



Title: Proceedings of 12th International Scientific Conference
“ECONOMIC POLICY IN THE EUROPEAN UNION MEMBER COUNTRIES”.

Editors: Michal Tvrdoň & Ingrid Majerová

Publisher: Silesian University in Opava
School of Business Administration in Karviná

Number of pages: 926, Part I (pp. 1 – 508), Part II (pp. 509 – 926)

Number of copies: 150

Printing Office: X-MEDIA servis s.r.o., Ostrava

Karviná 2015

ISBN 978-80-7510-114-3

Proceedings of
12th International
Scientific Conference

ECONOMIC POLICY IN THE EUROPEAN UNION MEMBER COUNTRIES **Part I**



Silesian University in Opava
School of Business Administration in Karvina



Moravian-Silesian
Region



Conference Proceedings
12th International Scientific Conference

**ECONOMIC POLICY IN THE EUROPEAN UNION
MEMBER COUNTRIES**

Part I

September 16-18, 2014
Ostravice, Czech Republic



Silesian University in Opava
School of Business Administration in Karvina



**Moravian-Silesian
Region**



Proceedings of 12th International Scientific Conference ECONOMIC POLICY IN THE EUROPEAN UNION MEMBER COUNTRIES

Organized by Department of Economics and Public Administration of the Silesian University in Opava, School of Business Administration in Karviná and Department of National Economy of the VŠB-Technical University of Ostrava, Faculty of Economics

The conference was financially supported by the Moravian-Silesian Region

**September 16-18, 2014
Ostravice, Czech Republic**

INTERNATIONAL SCIENTIFIC COMMITTEE

Assoc. Prof. Pavel Tuleja, dean, Silesian University in Opava, Czech Republic
Prof. Dana Dluhošová, dean, VŠB-Technical University of Ostrava, Czech Republic
Assoc. Prof. Michal Tvrdoň, vice-dean, Silesian University in Opava, Czech Republic
Prof. Jaromír Gottvald, vice-rector, VŠB-Technical University of Ostrava, Czech Republic
Assoc. Prof. Stanislav Šaroch, vice-rector, Škoda Auto University, Czech Republic
Prof. Ľudmila Lipková, dean, University of Economics in Bratislava, Slovakia
Prof. Antonín Slaný, dean, Masaryk University, Czech Republic
Assoc. Prof. Marian Lebieczik, vice-dean, Silesian University in Opava, Czech Republic
Prof. Christiana Kliková, VŠB-Technical University of Ostrava, Czech Republic
Prof. Eva Rievajová, University of Economics in Bratislava, Slovakia
Prof. Mária Uramová, Matej Bel University in Banská Bystrica, Slovakia
Prof. Igor Kotlán, VŠB-Technical University of Ostrava, Czech Republic
Assoc. Prof. Zuzana Kučerová, VŠB-Technical University of Ostrava, Czech Republic
Assoc. Prof. Šárka Laboutková, Technical University of Liberec, Czech Republic

ORGANIZING COMMITTEE

Dr. Ingrid Majerová
Dr. Eva Kotlánová
Dr. Natalie Uhrová
Miroslava Snopková
Silvie Chudárková
Karin Gajdová
Tomáš Verner

© Authors of the papers

ISBN 978-80-7510-114-3

Year of publishing: 2015

Number of pages: 926, Part I (pp. 1 – 508), Part II (pp. 509 – 926)

Editors: Michal Tvrdoň
Ingrid Majerová

All papers passed a double-blind review process.

Suggested citation:

Author, A., 2015. "Title of the paper". In: Tvrdoň, M. and I. Majerová (eds.). Proceedings of 12th International Conference Economic Policy in the European Union Member Countries. Karviná: Silesian University, pp. XXX-XXX. ISBN 978-80-7510-114-3

Dears Participants of the Conference

The international scientific conference “Economic Policy in the European Union Member Countries” is the annual platform for international scientific discussion on economic policy in its broadest sense.

The twelfth volume of this conference was held on September 16-18, 2014, Ostravice, Czech Republic. As in previous conferences, this year’s one is a platform for the worldwide dissemination and sharing of ideas for research in the field of Economic Policy, European Union, Crisis of Euro, Debt Crisis in the European Union, Future of European Integration, External Relations of the European Union, Labour Market, Globalisation Processes, Competitiveness, Regional Disparities.

I would like to thank the organizing committee for their efforts in helping us compile this volume. I would also like to express my deeply appreciations and thanks to all participants for their high quality contributions. It was our pleasure to welcome at our conference a significant number of participants from abroad.

We are happy that we have been able to get such broad participation from different sectors of the scientists, practitioners, policy makers and private sector actors. Together we try to advance efforts and present new ideas related to different aspects of economic policy.

The proceedings contain only papers that have successfully passed a double-blind referee process and whose authors had agreed with publication in the proceedings. There have always been two referee reports on each paper. The referees selected are distinguished scholars from Czech as well as foreign universities.

I hope that next volume of our conference will be successful and enjoyable to all participants. We look forward to seeing all of you next year at the thirteenth volume of “Economic Policy in the European Union Member Countries”.



Dr. Michal Tvrdoň
Vice-Dean of Science and Research
Silesian University in Opava
School of Business Administration in Karvina

CONTENTS

PART I

Adámek Jakub	INDICATORS OF INSTITUTIONAL QUALITY	1
Adámek Pavel Köhler Pavlína Štěpánková Petra Maršálková Lenka	THE GLOBALISATION OF CORPORATE SOCIAL RESPONSIBILITY: NATIONAL ANALYSES IN THE CZECH REPUBLIC	13
Baranová Veronika Janičková Lenka	EFFECTIVE CORPORATE TAX RATES IN THE SELECTED SECTORS: THE CASE OF THE CZECH REPUBLIC	22
Barták Miroslav Gavurová Beáta	ECONOMICS AND SOCIAL ASPECTS OF LONG-TERM CARE IN THE CONTEXT OF THE CZECH REPUBLIC AND THE SLOVAK REPUBLIC EU MEMBERSHIP	35
Bartůšková Hana Němcová Ingeborg	CONVERGENCE AND INTEGRATION OF THE CENTRAL EUROPE	45
Bayer Ondřej	INTERNATIONAL TAX REVENUES – CASE OF GRANGER CAUSALITY	51
Bečvářová Věra Zdráhal Ivo	EUROPEAN MODEL OF AGRICULTURE IN THE CONDITIONS OF THE WORLD AGRIBUSINESS	61
Bednářová Pavla	DOES ECONOMIC FREEDOM DEPEND ON DEGREE OF GLOBALIZATION?	68
Beran Vlastimil Franek Jiří	THE COMPETITIVENESS OF THE CZECH REPUBLIC WITHIN THE EUROPEAN UNION FROM LABOUR COSTS PERSPECTIVE	79
Botlík Josef Pellešová Pavlína Botlíková Milena	THE POSITION OF THE MORAVIAN-SILESIA REGION IN TERMS OF KNOWLEDGE POTENTIAL	88
Dobre Claudia Popovici Veronica Munteanu Irena	THE STRUCTURE-PERFORMANCE RELATIONSHIP IN THE EUROPEAN BANKING SYSTEM	97
Drobiszová Agata	PRO-GROWTH FISCAL POLICY: HOW TO ACHIEVE IT IN DEVELOPED COUNTRIES?	109

Duda Danuta	REVIEW PROCEDURE CONCERNING THE AWARD OF PUBLIC CONTRACTS IN CZECH REPUBLIC CONCERNING WITH LEGISLATION IN THE EU	118
Dudová Barbora	THE PRICE TRANSMISSION IN WHEAT AND BEEF MEAT AGRI-FOOD CHAIN IN THE CZECH REPUBLIC	130
Dufek Jaroslav Somerlíková Kristina Palát Milan	THE EFFECT OF EDUCATION OF THE POPULATION ON UNEMPLOYMENT IN THE EU COUNTRIES	141
Dufek Luboš	THE IMPACT OF GOVERNMENT POLICIES ON PUBLIC PROCUREMENT: THE CZECH EXPERIENCE	150
Fojtíková Lenka	A GRAVITY APPROACH TO MODELLING CZECH TRADE FLOWS: DOES TRADE LIBERALISATION INFLUENCE CZECH FOREIGN TRADE?	159
Gajdová Karin	CROSS-BORDER COOPERATION CZECH REPUBLIC - POLAND	168
Gongol Tomáš Münster Michael	PROCUREMENT WITHIN SO-CALLED IN-HOUSE EXEMPTION	177
Halásková Martina Halásek Dušan	PUBLIC EXPENDITURES IN EU COUNTRIES AND THEIR IMPACT ON PUBLIC SERVICES	187
Helísek Mojmír	THE “NO BAIL-OUT” PRINCIPLE IN THE EURO AREA’S RESCUE MECHANISMS	198
Heryán Tomáš	ERRORS IN SHORT RUN FORECASTS NEXT-DAY VOLATILITY WITHIN THE GREEK CAPITAL MARKET: EMPIRICAL RESEARCH BEFORE AND AFTER THE GLOBAL FINANCIAL CRISIS	205
Hodulák Vladan Krpec Oldřich	MONETARY RELATIONS OF FRANCE AND GERMANY – IMPACT ON EUROZONE	214
Horúcková Michaela Lebiedzík Marian	ASSESSMENT OF THE PROGRESS OF WESTERN BALKANS IN THE ECONOMIC FIELD OF COPENHAGEN CRITERIA	225
Hrabálek Martin	EUROPEAN UNION AND LIBERALIZATION OF GLOBAL TRADE: THE CASE OF AGRICULTURE	236

Hrůzová Martina	CAUSES OF WASTE IN PUBLIC PROCUREMENT	243
Hvozdenská Jana	THE EMPLOYMENT OF GOVERNMENT BOND SPREADS IN PREDICTION OF ECONOMIC ACTIVITY IN EU-15	253
Chobotová Monika	THE COMPARATION OF IMPACT FDI ON ECONOMIC DEVELOPMENT OF THE REGION IN THE CZECH REPUBLIC AND THE SLOVAK REPUBLIC	261
Issever Grochová Ladislava	ECONOMIC GROWTH IN THE EU COUNTRIES: DO INSTITUTIONAL SETTINGS AND MACROECONOMIC POLICIES MATTER?	270
Jajkowicz Ondřej	ESTIMATING THE SIZE OF THE SHADOW ECONOMY OF THE CZECH REPUBLIC	278
Janičková Lenka Šimek Milan	FINANCIAL CRISIS AND ITS IMPACT ON THE FOCUS OF TRAINING - THE CZECH REPUBLIC CASE	290
Janičková Lenka Šimek Milan	HAS THE ECONOMIC CRISIS CAUSED THE CHANGE OF AGE STRUCTURE OF (UN)EMPLOYED?	303
Janků Jan	THE POLITICAL BUDGET CYCLE IN OECD COUNTRIES	311
Jedlinský Jakub	WHAT IT ACTUALLY MEANS TO COMPLY WITH THE STABILITY AND GROWTH PACT CRITERIA?	322
Kaimova Nadira	THE ASYMMETRY IN MONETARY POLICY BETWEEN EU COUNTRIES	332
Kajurová Veronika	WHAT DETERMINED SOVEREIGN CDS SPREADS IN THE EURO AREA?	341
Kaňa Radomír Mynarzová Monika	EUROPEAN UNION COMMON SECURITY AND DEFENCE POLICY AS AN IMPORTANT FACTOR OF TRANSATLANTIC SECURITY COOPERATION	350
Kappel Stanislav	BUSINNES CYCLE SYNCHRONIZATION IN EUROZONE MEMBER STATES AND IN SELECTED POTENTIAL MONETARY UNIONS	360
Kaštan Milan	ACCEPTABLE INDICATORS OF INTELLECTUAL PROPERTY PROTECTION AND THEIR COVARIANCE IN THE CZECH REPUBLIC	369

Kliková Christiana	COMPETITIVENESS OF COUNTRIES IN GLOBAL ENVIRONMENT	379
Klimko Roman Rievajová Eva	CONSEQUENCES OF ECONOMIC PROCESSES ON THE LABOUR MARKETS OF THE EU AND COORDINATED APPROACH TO TACKLING	388
Knotek Pavel	CROSS-BORDER BANKING ACTIVITY IN EMU - INCENTIVES, CONSEQUENCES	398
Köhler Pavlína Ventruba Jaromír Přečková Lenka	PROFITABILITY OF EU SUBSIDY FOR THE FORESTATION PLAN IN THE CZECH REPUBLIC	406
Kolář Martin	A REVIEW OF CENTRAL BANK INDEPENDENCE	415
Kotlán Igor Machová Zuzana	THE INFLUENCE OF TAX SHOCKS ON THE ECONOMY OF DEVELOPED COUNTRIES	424
Kotlánová Eva	COULD ECONOMIC CRISES CHANGE ECONOMIC POLICY UNCERTAINTY IMPACT ON ECONOMIC GROWTH AND INVESTMENT IN INNOVATION?	435
Kotýnková Magdaléna Krebs Vojtěch	CHANGES OF THE EUROPEAN LABOUR MARKET	444
Kouba Luděk Rozmahel Petr	SKILL AND REGIONAL MISMATCH ON THE LABOUR MARKET IN THE CENTROPE REGION	452
Kučerová Zuzana	MONITORING THE SHADOW BANKING SECTOR IN THE EURO AREA	462
Kuric Miroslav	MEASURING THE SUCCESS OF ECONOMIC POLICY V4 USING MAGICAL QUADRANGLE	473
Laboutková Šárka	RELATION BETWEEN CORRUPTION IN DEVELOPED AND DEVELOPING COUNTRIES AND THE LEVEL OF THEIR GLOBALIZATION	479
Lokaj Aleš	DIFFERENCES IN ACTIVE LABOUR MARKET POLICIES IN CHOSEN COUNTRIES	489
Macek Rudolf	LABOUR TAXATION AND ITS IMPACT ON ECONOMIC GROWTH IN THE OECD COUNTRIES	499

PART II

MacGregor Pelikánová Radka	POTENTIAL IMPACT OF THE FAMOUS PIERRE FABRE CASE ON E-BUSINESS IN THE EU – THE EUROPEAN SECRET MESSAGE ABOUT THE SIGNIFICANCE OF DOMAIN NAMES	509
Macháček Martin Kolcunová Eva	PUBLISHING PRODUCTIVITY OF CZECH SENIOR ACADEMIC ECONOMISTS: FINALLY ON THE RIGHT TRACK, BUT NOT QUITE THERE	521
Machová Zuzana Kotlán Igor	TAXES AS A SOURCE OF GOVERNMENT SPENDING FINANCING	531
Majerová Ingrid	INTERACTIONS BETWEEN COMPETITIVENESS AND INNOVATION IN SELECTED COUNTRIES OF THE EUROPEAN UNION AND SWITZERLAND	540
Martinát Stanislav Klusáček Petr	REGIONAL PATHS OF AGRICULTURAL LABOUR FORCE DEVELOPMENT IN THE CZECH REPUBLIC: GROWTH OF LABOUR PRODUCTIVITY OR TICKING TIMEBOMB?	550
Melecký Lukáš	ASSESMENT OF SOCIOECONOMIC DEVELOPMENT OF VISEGRAD FOUR NUTS 2 REGIONS USING COMPOSITE INDICES	561
Moravcová Jana	TAXATION OF SELF-EMPLOYED IN THE CZECH REPUBLIC – ARE THE LUMP SUM EXPENSES THE ONLY PROBLEM?	572
Nerudová Danuše Solilová Veronika	THE IMPACT OF FTT INTRODUCTION ON JOBS IN THE EU: LESSONS FROM ITALY AND FRANCE	580
Nežinský Eduard	SOURCES OF INEFFICIENCY: LABOUR UTILIZATION IN THE EU	588
Nováková Michaela Chinoracká Andrea	REGIONAL DISPARITIES IN WORKING LIFE QUALITY AS A FACTOR OF THE HEALTH OF THE SLOVAK POPULATION	597
Palová Zuzana	THE MEASUREMENT OF REGIONAL DISPARITIES IN THE MORAVIAN-SILESIAN AND ZILINA REGION AND THEIR RELATIONSHIP TO FDI	606
Pawlas Iwona	THE IMPLEMENTATION OF NEW COHESION POLICY IN POLAND FROM 2007 TO 2013: AN ATTEMPT OF EVALUATION. PROSPECTS FOR 2014-2020	614

Perțicaș Diana Claudia Florea Adrian Gheorghe	ASPECTS OF IMPORTS AND EXPORTS FROM ROMANIA AFTER THE ACCESSION TO THE EU	621
Perțicaș Diana Claudia Simuț Ramona Marinela	ECONOMETRIC TESTING OF THE RELATIONSHIP BETWEEN THE CO2 LEVEL AND LIFE EXPECTANCY IN ROMANIA	629
Pongrácz Eva Kolláriková Tímea	SITUATION OF YOUNG PEOPLE IN THE SLOVAK LABOR MARKET AND POSSIBILITIES OF THEIR PLACEMENT IN THE AREA OF SOCIAL ECONOMY	638
Průša Ladislav	DEVELOPMENT OF MATERIAL SUPPORT TO FAMILIES BY NON-INSURANCE SOCIAL BENEFITS AFTER THE YEAR 2000	648
Pytliková Mariola Tichá Michaela	THE ROLE OF BUSINESS CYCLE IN SHAPING INTERNATIONAL MIGRATION	657
Rozmahel Petr Issever Grochová Ladislava Litzman Marek	SOME EVIDENCE ON THE RELATION BETWEEN DISSIMILAR FISCAL POLICIES AND BUSINESS CYCLE SYNCHRONIZATION IN THE EUROPEAN UNION	673
Salamon Pavel	MACROECONOMIC EFFECTS OF BOEBS LARGE-SCALE ASSET PURCHASES	681
Sehleanu Mariana Meșter Ioana Teodora	EMPIRICAL RESEARCH REGARDING THE ECONOMIC FACTORS INFLUENCING THE MERGER AND ACQUISITION ACTIVITY IN ROMANIA	690
Sikorová Eva Večeřová Vendula Měřvová Markéta	THE CAUSES OF BANKRUPTCY AND IMPACT OF THE ECONOMIC CRISIS ON THE CORPORATE INSOLVENCY'S EVOLUTION IN THE CZECH REPUBLIC	700
Sinevičienė Lina	THE IMPACT OF FINANCIAL MARKETS ON REAL ECONOMY IN THE CONTEXT OF SUSTAINABLE ECONOMIC DEVELOPMENT	710
Skaličanová Barbora	NEW PERSPECTIVE ON THE DEVELOPMENT OF COMPETITION POLICY	718

Staničková Michaela	TIME COMPARISON ANALYSIS OF EFFICIENCY DIFFERENCES IN COMPETITIVENESS: THE CASE OF EU NUTS 2 REGIONS	725
Stavárek Daniel	ECONOMIC DEVELOPMENT IN THE VISEGRAD COUNTRIES FROM THE PERSPECTIVE OF MACROECONOMIC IMBALANCE PROCEDURE	736
Stavárek Daniel Tomanová Lucie	EXCHANGE RATE VOLATILITY EXPOSURE ON CORPORATE CASH FLOWS AND STOCK PRICES: THE CASE OF CZECH REPUBLIC	747
Svobodová Dagmar	TRAINING PROGRAMMES OF THE CONSTRUCTIVE HABITS OF A PROFESSIONAL CAREER AT THE LABOUR MARKET	756
Szarowská Irena	TESTING LINK BETWEEN FISCAL DECENTRALIZATION AND ECONOMIC DEVELOPMENT IN THE EUROPEAN UNION	766
Szudi Gábor Kováčová Jaroslava	THE DEVELOPMENT OF THE LEGISLATIVE BACKGROUND AND CURRENT ORGANISATIONAL FRAMEWORK OF SOCIAL SERVICES IN SLOVAKIA	776
Šafr Karel	THE STABILITY ANALYSIS OF REGIONAL INPUT- OUTPUT MULTIPLIERS: THE CASE STUDY OF MORAVIAN-SILESIA REGION IN THE CZECH REPUBLIC BETWEEN 2007-2012	785
Šimáková Jana Szkorpová Zuzana	EFFECTS OF EXCHANGE-RATE UNCERTAINTY ON FOREIGN DIRECT INVESTMENT IN THE CZECH REPUBLIC	793
Šmejkal Václav	CJEU AND THE SOCIAL MARKET ECONOMY GOAL OF THE EU	800
Šperka Roman	THE PROCESS OF EGOVERNMENT IMPLEMENTATION IN THE CZECH REPUBLIC: A 2014 EVALUATION	810
Švarc Zbyněk Grmelová Nicole	CONSUMER PROTECTION IN COMMON EUROPEAN SALES LAW	820
Taterová Eva Darkwah Samuel Antwi	ATTITUDE OF EUROPEAN UNION TOWARDS MIDDLE EAST AND NORTHERN AFRICA SINCE 1990	829

Turečková Kamila	SELECTED FACTORS OF REGIONAL COMPETITIVENESS IN ICT – INDUSTRIAL COALITIONS AND EDUCATION	837
Tuschlová Miroslava Uramová Mária	EFFECTS OF THE EURO ADOPTION ON BUSINESS COMPANIES IN SLOVAKIA	846
Tvrdoň Michal	NATIONAL AND REGIONAL UNEMPLOYMENT: THE CASE OF HUNGARY	855
Uhrová Natalie	LAST TEN YEARS OF THE VISEGRAD GROUP COUNTRIES IN THE EU	865
Vahalík Bohdan	ALIGNMENT OF BUSINESS CYCLES OF THE EUROPEAN UNION AND BRICS COUNTRIES	875
Verner Tomáš	RELATION BETWEEN ECONOMIC FREEDOM AND CORPORATION'S OUTPUT: CASE OF THE CZECH REPUBLIC	884
Volejníková Jolana Kněžáčková Radka	INFLUENCE OF MIGRATION ON THE LABOUR MARKET IN THE CZECH REPUBLIC	892
Žďárek Václav Šaroch Stanislav	NON-TRADABLE GOODS IN CATCHING-UP EUROPEAN COUNTRIES – AN INSTITUTIONAL PUZZLE?	901
Žebroková Veronika Pellešová Pavlína	THE COMPETITIVENESS OF SMALL AND MEDIUM-SIZED ENTERPRISES IN RETAIL	917

INDICATORS OF INSTITUTIONAL QUALITY

Jakub Adámek

*Masaryk University, Faculty of Economics and Administration, Lipova 41a, 602 00 Brno-Pisarky, Czech Republic
email: 378499@mail.muni.cz*

Abstract

In recent years, there has been an increasing interest in empirical studies of institutions. For this purpose several indicators of institutional quality has been developed. This paper seeks to discover what institutional quality indicators are the most frequently used ones and how many different types of indicators can be found in the relevant economic literature. On the basis of further analysis it is presented how often and in which studies particular indicators are used during the analysis period. Lastly, it is investigated whether the number of citations of the papers which use any indicator of institutional quality for empirical research is related to the type of the indicator. A criticism of certain types of indicators is also mentioned. The findings presented in this paper should provide an insight into the field of measuring institutions

Keywords

New Institutional Economics, Institutional Quality, Indicators, WGI, ICRG, Polity.

JEL Classification

A13, C12, C89.

1 Introduction

Since 1970s', when a term New Institutional Economics (NIE) was used for the first time by Oliver Williamson, NIE has quickly developed to a popular and widespread field of economic studies. Especially in past two decades, a considerable amount of literature has been published on the topic of institutions and measurement of institutions. Although, the latter is a subject of controversy since many scholars doubt whether we are able to measure institutions, or more exactly whether we are able to measure anything else than results of governmental policies and subjective evaluations of institutional environment.

In spite of these disputes, measuring of institutions is quite usual method of institutional research. In order to get a tool for further analysis (e.g. comparison of institutions in different countries), indicators of institutional quality are created on the basis of data gained from various types of measurements of institutions. These indicators represent a quality of institutional environment in investigated countries and they are often used for the purpose of a subsequent economic research (mainly in area of economic growth and economic development research e.g. Acemoglu and Robinson 2012; Ang 2013; Glaeser et al. 2004). But they can be also used as a criteria for the distribution of the development aid - thus, an accuracy and informational value of the indicator is not only academic question as the indicator can have a significant impact on making of economic policy (Shirley, 2008, p. 79).

This paper seeks to discover what institutional quality indicators are the most frequently used ones and how many different types of indicators can be found in the relevant economic literature. Therefore this paper provides an analysis of a database containing empirical economic studies (gathered from Web of Science) which include at least one indicator of institutional quality. Furthermore, it is investigated a relation between particular indicators and a number of citations of the studies which include these indicators, and a relation between particular indicators and impact factor of journals which contain studies with these indicators.

2 Literature review

From my point of view NIE deals with four main questions: What are the institutions? What is the nature of institutions? What is their impact on economy? And, how can we measure institutions and their impact on economy? Mainly the first one and the fourth one are important for the purpose of

this paper because we have to define what institutions are if we want to measure them, and classify them to the different groups for better understanding of various types of indicators. Also we have to know what are the specific problems associated with the measuring of institutions, if we want to analyse indicators of institutional quality which are the output of the measurement of institutions.

NIE literature provides a large number of different definitions of institutions. However, one definition is undoubtedly the most commonly accepted one: “Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction (North, 1990, p. 3).” This definition is quite broad and general and for this reason, it can include almost every type of constraints. Even the language can be seen as a institution because it is also a constraint on the way how we communicate with each other (Mlčoch, 2005, p. 29). Also Hodgson (2006, p. 2) defines institutions similarly like North as “systems of established and prevalent social rules that structure social interactions”.

Another approach to defining institutions, which put an emphasis on the application and enforcement of rules, is used by Ostrom (1990, p. 51): “Institutions can be defined as the sets of working rules that are used to determine who is eligible to make decisions in some arena, what actions are allowed or constrained, what aggregation rules will be used, what procedures must be followed, what information must or must not be provided, and what payoffs will be assigned to individuals dependent on their actions.”

These definitions of institutions provide us only general, overall picture of institutional environment. However, economists are usually more interested in differences between institutions, since NIE claim that it is a different quality of institutional environment what causes differences in economic performance between countries (Acemoglu and Robinson, 2012). That leads us to the problem of measurement of institutions. Several methods of measuring institutions have been developed (e.g. Kaufmann et al., 1999, Howell, 2014, Greif, 1998, Marshall and Jagers, 2005) but we can distinguish them to two main types: objective methods (which are based on analysis of existing documents or phenomena e.g. analysis of constitutions, analysis of political system) and subjective methods (which are based on opinions and attitudes e.g. opinion polls, expert assessments). Consequently, we can distinguish objective, subjective and mixed indicators of institutional quality according to the measuring method which was applied for gathering data from which the indicator of institutional quality is created. Jütting (2003, p. 10-14) moreover distinguishes economic, political, legal and social indicators according to the area of analysis, for which these indicators are used, and formal and informal indicators according to type of institutions which is represented by the indicator. This distinction on formal and informal institutions comes from North (1990) and Jütting follows that.

Glaeser et al. (2004, p. 278) suggest that only the formal indicators (e.g. judicial independence, constitutional review, proportional representation in parliament) should be used for economic research due to the fact that subjective indicators can be vague or can be distorted. On the other hand, Kaufmann et al. (2004, p. 271) argue that we can hardly find any objective indicator for some important aspect of institutional environment (e.g. corruption clearly determines the quality of institutional environment, but the nature of corruption as an illegal and covert activity almost excludes the possibility of objective measuring) and that is why we should not ignore subjective indicators. However, Woodruff (2006, p. 3-10) also shares doubts about measurement of institutions by subjective methods and he argues that by applying different measuring methods we actually measure different phenomena and the results of measuring may not be comparable.

Shirley (2008, p. 85) points out that the other problem with measurement of institutions can be that some types of institutions can be hardly quantified (e.g. political institutions which represent the quality of a political system and democracy). Shirley (2008, p. 89) also mentions that subjective methods can lead to incorrect results because people, who evaluate the quality of institutions, can be biased for many reasons (e.g. they can have a favourite country, they have prejudices, they are influenced by recent news or they omit some important criteria). Lastly, subjective evaluations can

be distorted by the current economic development (i.e. when the economy grows people might expect better institutions than they actually are and vice versa) which leads to the problem of reverse causality (Vymětal and Žák, 2006, p. 583).

In view of all that has been mentioned so far, it is obvious that many economists are not perfectly satisfied with the way how institutions are measured and compared. To avoid some of methodological problems, Voigt (2013, p. 11-12) suggests to focus more on enforcement of institutions and to analyse only these, which are actually enforced (which means to analyse institutions which are in compliance with Ostrom's definition). Nekola (2006, p. 16-17) notes that the solution of these methodological problems could be a usage of strictly objective indicators (so called indicators of second generation) e.g. contract-intensive money (CIM).

3 Data

As mentioned above, the aim of this paper is to analyse usage of indicators in empirical economic studies. Data used for this analysis were gathered from Web of Science during the first quarter of 2014. I searched for empirical studies, which contain any indicator of institutional quality by using key words “*institutional quality*”, “*indicator (of) institutions*” and “*(to) measure institutions*”. Subsequently, the results of searching in Web of Science were restricted only to the field of economics. I analysed found studies one after another and those which contained an empirical model with at least one variable which can be considered as the indicator of institutional quality were included in database¹. Decision whether a particular variable can be considered as the indicator of institutional quality was made on the basis of how author of the study described that particular variable in the model description (i.e. It had to be defined by the author that particular variable represents institutional quality. For instance: “Data for variable IQ (institutional quality) comes from World Bank - World Governance Indicators.”).

The database² contains 249 records for the period from 1997 to the first quarter of 2014. Each database record consists of an author's name, a year of publishing, a title of study, a journal's title, an abstract, an immediate impact factor of the journal, a number of citations³, a WOS number and from one to four indicators of institutional quality. I restricted the number of indicators on the maximum of four, since the majority of studies contains no more than four of them, and those studies which contain more than four indicators are mostly comparative studies with dozens of indicators.

4 Results

First of all, the proportion between number of found studies and the number of records in database was investigated in order to check whether the number of records is or is not deviated in some way. Figure 1 shows that except of the period from 1997 to 2000 this proportion is around 20%. The deviation for the period 1997-2000 is probably caused by the fact that the first empirical studies on this topic were published in 1990s so we can assume that usage of indicators of institutional quality for empirical research was generally less frequent at that time.

¹ No instrumental variables are included in database although they are usually used together with certain types of indicators of institutional quality. The reason is that instrumental variables used alone do not represent institutional quality.

² The database was originally created for my bachelor thesis *Indicators of Institutional Environment Quality*.

³ The number of citations represents a sum of citations from Web of Science Core Collection. This collection contains data from these citation indexes: Science Citation Index Expanded (SCIE), Social Science Citation Index (SSCI), Arts & Humanities Citation Index (A&HCI), Conference Proceedings Citation Index - Science (CPCI-S), Conference Proceedings Citation Index - Social Science & Humanities (CPCI-SSH), Book Citation Index - Science (BKCI-S) and Book Citation Index - Social Sciences & Humanities (BKCI-SSH).

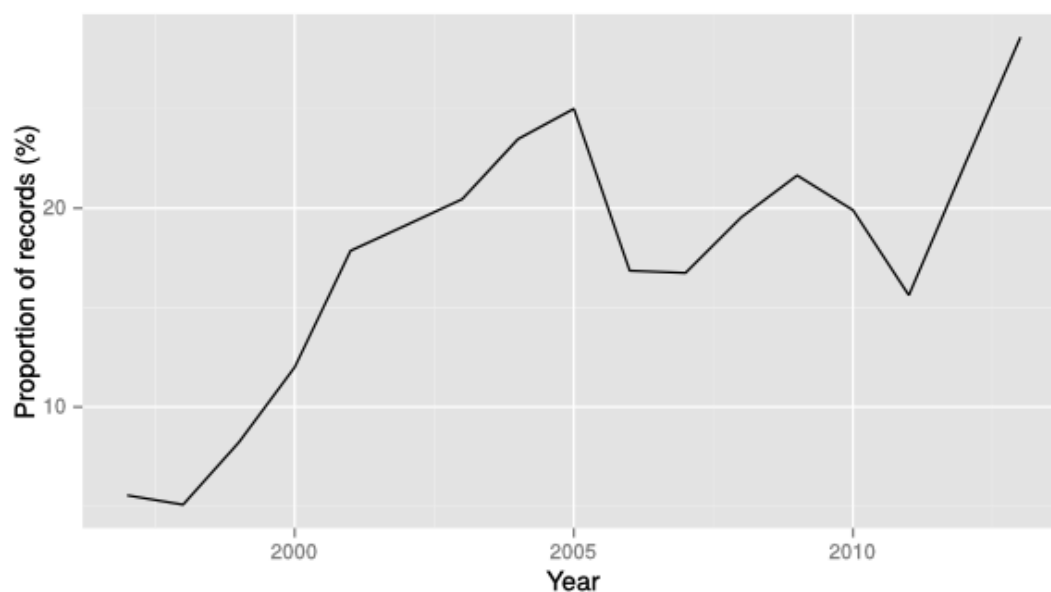


Figure 1. Proportion of records (Source: author)

Figure 2 presents that the quantity of empirical studies with indicators of institutional quality rises during the investigated period. Therefore, it can be claimed that this method of empirical research becomes increasingly popular and widespread. On the contrary, average number of citations of these studies declines as shown in Figure 3. We can interpret these results in the way that until 2005 a small amount of frequently cited studies was published whereas after 2005 a large number of studies were published however they are significantly less cited by other authors, e.g. Lin and Chen (2011).

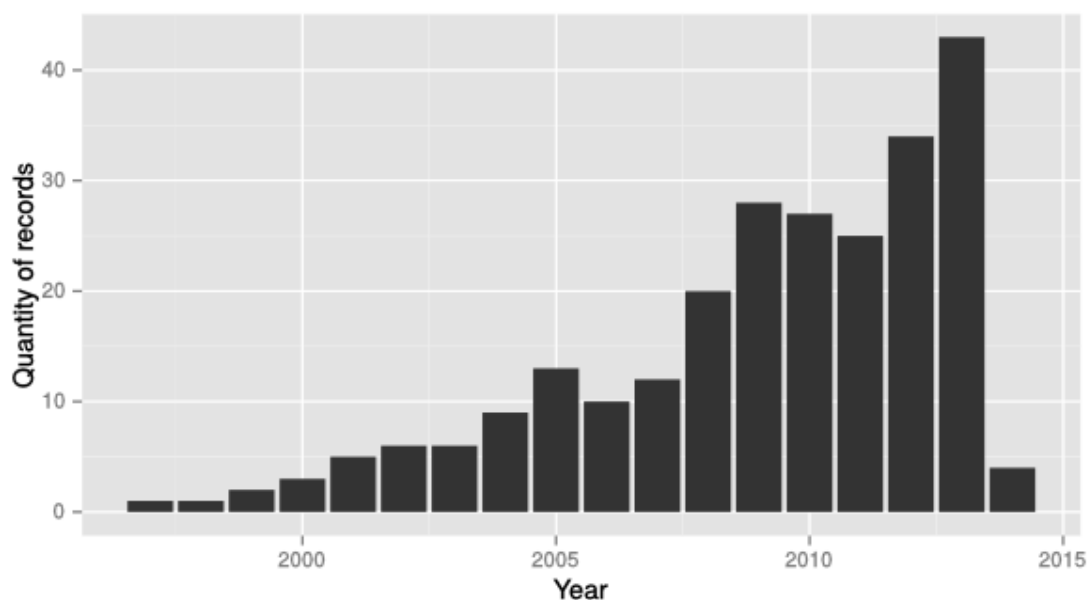


Figure 2. Quantity of studies (Source: author)

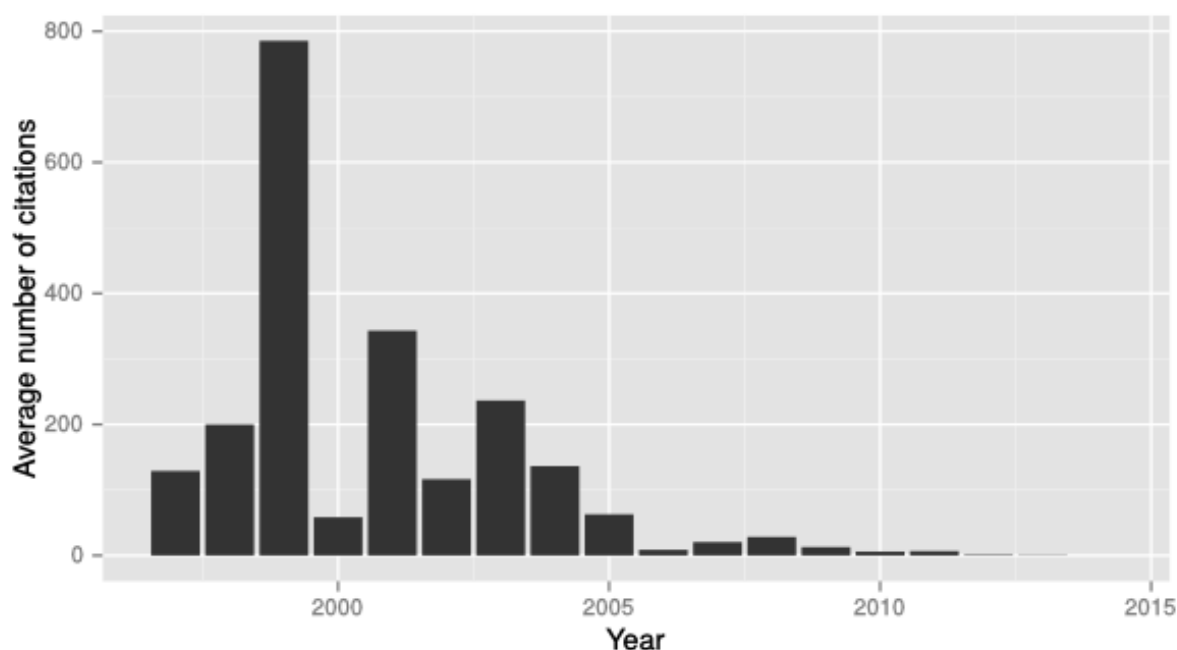


Figure 3. Average number of citations (Source: author)

The main goal of this paper is to find the most frequently used indicators. Overall, 66 different indicators have been found. Figure 4 presents the frequency of usage of these indicators. From the data in Figure 4, it is apparent that the far most often used indicators are World Governance Indicators (WGI), International Country Risk Guide (ICRG) and Polity. Also we can find a group of 12 indicators which are repeatedly used but less frequently than the first three e.g. Freedom House Index (FHI), Corruption Perception Index (CPI) or Legal Formalism (LegForm). The rest of indicators have been used up to three times. Some of them are created for areas with specific cultural, political and/or economic environment e.g. Fan-Wang-Zhu Index (FWZI), Vietnam Provincial Competitiveness Index (VPCI) or Contract Enforcement – China (CE-CN).

From the Figure 5, it can be seen that the diversity of indicators is low during the period 1997-2000 which is caused by small number of records from this period (the same applies for the year 2014)⁴. It is apparent from this figure that the three most frequently used indicators are used constantly during the period, except WGI at the beginning of the investigated period. The reason is that WGI has been firstly presented in 1999 (Kaufmann et al., 1999).

⁴ Category "Other" represents indicators which are less than eight times in the database.

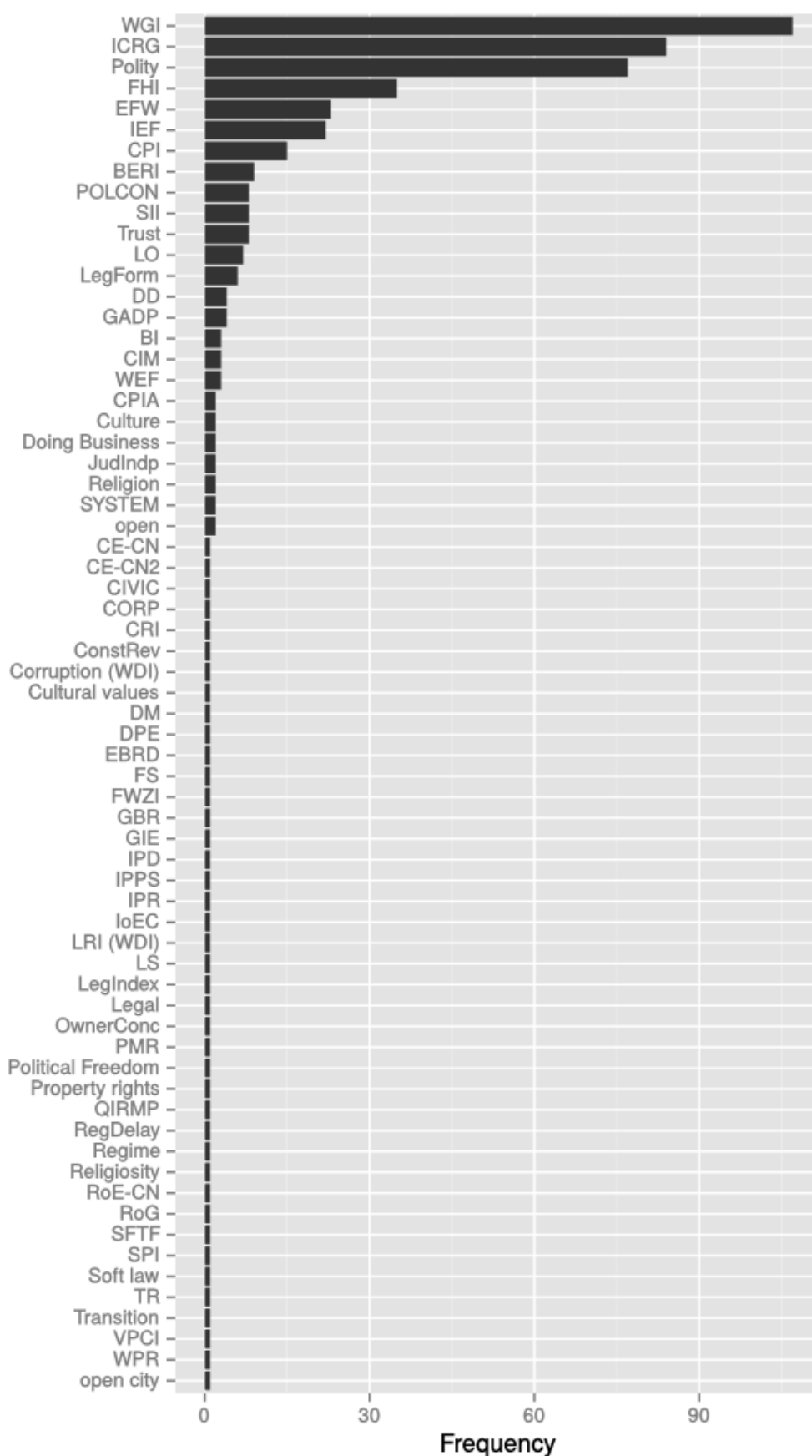


Figure 4. Frequency of usage of the indicators (Source: author)



Figure 5. Relative frequency of usage of the indicators (Source: author)

Another aim of this paper is to investigate a relation between particular indicators and a number of citations of the studies, which include these indicators, and a relation between particular indicators and impact factor of journals, which contain studies with these indicators.

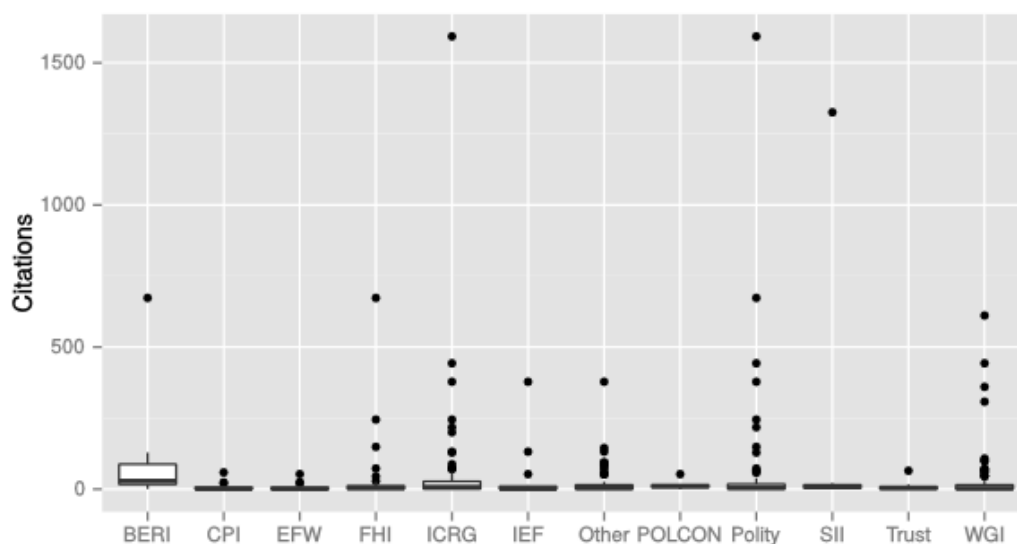


Figure 6. Boxplot – citations (Source: author)

Firstly, the hypothesis has been tested whether number of citations differ with the indicator used in the study. The null hypothesis that all medians number of citations for each type of the indicator are the same has been rejected at the $p = 0.05$ level (Kruskal-Wallis test: $\chi^2 = 25.393$, $df = 11$, $p\text{-value} = 0.008$). Nevertheless, box plot (in Figure 6) suggests that the result of the Kruskal-Wallis test is influenced by outliers, especially with regards to data for the indicators ICRG, Polity and Social

Infrastructure Index (SII). However, when I exclude outliers, the null hypothesis has been rejected at the $p = 0.10$ level (Kruskal-Wallis $\chi^2 = 26.3885$, $df = 11$, $p\text{-value} = 0.005679$). When I exclude "Other" indicators, the null hypothesis has been again rejected at the $p = 0.05$ level (Kruskal-Wallis $\chi^2 = 26.1294$, $df = 10$, $p\text{-value} = 0.00357$). Therefore, I made a multiple-comparison test. The results is that it exists statistically significant difference between number of citations which use indicator BERI and which use indicator EFW (Multiple comparison test after Kruskal-Wallis: BERI-EFW - obs.dif 184.3937, critical.dif 184.055). The reason for that can be that indicator BERI was more often used at the beginning of the investigated period from which the most cited studies comes from.

Similar test has been made also with impact factor of journals in which those studies were published. From the data in Figure 7, it is apparent that except 1997 the average impact factor of all journals in certain year varies consistently between 1 and 2.1. The motivation for the test with impact factors is to investigate whether studies containing particular indicator are published in journals with the significantly different impact factor than studies with other types of indicators. However, the null hypothesis that all medians of impact factors for each type of the indicator are the same has not been rejected at the $p = 0.05$ level (Kruskal-Wallis: $\chi^2 = 15.2265$, $df = 11$, $p\text{-value} = 0.172$) so it have not been proven that such a relationship between indicator and impact factor exists which is also supported by the boxplot (in Figure 8).

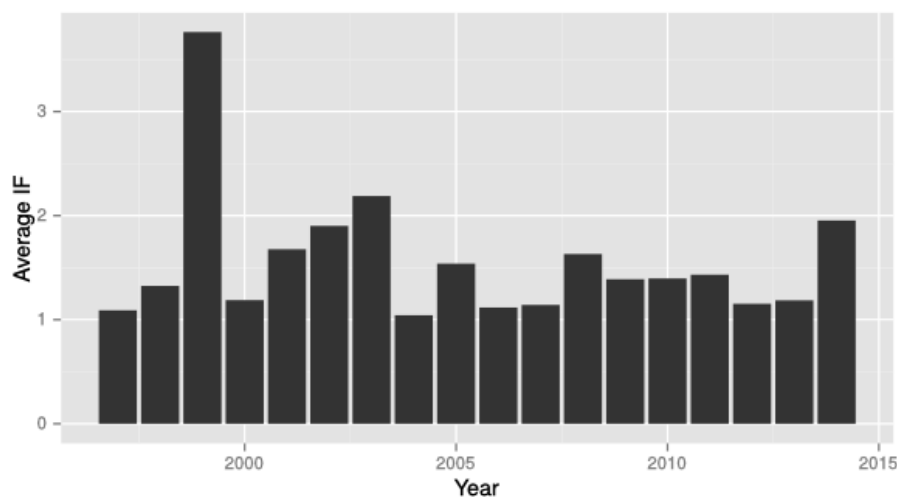


Figure 7. Average impact factor (Source: author)

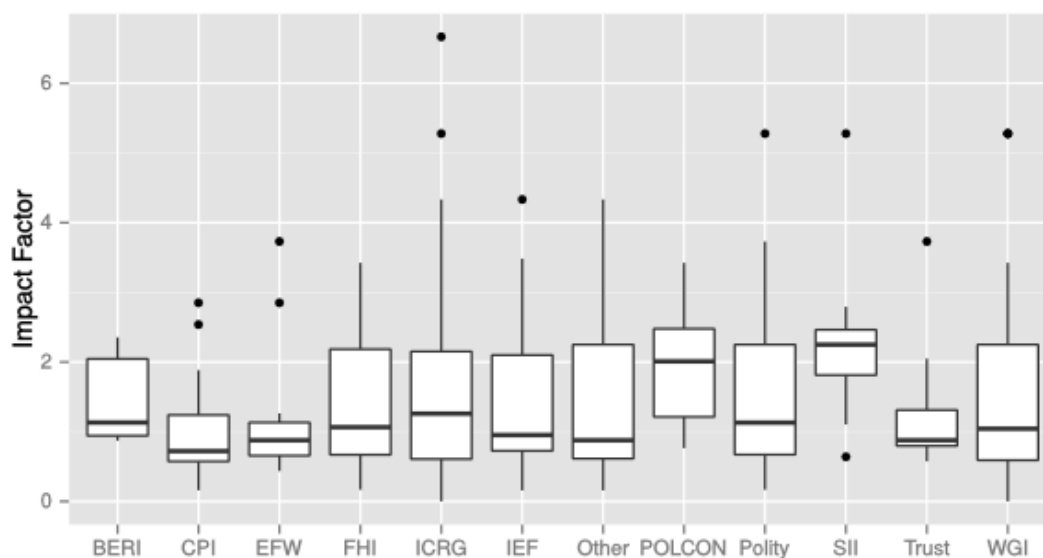


Figure 8. Boxplot – impact factor (Source: author)

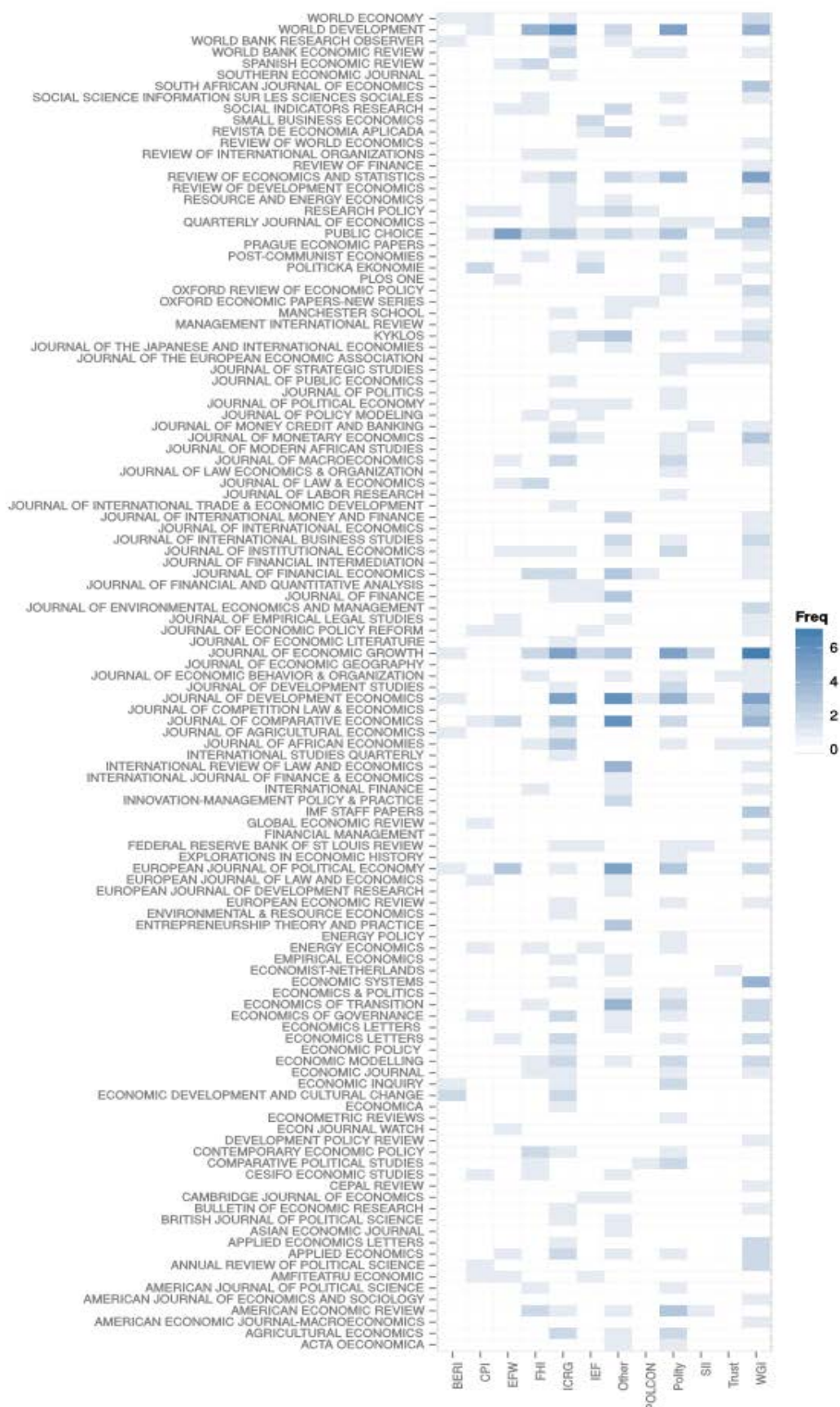


Figure 9. Frequency of indicator according to journal (Source: author)

Figure 9 shows the overall distribution of indicators among journals and the frequency of their usage in each journal. As we can see, a vast majority of journals contains studies with at least one of the three most frequently used indicators.

5 Conclusion

For the purpose of the presented analysis, a database consisting of 249 empirical studies with 66 different indicators of institutional quality has been created. This paper has shown that the quantity of published empirical studies containing indicators of institutional quality constantly rises but their average number of citations decreases. WGI, ICRG and Polity have been found as the three most frequently used indicators.

On the basis of non-parametric test it has been shown that number of citations can differ according to the indicator which is used in the study. By using the same test it has not been proven that a relationship between indicator and impact factor of the journal, in which the study with that particular indicator was published, exists.

This paper has given an insight to area of empirical institutional research. The findings of this study can be used for further research since it offers a wide range of different indicators of institutional quality and it can facilitate selection of appropriate indicator.

6 Acknowledgement

This research was supported by the Student Project Grant No. MUNI/A/0844/2013.

References

- [1] Acemoglu, D. and J. A. Robinson, 2012. *Why nations fail: the origins of power, prosperity, and poverty*. New York: Crown Publishers.
- [2] Ang, J., 2013. Institutions and the long-run impact of early development. *Journal of development economics*, vol. 105, pp. 1-18.
- [3] Gleaser, E. L., R. La Porta, F. Lopez-De-Silanes and A. Shreifer, 2004. Do Institutions Cause Growth? *Journal of economic growth*, vol. 9, issue 3, pp. 271-303.
- [4] Greif, A., 1998. Historical and Comparative Institutional Analysis. *American Economic Review*, vol. 88, issue 2, pp. 80-84.
- [5] Hodgson, G. M., 2006. What Are Institutions? *Journal of Economic Issues*, vol. XL, No. 1, pp. 1-25.
- [6] Howell, L. D., 2014. *International Country Risk Guide Methodology*. [online]. Available from: <https://www.prsgroup.com/about-us/our-two-methodologies/icrg>.
- [7] Jütting, J., 2003. *Institutions and Development: A Critical Review*. OECD Working Paper No. 210.
- [8] Kaufmann, D., A. Kraay and P. Zoido, 1999. *Governance Matters*. World Bank Policy Research Working Paper No. 2196.
- [9] Kaufmann, D., A. Kraay and M. Mastruzzi, 2004. Governance Matters III: Governance Indicators for 1996, 1998, 2000 and 2002. *The World Bank economic review*, vol. 18, issue 2, pp. 253-287.
- [10] Lin, Y. and X. Chen, 2011. Review of Institutions and Economic Growth Empirical Research. *Applied Economics, Business and Development*. pp. 563-569.

- [11] Marshall, G. M. and K. Jagers, 2005. *Polity IV Project: Data Users' Manual*. [online]. Available from: http://home.bi.no/a0110709/PolityIV_manual.pdf.
- [12] Mlčoch, L., 2005. *Institucionální ekonomie*. 2nd Ed. Praha: Charles University.
- [13] Nekola, M., 2006. *Analýza a evaluace hlavních přístupů k měření vládnutí ve světě*. Pražské sociálně vědní studie. Veřejná politika a prognostika, PPF-018.
- [14] North, D. C., 1990. *Institutions, institutional change and economic performance*. Cambridge: Cambridge University Press.
- [15] Ostrom, E., 1990. *Governing the commons: the evolution of institutions for collective action*. Cambridge: Cambridge University Press.
- [16] Shirley, M. M., 2008. *Institutions and Development (Advances in New Institutional Analysis)*. Cheltenham: Edward Elgar Publishing.
- [17] Voigz, S., 2013. How (Not) to measure institutions. *Journal of institutional economics*, vol. 9, issue 1, pp. 1-26.
- [18] Vymětal, P. and M. Žák, 2006. Institucionální aspekty nové komparativní ekonomie: ČR a EU. *Politická ekonomie*, vol. 5, pp. 583-609.
- [19] Woodruff, Ch., 2006. Measuring Institutions In: *International Handbook on the Economics of Corruption*. Cheltenham: Edward Elgar Publishers.

Appendix – Full names of indicators

WGI	World Governance Indicators	DM	Decision-making
ICRG	International Country Risk Guide	DPE	Domestic protection from expropriation
FHI	Freedom House Index	EBRD	European Bank for Reconstruction and Development
EFW	Economic Freedom of the World	FS	Financial system
IEF	Index of Economic Freedom	FWZI	Fan–Wang–Zhu Index
CPI	Corruption Perceptions Index	GRB	Government–business Relation
BERI	Business Environment Risk Index	GIE	Gender Inequalities in Education
POLCON	Political Constraints	IPD	The Institutional Profiles Database
SII	Social Infrastructure Index	IPPS	Indicator of the Strength of Patent Protection
LO	Legal Origin	IPR	Index of Property Rights
LegForm	Legal Formalism	IoEC	Index of Electoral Competitiveness
DD	Democracy and Dictatorship	LRI (WDI)	Legal rights index (World Development Indicators)
GADP	Index of Government Antidiversion Policies	LS	Legal System
BI	Beraucracy Index	LegIndex	Legislative Index
CIM	Contract Intensive Money	OwnerConc	Ownership Concentration
WEF	World Economic Forum Executive Survey	PMR	Product Market Regulation Index
CPIA	The Country Policy and Institutional Assessment	QIRMP	index of the quality of institutions and of economic policies
JudIndp	Judicial Independence	RegDelay	Regulatory Delay
open	Openness Index	RoE-CN	Risk of Expropriation - China
CE-CN	Contract Enforcement - China	RoG	Restriction of Government
CE-CN2	Contract Enforcement 2 - China	SFTF	Ethnic Homogeneity Index
CIVIC	Civic Cooperation	SPI	Socio-political Instability Index
CORP	Corporatism	TR	Trust Relations
CRI	Creditor Rights Index	VPCI	Vietnam Provincial Competitiveness Index
ConstRev	Constitutional Review		

Source: author

THE GLOBALISATION OF CORPORATE SOCIAL RESPONSIBILITY: NATIONAL ANALYSES IN THE CZECH REPUBLIC

Pavel Adámek¹, Pavlína Köhler², Petra Štěpánková³, Lenka Maršálková⁴

¹*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: adamek@opf.slu.cz*

²*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: haltofova@opf.slu.cz*

³*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: O130070 @opf.slu.cz*

⁴*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: O130062 @opf.slu.cz*

Abstract

This paper examines why global corporate social responsibility (CSR) frameworks have gained growing popularity in the last decade and what factors lead to weaker versus stronger commitments to those frameworks. Interestingly, the fundamentals of CSR are considered to be universal reflecting the globalisation of business and economies. The traditional ethos of maximising shareholder value without regard to other stakeholders is an outdated notion in today's global environment. CSR not only sits comfortably with the mantra of maximising shareholder value, sustainable CRS practices enhance shareholder value. In the case of the Czech Republic it is evident that to a large extent are being used CSR standards for transnational corporations that extend these principles to other "national" companies and organizations. The objective of the paper is to identify existing frameworks applicable for the assessment of CSR and then evaluate their application to the selected organizations and define their global impact. We indicate a possible future development of CSR frameworks (global and national) for evaluation and implementation of CSR concept and we uncover a summary of possibility using of CSR frameworks. We contribute to the debate for recognition of the global consequences of an organization to combine with CSR frameworks.

Keywords

Corporate Social Responsibility, Evaluation, Frameworks, Globalisation.

JEL Classification

M14, F64.

1 Introduction

Continuous measurement and evaluation of corporate performance is necessary for business success and the Corporate Social Responsibility (CSR) movement is has been rapidly growing in signification as a strategic management instrument over the past number of years.

The considerable emphasis placed nowadays on the societal role of business is in accordance with the spreading belief that measures of company success must go beyond profit and should also relate to the needs of stakeholders and society at large (Natale and Sora, 2009). According to Carroll (2000) CSR is becoming the defining business issue of our time, affecting corporate profits and credibility, as well as personal security and sustainability of the global economy.

The organisation is able to work long term with success if the ambient society and environment are also long term, so it means that the resources and the market also have to be viable. The concept of sustainable development – which meets the needs of the present without compromising the ability of future generations to meet their own needs – and the pillars using the principles of Elkington (1997) - environmental, social and economic – confirm the importance of the environmental and social points in competitiveness. Summarizing these, the environment and society have also become the key,

success values, resources of the organizations, which can influence the competitiveness and success of the organization (Kósi and Harazin, 2011). However if these are key, success resources, then it is necessary to examine their role in the corporate performance and to measure, evaluate and follow it.

The CSR debate has largely revolved around the conduct of multinational corporations (MNEs) and other large private companies which, due to their size, have the ability to significantly influence domestic and international policy and the communities in which they operate. Central to the debate is the perceived deficiency of national and international law remedies regarding corporate accountability, in particular the ability of available regulation to successfully regulate a corporation's conduct in jurisdictions outside the corporation's home state. International investment by MNEs is central to corporate globalisation, which inevitably will lead to a desire to harmonise laws and reporting practices. MNEs tend to be a focal point with regard to CSR due to their size and complexity and the fact that they operate in more than one jurisdiction either directly or via subsidiary entities or in alliances with other entities (Kercher, 2007). Proponents of CSR argue that the efficient functioning of global markets depends on socially responsible business conduct.

There are a number of factors relevant to the current CSR debate, including:

- globalisation and the proliferation of cross-border trade by MNEs resulting in an increasing awareness of CSR practices relating to areas such as human rights, environmental protection, health and safety and anti-corruption;
- organisations, such as the UN, the Organisation for Economic Co-operation and Development (OECD) and the International Labour Organisation (ILO), have developed compacts, declarations, guidelines, principles and other instruments that outline norms for acceptable corporate conduct;
- access to information and media enables the public to be more informed and to easily monitor corporate activities;
- consumers and investors are demonstrating increased interest in supporting responsible business practices and are demanding more information as to how companies address risks and opportunities relating to social and environmental issues;
- recent high profile corporate collapses have contributed to public mistrust and the demand for improved corporate governance, accountability and transparency;
- commonality of expectations by citizens of various countries with regard to minimum standards corporations should achieve in relation to social and environmental issues, regardless of the jurisdiction in which the corporation operates; and
- Increasing awareness of the inadequacy of current regulations and legislation with regard to CSR matters and the regulation of MNEs (Kercher, 2007).

Interestingly, the fundamentals of CSR are considered to be universal reflecting the globalisation of business and economies. The traditional ethos of maximising shareholder value without regard to other stakeholders is an outdated notion in today's global environment. CSR not only sits comfortably with the mantra of maximising shareholder value, sustainable CSR practices enhance shareholder value.

2 Frameworks and methods for evaluation CSR performance

A proposed methodological frameworks that can be followed by the companies in order to implement an effective CSR in all the areas of their operation – consisting of three distinct stages: Analysis, Execution and Performance Evaluation (Aravossis et al., 2006). We are mainly focused in the stage of performance evaluation. An overview of how actors other than business address and/or evaluate CSR performance and CSR impact especially focusing on the areas and objectives that were set in the Lisbon and Gothenburg strategies i.e. competitiveness (including innovation), growth, quality of jobs and sustainability.

There are many methods for measuring and evaluating CSR. Results, success of achieved activities, processes and achieved targets, objectives – achieved by the available resources – are defined, measured by the organization in the corporate performance. Nowadays the intellectual, invisible capital became the key, success resource of organizations, and it is proved that this resource can not be valuable by the help of traditional, general methods of finance and accounting. This fact is proved by different international researches, for example Kaplan and Norton said that in the information-based competition corporations are able to adapt this competition, and parallel with this adaption the ability of utilization of their immaterial values, capitals became more dominant than the ability of the management of other assets (Kaplan and Norton, 2007).

Sveiby's (2007) invisible balance sheet also can be an evidence for this fact. This invisible balance sheet shows the traditional part of the balance sheet, but here it is completed with the intangible, invisible values of organizations also in the asset and liability side too (Sveiby, 2007). With parallel of the appearance of this new, key, success resource there is a need for the change the traditional methods of measurements. There is a need for new, up-to-date methods, which are able to measure and evaluate the resources, the performance from different aspects and not only from the financial aspect (Kósi and Harazin, 2011).

2.1 Research design

The main research task was to conduct an analysis of documents and tools written and prepared by actors who measure and evaluate CSR performance and CSR impact. In the first step we analysed of available frameworks for CSR evaluation and then we have made a research by questioning researched enterprises in the Czech Republic.

The second research task was to identify on the research sample of the companies the examples of usage frameworks (methods) for CSR evaluation. We divided companies according the EU criteria, for micro, small, medium-sized and large enterprises, were used to define the companies involved in the research. The target group for the study were enterprises operating in the Czech Republic. We involved 229 SMEs and 23 large enterprises. Identified instruments are included in the next section (see chapter 2.2), where they were identified basic frameworks for CSR evaluation and in the third section of the paper are involved the research findings from questioning of SMEs and large enterprises.

2.2 Identification of frameworks (methods, instruments) for CSR evaluation

The needs of current and future generations cannot be met unless there is respect for natural systems and international standards protecting core social and environmental values. In this context, it is increasingly recognized that the role of the business sector is critical.

As a part of society, it is in business' interest to contribute to addressing common problems. Strategically speaking, business can only flourish when the communities and ecosystems in which they operate are healthy. This broad strategic context helps explain the growing appetite among businesses worldwide for authoritative information, company examples and advice about corporate social responsibility. The paper should also be useful to the many firms that do not currently have formal CSR policies or programs in place.

We identified according selected documents and tools different ways the structure of these frameworks, for example CSR ratings and rankings, CSR prizes and competitions, CSR-tests (i.e. by consumer associations, suppliers), existing publication by stakeholder that addresses CSR (e. g. public statement on CSR, discussion paper, petition). This structure could be combine with categorized stakeholders: political actors (e.g. national governments, the European Commission, IGOs), NGOs (environmental NGOs, consumer association etc.), for profit organizations (e.g. ranking agencies, consultancy companies and labour unions).

Among the better known international instruments which global influence are:

- OECD Guidelines for Multinational Enterprises,

- AA 1000 AccountAbility/Assurance Standard,
- Social Audit Network,
- ETHIBEL,
- EFQM,
- SA 8000 – Social Accountability International,
- ISO 26000, ISO 8000, ISO 9000, ISO 14000,
- IASE 3000,
- Global Reporting Initiative (GRI),
- London Benchmarking Group,
- Corporate Responsibility Index,
- Corporate Giving Standard,
- Corporate Community Involvement Index,
- Dow Jones Sustainability Index,
- FTSE4GOOD.

The differences between separate standards often are focused on the stakeholder or it depends on the methodology. There is the importance to highlight the London Benchmarking Group (LBG) which is implicated in the Czech Republic as “Standard odpovědná firma” (SOF). The project SOF is realized in cooperation with British Corporate Citizenship Company which based the LBG methodology (London Benchmarking Group, online). These is using for data verification into list “TOP Firemní Filantrop” in the Czech Republic and in the Slovak Republic, also for Giving List in Great Britain and reporting about all CSR activities either. The following are shortly further introduced initiatives that can be considered significant.

The mission of Global Reporting Initiative (GRI) is in reporting on sustainability, which should become common for all companies and organisations. GRI created the complex of Sustainability Reporting Framework, which is widespread abroad (Global Reporting Initiative, online). The next method is the standard SA 8000. The SA8000 standard is a central document. It is one of the world’s first auditable social certification standards for decent workplaces, across all industrial sectors, which has adopted policies and procedures that protect workers’ basic human rights (Social Accountability International, online). For international companies with CSR monitoring, the OECD Guidelines for multinational Enterprises could be used. (Ministry of Industry and Trade of the Czech Republic, online). AA 1000 AccountAbility/Assurance Standards are norms which help organisations to become more responsible and sustainable (Accountability, online). SAN Ltd. (Social Audit Network) is a method suitable for any organisation from the private or public sector (Social Audit Network, online). Other method which could be used is balanced scorecard: “The balanced scorecard is a strategic planning and management system that is used extensively in business and industry, government, and non-profit organizations worldwide to align business activities to the vision and strategy of the organization, improve internal and external communications, and monitor organization performance against strategic goals.” (Balanced Scorecard Institute, online). The KORP method is the only one used in the Czech Republic for evaluating CSR. It judges organizations in three pillars – economic, environmental and social for internal and external application (Plášková and Ryšánek, 2013). In the year 2011 the national programme for the evaluation agreement of the management system of CSR was made by the Quality Council of the Ministry of Industry and Trade of the Czech Republic (National Quality Policy, online).

The mentioned methods instruments above are introduced shortly, for purpose of these paper was to primary to identify existing frameworks. In continuing research we will be more focused on analysing each of these methods with impact on actor (stakeholder), title of the CSR (assessment, award, rating, and ranking), main CSR-issues covered by the assessment, CSR performance and impact and other method used for the assessment. Next part of the paper represents the sum of research findings.

3 Research findings

The method of the reviewed assessments varies greatly. In terms of methodology, two general types can be distinguished. The first one concentrates on the general state of CSR within the national settings, with great variation in the analytical accuracy and depth of these assessments. The initial focus is primarily on prominent corporations, selected either through their size or economic performance. The scope of the evaluations expands gradually over time to include analysis of perceptions and practices of corporate social responsibility among small and medium size enterprises. Overall, the methodology of this type of assessments generally relies on the review of legal and regulatory contexts, CSR and/or sustainability reports and websites of stakeholders as well as data collected through surveys and interviews with key personalities.

The other type of assessment concerns CSR performance of individual organizations. The preferred methodology in these cases consists of evaluations based on the applications of a set of criteria varying slightly from one evaluator to the other. Predominantly, these criteria refer to the performance of CSR practices rather than their actual impact. No distinction is made in the assessment process between local and multinational enterprises that often results in the domination of multinational enterprises as the best performers. Evaluation is often based on documents (such as annual reports, internal company documentation, filled-in questionnaires) that the company hands over to the assessment body. Typical forms of these assessments are CSR related prizes and awards that can be distinguished as follows: CSR awards: most of these overall awards are granted by business organizations themselves or business-related associations; specific prizes (diversity label, gender equality prize): often given by co-operations of different actors: NGOs, media groups or political actors; environmental awards: often given by national agencies or governmental actors.

We identified the most important awards in the Czech Republic – CSR Award, National Award for CSR (National Quality Policy), Top Corporate Philanthropist (Czech Donors Forum), Price for Regional Social Responsibility (Moravian-Silesian Region Council).

According to our researched we identified that the most international instruments for CSR evaluation are using by large companies (see Table 1). In our research was involved 229 SMEs and 23 large enterprises. Results represent findings from the questioning survey in the Czech Republic. There could be seen the dependence with the size of the company. Micro enterprises are using only ISO standards and certification by contrast with large – there use more international standards such as OECD Guidelines, GRI, or LBG which have a global impact. Other instruments (such as indexes) were not mentioned by researched companies.

Table 1. Numbers of identified instruments

Instruments (type)	micro	small	medium-sized	large	Total
ISO 14001	2	6	15	10	33
ISO 9000	2	8	5	14	29
ISO 9001	5	10	14	3	32
ISO 22000	-	-	-	1	1
OHSAS 18001	-	-	5	-	5
SA8000	-	-	-	3	3
LBG	-	-	-	3	3
GRI	-	-	-	5	5
OECD Guidelines	-	-	-	2	2
EMAS	-	-	3	1	4
SOF	-	-	2	3	5
IFC Colour Certificate	-	-	1	1	2
Total	9	24	45	46	124

Source: own research.

There is tendency for large companies with using “more” global and international standards that evokes spreading these voluntary approaches into condition of Czech. We questioned 104 micro, 73 small, 53 medium-sized and 23 large enterprises for findings which companies have adopted, do not have or consider using of instruments for assessment of CSR performance in the Czech Republic. The findings (see Figure 1) are obvious for large enterprises who implement some instruments from 96 % of representatives. All these are multinational companies operate internationally. In Czech is typical that from these approaches of large companies is spreading the CSR initiative into business area. We identified the dependency between the size of the company and using the instruments, method or frameworks for evaluation of CSR performance.

Companies are often assessed by other for-profit actors or by coalitions of different stakeholders involving businesses. External stakeholders also perceive the CSR performance of companies as achievements based on the companies’ own objectives and notion external expectations, not to mention the potential effects on social, human and environmental affairs (Hardi et al., 2012). Even in the case of ranking and/or awarding best CSR performances where the application of external criteria set by the ranking and awarding stakeholders should be the norm, almost in all cases the criteria are based on objectives set by the given companies.

The focus of these assessments is almost exclusively on the CSR performance – meaning the CSR output of companies (whether they e.g. have a CSR strategy etc.), the implementation of activities (whether they have environmental initiatives, employee related programs etc.) and the effects of those on company level (outcome).

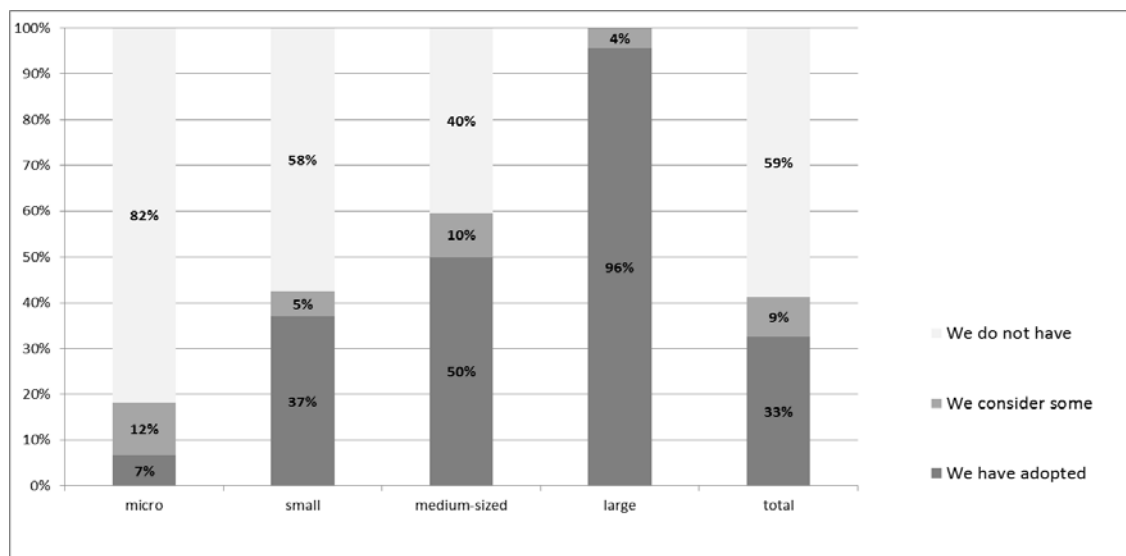


Figure 1. Representation of companies which have, do not have or consider application of frameworks, instruments, methods for assessment of CSR performance (Source: own research)

Awards and prizes for which companies compete seem to be the most common kind of ranking at a national level and completed by national stakeholders. They are based on voluntary participation. Being rewarded does not depend on the fulfilment of a set of restrictive requirements. There is a clear dominance of voluntary systems of assessment like awards and labels among national stakeholders.

Generally, rankings, certifications, prizes given to the company does not reward CSR impact but assesses CSR performance - activities and measures what the company has implemented. We found prizes which distinguish companies for their integrated CSR approach as well as prizes which award a company for one single project (e.g. community involvement). As such, both general CSR approaches on a wide range of social and environmental issues as well as specific CSR-activities on narrowly defined issues are being assessed and rewarded.

Especially in the Czech Republic most of the stakeholders who are involved in CSR performance assessments have international background, including organizations like the UNDP, World Bank, ILO etc.; multinational consulting firms like KPMG; non-profit international organizations like CSR Europe.

4 Conclusion

This paper makes a proposal for performance evaluation in terms of CSR. It also examines the methods, instruments, models, indices and international initiatives useful for evaluation of CSR performance. The purpose of this paper is to overcome both, research gaps in a comprehensive survey in the complexity of CSR evaluation instruments and to provide deep understanding of the nature of using these instruments in a sample of companies in the Czech Republic with the global impact. The assumption is that there exist other CSR methods and instruments which are not spreading into business area in the Czech Republic.

It must be recognized up front that CSR still creates a degree of confusion and controversy. Is the promotion and implementation of socially and environmentally preferable corporate conducting a function of business or government? Is the implementation of CSR practices a cost or a value-enhancer? Is it just public relations? In part, the problem stems from definitional issues, and a perception in some quarters that CSR is more about philanthropy, rather than “doing business” and responding to shareholder interests. The papers contribute to debate about measurement and offer possible approach which should be used for enterprises.

Since businesses play a pivotal role both in job and wealth creation in society and in the efficient use of natural capital, CSR is a central management concern. It positions companies to both

proactively manage risks and take advantage of opportunities, especially with respect to their corporate reputation and the broad engagement of stakeholders. The latter can include shareholders, employees, customers, communities, suppliers, governments, non-governmental organizations, international organizations and others affected by a company's activities.

The conclusion is that it is not always possible to control behaviour and corporate activity with regulations, rules and norms. So another question arises in this situation, that if people do not know their responsibility and socially responsible things to do and if they do not behave socially responsibly then, who will control this problem in business life and in the market. The concern is that the social responsibility implication of the company cannot be controlled through legal means. This is the only social contract between managers and society and stakeholders of the company and for responsible and accountable behaviour that is why is important to use properly instruments, methods, and frameworks suitable for specific area of business in which companies operates. All the approaches are based on a voluntary approach, it means that the motivation engine is the “allowance” of the companies according to the market condition (e. g. influenced by all stakeholders and shareholders).

5 Acknowledgement

This paper was financially supported by the project “*Performance evaluation of corporate social responsibility*” NO. SGS/19/2014 (Grant System of Silesian University in Opava).

References

- [1] AccountAbility. Standards. *The AA 1000 Standards*. [online]. [2014-05-20]. Available from: <http://www.accountability.org/standards/>.
- [2] Aravossis, K. G., N. A. Panayiotou and K. Tsousi, 2006. A proposed methodological framework for the evaluation of corporate social responsibility. In: *Proceedings of the 1st International Conference on Environmental Economics and Investment Assessment, 13-15/09/2006*. Mykonos: WIT Press, pp. 87-95.
- [3] Balanced Scorecard Institute. *Balanced Scorecard Basics*. [online]. [2014-05-04]. Available from: <http://balancedscorecard.org/Resources/AbouttheBalancedScorecard/tabid/55/Default.aspx>.
- [4] Carroll, A. B., 2000. Ethical challenges for business in the new millennium: corporate social responsibility and models of management morality. *Business Ethics Quarterly*, vol. 10, issue 1, pp. 33-42.
- [5] Elkington, J., 1997. *Cannibals With Forks: the Triple Bottom Line of 21st Century Business*. Oxford: Capstone Publishing.
- [6] Global Reporting Initiative. ABOUT GRI. [online]. [2014-05-30]. Available from: <https://www.globalreporting.org/information/about-gri/Pages/default.aspx>.
- [7] Hardi, P., G. Radacsi and K. Schmitt, 2012. *CSR impact – Evaluations of CSR performance and impact as seen by key actors other than business*. Work Package 1. [online]. [2014-06-16]. Available from: <https://csr-impact.eu>.
- [8] Kaplan, R. S. and D. P. Norton, 2007. A balanced scorecard mint stratégiai menedzsmentrendszer. *Harvard Businessmanager*.
- [9] Kercher, K. 2007. Corporate Social Responsibility: Impact of globalisation and international business. *Corporate Governance eJournal*. [online]. [2014-06-03]. Available from: <http://epublications.bond.edu.au/cgej/4>.

- [10] Kósi, K. and P. Harazin, 2011. Performance Evaluation of Corporate Social Responsibility According to the Logic of ISO 26000 Standard. *Regional and Business Studies*, vol. 3, issue 1, pp. 739-749.
- [11] London Benchmarking Group. LBG. [online]. [2014-06-05]. Available from: <http://www.lbg-online.net/about-lbg/the-lbg-model.aspx>.
- [12] Ministry of Industry and Trade of the Czech Republic. *Směrnice OECD pro národní podniky: Doporučení pro odpovědná chování podniků v globálním kontextu (12/2013)*. [online]. [2014-05-04]. Available from: <http://mneguidelines.oecd.org/text/MNEGuidelines%C4%8Ce%C5%A1tina.pdf>
- [13] National Quality Policy. *Národní program posuzování shody systému managementu společenské odpovědnosti (8/2011)*. [online]. [2014-05-03]. Available from: <http://www.npj.cz/tmce/aktuality%20soubory/narodni-program-posuzovani-shody-systemu-managementu-spolecenske-odpovednosti.pdf>.
- [14] Natale, S. M. and S. A. Sora, 2009. Ethics in strategic thinking: business processes and the global market collapse. *Journal of Business Ethics*, vol. 94, issue 3, pp. 309-316.
- [15] Plášková, A. and P. Ryšánek, 2013. *Společenská odpovědnost (CSR)*. Hodnocení CSR organizací v Programu Národní ceny ČR za společenskou odpovědnost. Rada kvality ČR.
- [16] Social Accountability International (SAI). *SA8000® Standard*. [online]. [2014-05-10]. Available from: <http://www.sa-intl.org/index.cfm?fuseaction=Page.ViewPage&PageID=937>.
- [17] Social audit network (SAN). *What is Social Accounting and Audit*. [online]. [2014-05-12]. Available from: <http://www.socialauditnetwork.org.uk/getting-started/what-is-social-accounting-and-audit/>.
- [18] Sveiby, K. E. 2007. *Methods for Measuring Intangible Assets*. [online]. [2014-05-14]. Available from: www.sveiby.com.

EFFECTIVE CORPORATE TAX RATES IN THE SELECTED SECTORS: THE CASE OF THE CZECH REPUBLIC

Veronika Baranová¹, Lenka Janíčková²

¹ VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: veronika.baranova@vsb.cz

²VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: lenka.janickova@vsb.cz

Abstract

The aim of this paper is to calculate corporate effective tax rates for the chosen economy sectors of the Czech Republic describe the evolution of these rates and find out if the rates are neutral and that react to changes in the economy. The calculation will be based on backward looking microview methodology and enable to find out differences in corporate tax burden in the given economic sectors. Corporate effective tax rates are provided for the chosen economic sectors (based on the NACE classification) for the 2002-2012 period. In the following step the individual corporate effective tax rates are compared for the companies differentiated by their size. The used data are received from the BACH database (Bank for the Accounts of Companies Harmonised), this database uses financial statements of the individual companies. The results suggest that there are important differences within corporate effective tax rates composed for the different-sized companies. It was also confirmed that effective taxation of the companies is sensitive on the business cycle.

Keywords

Effective Corporate Tax, Micro-backward Looking, Statistical Classification of Economic Activities - NACE, Bank for the Accounts of Companies Harmonised - BACH.

JEL Classification

H22, H25.

1 Introduction

Taxation is inseparable part of economy and represents important tool of the fiscal policy. Taxes are significant from the microeconomic perspective as well. They represent costs for the companies that should be included to the strategy of the companies and significantly influence a profit and its distribution. Tax burden of the companies is the subject of interest both of the politics and managers. The current tax systems are set up in the way that it is nearly impossible to recognize real tax burden only from the statutory tax rate. The final tax burden can be influenced by the change of the tax base, of the allowances or of tax credits. For the responsible decision-making influencing the tax burden the knowledge of the effective tax rates is necessary.

There are few methods how to calculate the corporate effective tax rates. The three are used mainly – backward looking micro view, backward looking macro view, and forward looking micro view (for detailed info about their advantages and disadvantages see e.g. Baranová, 2012). The possibility to calculate corporate effective tax rate is important from many reasons. Methodology based on the macro view enables to compare effective tax rate and statutory tax rate and provide overview about tax incentives. The following comparison of effective tax rates in the individual countries provides information about differences in the corporate tax laws. Effective tax rates can help to identify not only the difference of the statutory tax rates but also tax law details. The micro view based methods provide detailed analysis of the individual sectors or enable to compare effective tax rates based on the company size within country or between countries. They also enable to evaluate the situation between economic sectors or companies of different size.

The aim of the paper is to calculate effective corporate tax rates based on the backward looking micro view for the individual economic sectors in the Czech Republic, describe the evolution of the rates and find out if the rates are neutral and how they react to the changes in the economy. The results enable to find out the differences of the tax burden in the individual economic sectors. The effective corporate tax rates are calculated for the individual economic sectors according to NACE in the 2002-

2012 period. The size of the company is considered as well. The initial data are obtained from the database of the Bank for the Accounts of Companies Harmonised – BACH.

2 Literature review

The role of the taxation for the decision making process of the companies is in the focus of the many empirical works (e.g. Slemrod, 1990; Scholes and Wolfson, 1992; Auerbach and Slemrod, 1997 or Shackelford and Shevlin, 2001). Those authors are also interested in the influence of taxation on the investing decisions, distribution of finances, dividend policy or organization structure and confirmed the direct impact of the corporate taxation on the decision-making. The elementary way how to measure the corporate tax burden is to use statutory tax rates. The most of the authors (e.g. Blechová, 2008; Szarowská, 2011; Kotlán et al., 2011) agree that this type of analysis is simple but not precise. Nominal statutory tax rate is provided by the tax laws of the countries. Its real impact is quite different as the tax base can be calculated in the different ways. The different tax legislation does not provide possibility to evaluate the real tax burden or relevant comparison with other countries. The value of the tax rate is only one of the variables which reflect real tax burden. The above mentioned construction and methodological disadvantages can be partially removed by effective corporate tax rate. The effective corporate tax rates are mainly used for its better explanatory value about a real tax burden imposed on the profits of the corporations and can reflect the tax base and the way the corporate and personal taxation is integrated. The effective corporate tax rate provides information about different tax approaches to the companies characterised by the same features. The three main approaches to the effective corporation taxation are used – the backward looking micro view, backward looking macro view, and forward looking micro view. The micro view uses data from the financial statements from individual companies or within the economic sector. The macro view uses macroeconomic data which provide overview about the whole economy; data are usually obtained from the system of the national accounts. The backward looking method uses ex-post data, the forward looking approach works with predicted data.

The backward looking macro view analyses data provided by the system of the national account of the individual countries. This approach was for the first time applied by Mendoza et al. (1994) and then used by many following studies (e.g. Martinez-Mongay, 1997). The backward looking macro view involves the tax quote. On the European level the implicit tax rates is provided by the European Commission (2014). The forward looking micro view is based on the neoclassic investment theory where the average effective tax rate is dependent on the marginal effective tax rate and on the capital costs. First common approach to the evaluation of the tax burden of the companies was suggested by the King and Fullerton (1984). They set up the base for the marginal effective corporate tax rates while they analysed the corporate environment of USA, Germany, Sweden and UK. Their approach was then used by Devereux and Griffith (1998) who elaborated their methodology and used an average effective corporate tax rate as well.

The backward looking micro view is based on the financial statements and the effective tax rate is given as a share of tax liabilities and revenues. Collins and Shackelford (1995) used this methodology in the case of Canada, Japan, USA and UK and highlighted the different taxation of the corporations compared to the tax base and tax rates. They applied data provided by the Standard & Poor's. The results were used by e.g. Buijink et al. (2002) who used consolidated financial statements of the EU member countries to calculate effective corporate tax rates. They were also interested in (i) the question how the tax incentives can influence real corporate tax burden, (ii) comparison of the differences between individual countries. Nicodème (2001) provides detailed description of advantages and disadvantages of the above mentioned methods and concludes that each methodology is focused in other aspects and depends what the researchers are interested in. His work also describe differences between statutory tax rates compared to the effective corporate tax rates based on the backward looking micro view and concludes that effective taxes are sensitive to the business cycle. Janíčková (2012) focuses on the effective corporate tax rates on the micro level and analysis the

effective corporate tax rates in the Moravian Silesian region and compares them with the tax rates based on the other methods. The conclusion supports idea that backward looking methodology based effective tax rates reflects business cycle. It can be concluded that the backward looking micro view is the only one which can analyse the tax environment within the country. It enables to evaluate tax treatment of the companies so this approach will be in the main focus in the following parts.

3 Micro backward looking method and tax neutrality

As it was already mentioned above, the backward looking microeconomic view is used for the effective tax rate calculation and is based on the data provided by the financial accounts. Effective corporate tax rate is given as a share of the income tax or profit of the company to the tax base. As Nicodème (2001) states, tax base can be represented by:

- a) the total profit or loss before tax,
- b) net turnover,
- c) the gross operating profit or loss.

The final values from financial statements which are obtained are based on the accounting standards. The accounting standards represent rules which the company follows within the financial accounting and assembling the final financial statement. The opportunity to compare financial statements based on the identical accounting standards enables international accounting standards. The requirements are mainly given by the stock market, the main reason is usually need to have possibility to compare financial statements of international companies whose shares are trade on the international markets.

The basic expression of the effective corporate tax rate (ECTR) based on the backward looking microview is represented by (1):

$$ECTR = \text{Taxes on profit} / a; b; c \quad (1)$$

From the above mentioned is clear that the comparison of the effective corporate tax rates based on the backward looking micro view can be problematic because of different ways how to calculate tax base (denominator). As Blechová (2008) states the option a) provides advantage of option to compare calculated effective tax rate with the statutory tax rates. Option b) provides small values of tax rates and does not include costs which can lead to the misleading results. The impact of high costs of the corporation which can be covered by the operating income leads to the low taxable profit and so the paid tax is low as well. The usage of this option is so not so common. If we want to receive reliable result it is convenient to use option c). This option does not involve depreciations which is quite important if we want to obtain tax rate which would be similar between individual countries. The methodology for depreciations varies between individual countries; the main differences are usually reported in the way how to set up price of the depreciated assets or time horizon of depreciation. The option c) eliminates different rules for the depreciation and because of it is required as the most proper.

Interesting results can provide the backward looking micro view as it can be calculate not only for the individual corporations but for the individual sectors, groups of companies as well. Nicodème (2007) states that the average effective tax rate for the given country in the given period (from year n do year n+m), given sector (I) and size group (S) is given by (2):

$$ECTR_{I;S}^{n \rightarrow n+m} = \sum_{t=n}^{n+m} (\text{Taxes on profit})_{t;I;S} / \sum_{t=n}^{n+m} (a; b; c)_{t;I;S} \quad (2)$$

European Commission created BACH database, which provide data necessary for the ECTR evaluation within EU member countries. The database provides set of financial statements of companies whose structure is given by 4th EU direction (76/660/EEC). Non-financial companies are

divided according different sectors (Table 1) and number of employees (Small - Turnover < 10 million €, Medium - 10 million € ≤ Turnover < 50 million €, SME - Turnover < 50 million € and Large - Turnover ≥ 50 million €) (BACH, 2014). The advantage of these indicators is that they reflect real tax burden of the companies. On the other hand their usage for the international comparison can be misleading. The main reason is based on the methodology of the ex-post data which doesn't take into consideration of personal and corporate taxation of income; but this feature is very important for the investors. Another disadvantage of the indicator is that its fluctuations are dependent on the economic cycle. Nevertheless they represent the only one option how to evaluate effective taxation of individual economic sectors, or between different sized companies. It can be concluded that they are more proper for evaluation within one country that to international comparison.

If the government applies different tax laws on different kinds of companies, it is reflected also in the tax burden of the companies. Complicated tax systems can therefore create discrimination between small or big companies or within economic sectors. This difference is reflected in the question of the taxation neutrality. This area is studied by e.g. Buijink et al. (2002) or Nicodème (2001) who states that the tax is collected in the neutral way if there are no significant differences in the effective taxation within different companies. He points out that different tax approaches to the e.g. depreciation can create non-neutral taxation. In a result the tax allowances are decreased with the profit and effective tax rates tends to the statutory tax rates. If this statement is true that in the economic sectors with high degree of competition is lower effective taxation as the lower income is expected. He also states that big companies give more effort to lower their taxation which can lead to the inequality between different sized companies.

The following part of the paper will present calculation of effective corporate tax rates based on the backward looking micro view in the Czech Republic. The tax rates will be calculated for individual economic sectors and different sizes of the companies. The results will enable to compare tax situation and tax discrimination in the Czech Republic. It will also enable to answer the question whether is the taxation in the Czech Republic neutral. For this it is necessary to define sector structure of the Czech Republic.

4 Sector structure in the Czech Republic

The structure of the national economy is created by the system of the economic activities which can be clustered to the wider structures (economic sectors) based on the similar features. Given economic sectors are usually divided to three main sectors (i) primary, which cluster mainly agricultural activities, (ii) secondary, focusing mainly on the manufacture activities and (iii) tertiary, including all kinds of services. The tertiary sector is in the modern sector structure divided to many subgroups, including quaternary sector which is set up by services connected with creation and sharing of knowledge and information.

The sector structure of the Czech Republic is shown in the Table 1 according NACE; same structure is followed by the BACH database. This structure will be also used in the following analysis of the tax burden.

Table 1. Economic sectors NACE according to BACH

Primary	Secondary	Tertiary	Quaternary
A - Agriculture, forestry and fishing	C - Manufacturing	G - Wholesale and retail trade; repair of motor vehicles and motorcycles	J - Information and communication
B - Mining and quarrying	D - Electricity, gas, steam and air conditioning supply	H - Transportation and storage	K642 - Activities of holding companies
	E - Water supply, sewerage, waste management and remediation act.	I - Accommodation and food service activities	M - Professional, scientific and technical activities
	F - Construction	L - Real estate activities	Mc - Total M (without M701)
		R - Arts, entertainment and recreation	M701 - Activities of head offices
		S - Other service activities	M702 - Management consultancy activities
			N - Administrative and support service activities
			P - Education
			Q - Human health and social work services
			Z0 - Total NACE (includes M701, but excludes K642)
			Zc - Total NACE (without K642 and M701)

Source: BACH, own processing.

The evolution of the sector structure copies the evolution of the society. The original economic model of the society which was based on the agriculture was gradually changed to the dominance of manufacturing sector after Industrial Revolution, up to hegemony of the service sector. Nevertheless this is not rule for all countries, above mentioned model is dominant mainly in the developed countries.

Figure 1 displays the percentage share of the individual sectors on the gross value added (GVA) in the Czech Republic in 2002-2012. It is obvious that the sector structure responds to the trend of the developed countries. The share of the primary sector on the GVA was only about 3.5% in 2012 which represents decrease about 0.6 pp. Secondary sector contributed to the GVA about 36.1% in 2012 and had nearly same contribution for the whole period. It is quite surprising that the share of tertiary sector is decreasing; it declined in GVA contribution about 2.8 pp and its total share on the GVA was about 35.4% in 2012. As a positive can be considered the increase in quaternary sector up to 24.9% in 2012 which represent increase about 2.9 pp from 2002. This trend is considered as a positive if the society wants to create developed economy based on the knowledge and innovation. The cumulative amount of tertiary and quaternary sector contributed to GVP by 60.4% in 2012 which represented dominant sector.

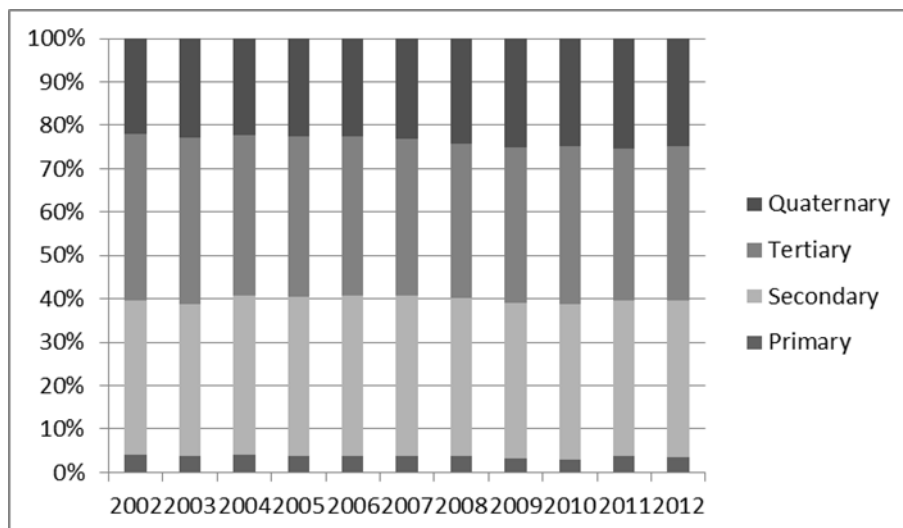


Figure 1. The percentage of sectors in GVA in the Czech Republic in the years 2002 - 2012 (Source: ČSÚ, own processing)

5 Methodology and data

All data used for estimation of tax burden are quantitative and secondary. They represent time series on the annual base in the 2002-2012 period. The data source is mainly BACH (2014) database which enables evaluation of the effective corporate tax rates. From three options how to calculate it was used the one which uses gross operating profit or loss which seems as the most convenient (more in the chapter 3). Individual effective corporate tax rates will be calculated both for the given economic sector and size of the involved companies. The formula for the calculation is characterised following (3):

$$ECTR_{I,S}^{2002 \rightarrow 2012} = \sum_{t=2002}^{2012} (\text{Taxes on profit})_{t,I,S} / \sum_{t=2002}^{2012} (\text{Gross operating profit})_{t,I,S} \quad (3)$$

where ECTR is estimated for the Czech Republic for individual years in the period 2002-2012, given economic sector **I** (according BACH database, see Table 1) and given size group **S**. The chosen size groups are following: **ALL** (all size of companies), **1** (SME - Turnover < 50 million €), **1a** (Small - Turnover < 10 million €), **1b** (Medium - 10 million € ≤ Turnover < 50 million €) and **2** (Large – Turnover ≥ 50 million €).

Calculated tax rates for **ALL** group are followingly compared according individual sectors or economic sectors generally. Tax rates used for the comparison are calculated both for individual economic branches and for total NACE (**Zc**, see Table 1). All ECTR values are expressed in percentage value. The above mentioned comparison enables to analyse possible discrimination or neutral taxation within individual sectors and companies divided by their size.

It is important to notice that calculated tax rates are in their effective form which means that their value can be negative. Negative tax rates are the result of negative gross operating profit of the company/economic sector, which means that given sector, is ineffective. Negative effective tax rate does not represent negative taxation. As an important can be also considered change of ECTR in time. For the general overview it is also important to compare ECTR for **Z0** a **Zc** (all sizes of companies - **ALL**) with other tax rates and results of other methods of effective tax rate calculation. European tax database (2014) provides information about implicit tax rate from capital income (**ICT_CI**) and tax quota from the corporate income (**TQ_CI**). Marginal (**EMTR_MFL**) and average (**EATR_MFL**) effective corporate tax rate presented by Devereux et al. (2012) represent forward looking micro view

methodology results. The statutory tax rates (European tax database, 2014) will be included to the comparison as well.

It was already mentioned above that backward looking micro view is criticised for its fluctuations reflecting business cycle. Because of this fact the calculated tax rates will be also compared with rate of GDP growth (**GDP_Growth**). Numbers representing GDP growth are obtained from Eurostat database (2014).

6 Effective corporate tax rate by sectors and size of company - results

The primary sector includes economic activities which are slowing down its productivity in the Czech Republic. It is mainly agriculture, forestry and fishing which are included to the EU common policy. Before the Czech Republic entrance to the EU in 2004, this sector was handled by the Czech government exclusively. Although new concept of agriculture policy was accepted for the period 1999-2003 which took into account expecting partnership with the EU and were accepted legislative changes for the entrance as well the agriculture was still subsidized by the government. This fact is obvious from the ETCR (see Fig. 2) where the ETCR representing economic sector A is negative at the beginning of the observed period. This is result of negative gross operating profit and nearly zero taxation of income. This evolution was changed after the entrance to the EU rapidly. Impact of the economic crisis (2008-2009) is also obvious. The value of ETCR in 2002 was -120% and increased up to 31.6% in 2012 which represents increase about 151.6 pp. To the contrary to the relatively volatile economic sector A the ETCR of the economic sector B is quite stable with slightly decreasing tendency (the decrease in ETCR from 2002 was about 6.3 pp). This evolution was slightly affected by the economic crisis, and the final tax burden in 2012 was about 19.7%.

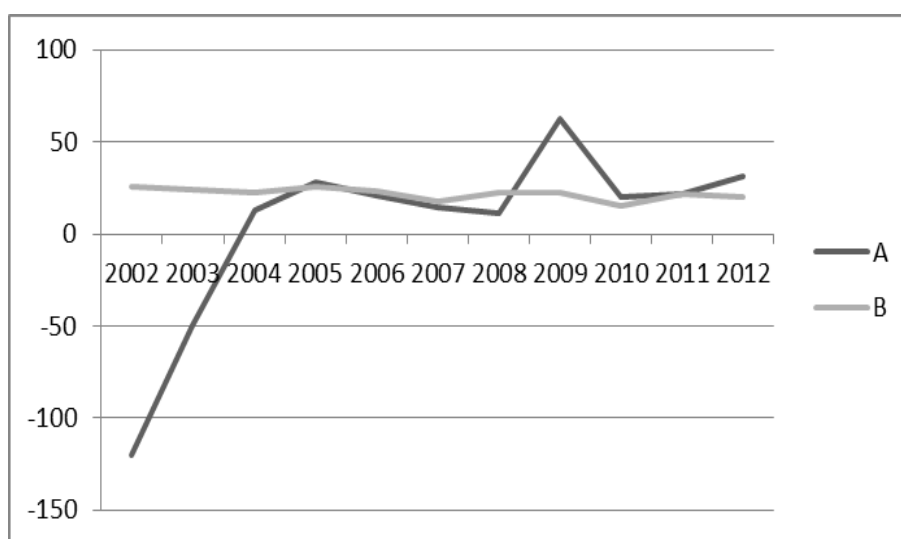


Figure 2. ETCR in primary sector in year 2002-2012 (%) (Source: BACH, own processing)

The ETCR of Manufacturing (secondary sector) has in all observed parts decreasing trend which corresponds to expecting slowing-down of this sector and its decreasing share on GVA (see Chapter 4). Figure 3 shows quite volatile ETCR with the lowest value at 6.5% in 2012 in sector D which also underwent the biggest decline in the observed period (about 18.5 pp). It is important to remind that sector D is regulated by the government partially and is typical by growing prices and decreasing taxation. The highest values of ETCR are reported in sector F which reached 21.9% in 2012 and this sector represents slowest decrease of ETCR values (only about 7.4 pp). Sector F is currently struggling with slowing down of the economic activity and the taxation remains unchanged. ETCR values for sector C, D and F again reflected economic crisis. Sector E was not influenced by the crisis as it contains water supply, sewerage, waste management and remediation activity. The absolute

value of sectors C, E and F were in the interval from 15 to 22% in 2012 and as for the whole period sector D reaches values under average and in 2012 had ECTR equal to 6.8%.

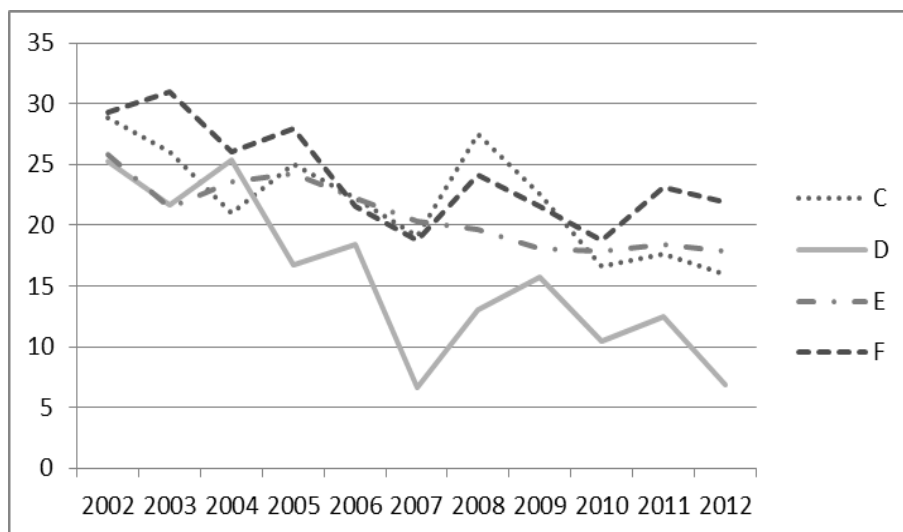


Figure 3. ECTR in secondary sector in year 2002-2012 (%) (Source: BACH, own processing)

Figure 4 represents ECTR of tertiary sector. At the beginning of the observed period the ECTR values were quite stable. This trend was broken down in 2008 after economic crisis hit Czech economy. This feature is the most visible in L sector (real estate activities). This sector was hardly influenced by the economic crisis as ECTR in 2008 was about 166.7% and then dropped to the -100% in 2009. In the following year there was again increase in ECTR up to 53.6% in 2010 followed by second drop to the -126.7% and again increase to 51.2%. On the other way the R sector (arts, entertainment and recreation) is the most stable sector within tertiary sector. Its ECTR value was about 6.3% in 2012 which represents slight increase (about 2.8 pp) compared to 2002. ECTR values representing sectors G, H and I are decreasing. Compared to the 2002 the ECTR of G sector dropped about 14.1 pp, H sector decreased about 25.2 pp and I sector decreased about 66.7 pp. The only negative value is reported in the sector I in 2012 (-33.3%). Sector S is represented by relatively stable evolution with slight increase in ECTR reported mainly at the end of the observed period. Nearly all sectors are represented by relatively similar ECTR values and so can be concluded that in the tertiary sector is neutral taxation with the only exception of sector I.

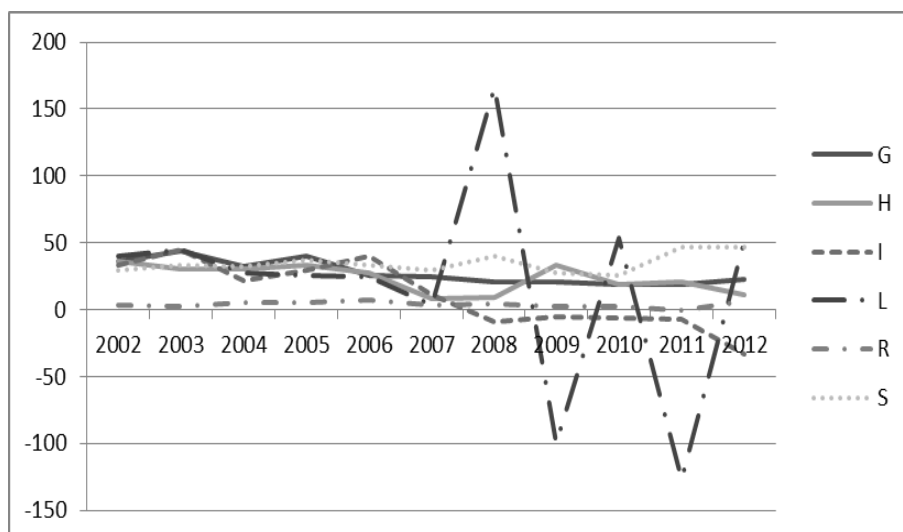


Figure 4. ECTR in tertiary sector in year 2002-2012 (%) (Source: BACH, own processing)

As the most instable and volatile can be considered quarternary sector (see Figure 5). All estimated ECTR values evince decreasing trend. Probably the biggest change was reported in sector J where ECTR values reached 45.8% in 2002 then decreased about 58.3 pp. and in the following year raised again to 22.7%; from the 2004 is quite stable and reached 21.7% in 2012. Sector Q (human health and social work services) is also quite sensitive to the economic cycle. After the economic crisis hit the Czech Republic in 2007 its ECTR values significantly increased (39.3% in 2007) and then again decreased and remained stable up to 25.9% in 2012. ECTR of sectors M and Mc reports periodical changes. As Mc is part of M their values are very similar with the exception of years 2007-2010 when it is obvious that sector M nearly was not influenced by the economic development and is quite stable. On the other hand sector Mc (sector M without activities of head offices) was deeply influenced by the economic crisis. ECTR of sector N is relatively stable with slightly decreasing tendency. As ECTR of the quarterly sector moves in the relative similar interval (+/- 10 pp.) it is not possible to definitely decide whether this sector is influenced by discrimination. In 2012 ECTR of sector J was about 21.7%, sector N was represented by 17.0%, sector M by 8.5% and sector Mc 17.0%.

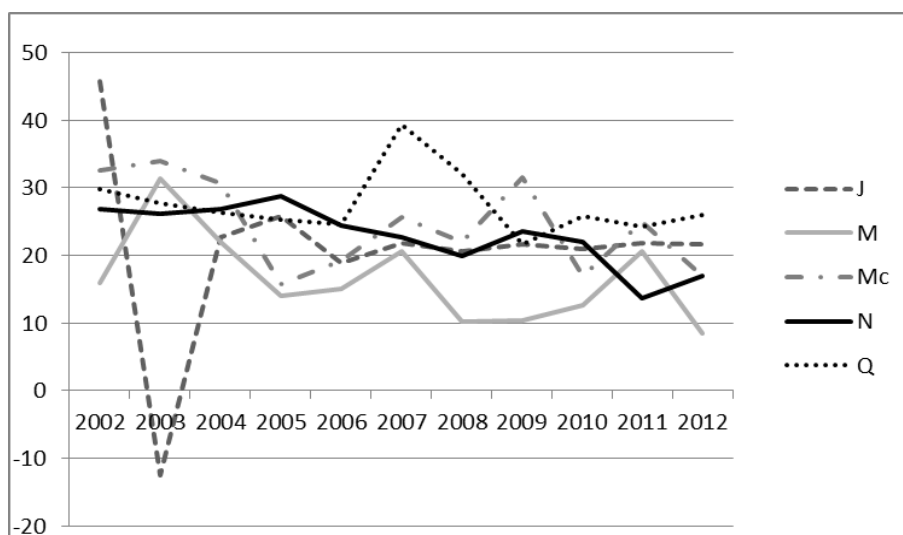


Figure 5. ECTR in quarterly sector in year 2002-2012 (%) (Source: BACH, own processing)
 * Data for M701, M702 and P was not complete and therefore not listed here.

The development of ECTR while considering size of the companies is shown in the Figure 6. As it was already mentioned in the chapter 5 the ECTR is calculated for all NACE branches for different sizes of companies in this case. From the Figure 6 is obvious that considering ECTR for different size of companies is very similar and reacts on the changes in the economy similarly. Company size 2 represents the only exception as its values are decreasing at the beginning of the observed period but this divergence was removed after 2004. All observed ECTR report decreasing trend which is the most obvious for the group 2. The biggest companies report decreasing tax burden (decrease in ECTR about 17.7 pp from 2002) and contrary to other groups have significantly lower level of tax burden. This trend confirmed Nicodèmes (2001) assumption who states that bigger companies give greater afford to lower their taxation and this behaviour finally leads to inequalities between different sized companies. ECTR for the group 2 was about 12.9%, for the group 1a 33.3% and for the group 1 22.2% in 2012. It is obvious that ECTR for group 2 is lower than average ECTR. On the other hand ECTR for group 1a is bigger compared to the other groups so it can be concluded that this result confirms hypothesis about discrimination based on the company size.

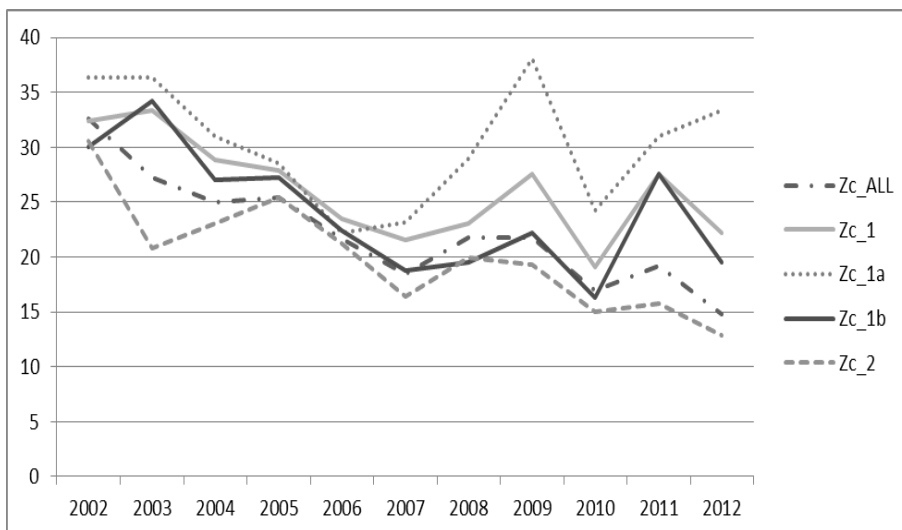


Figure 6. ECTR by corporate size in year 2002-2012 (%) (Source: BACH, own processing)

As it was mentioned tax rates calculated according backward looking micro view tends to react on the economic cycle. This assumption was confirmed nearly by all estimated ECTR both in the case of different economic sectors and size groups. It is also obvious from Figure 7 where is reported reverse evolution of ECTR to GDP_Growth is. This statement is also supported by highlighting of individual time series by connecting their extreme values. Other tax rates are mainly linear declining and do not present huge fluctuation. Tax burden calculation based on different methodology presents following results (2012): ECTR_Z0 – 14,3%, ectr_Zc – 14,8%, TQ_CI – 3,6%, ITR_CI – 21,4%, EATR_MFL – 16,7%, EMTR_MFL – 10,6% a STR_C – 19%. From the obtained results can't be concluded that tax burden is higher or lower. It is important to find out which kind of information about taxation does we need. In nearly all cases are effective corporate tax rates lower compared to statutory tax rate, the only exception is ITR_CI which is slightly higher than STR_C from 2007.

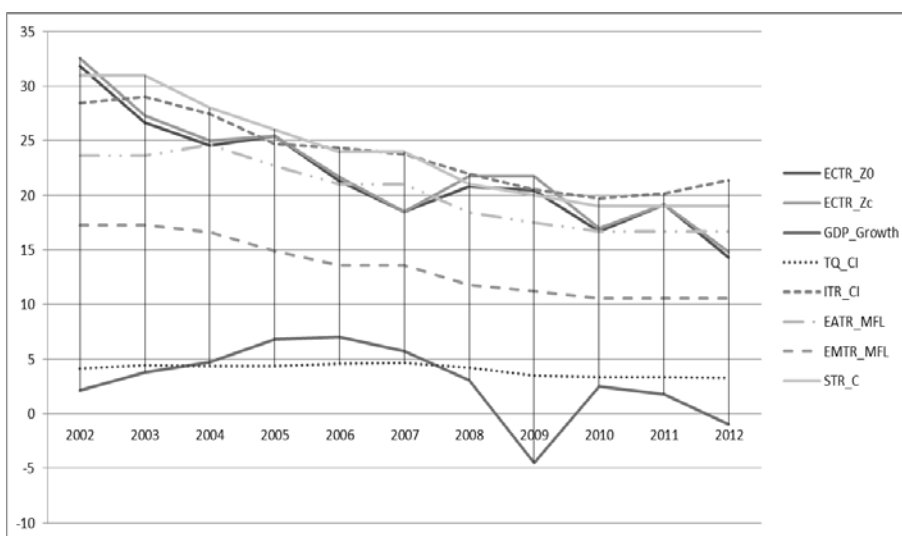


Figure 7. Selected tax rates and GDP in year 2002-2012(%) (Source: BACH, own processing)

7 Conclusion

The calculation of the effective corporate tax rates can be based on three different methods – backward looking macro view, backward looking micro view and forward looking micro view. Each of them estimates tax rates in their effective form but their final values are different. It is important

to choose proper method for each situation and the reasons why the tax rate is needed. The forward looking micro view enables to evaluate tax effectivity and return of the investments. Forward looking macro view is suitable for the international comparison mainly as it aggregates individual data. Forward looking micro view enables to set up tax rates for individual economic sectors or to compare tax burden for different sized companies both within the country and between countries.

The aim of the paper is to evaluate effective corporate tax rates based on the backward looking micro view for chosen economic branches and find out whether there was different corporate tax burden in the Czech Republic in the 2002-2012 period. ECTR was evaluated for chosen economic sectors according NACE classification. Same tax rate was also obtained for different sized companies to find out possible tax discrimination.

Within the primary sector the less stable and relatively volatile is sector A from the ECTR perspective. On the other hand sector B is quite stable and economic cycle does not influence significantly. There is no evidence about tax discrimination between individual sectors of the primary sector. Secondary sector reported similar ECTR trends; its values are quite volatile in the sectors C, E and F and are sensible to the economic changes. Absolute values of ECTR are quite similar (in the range +/- 10pp.). The only exception of this economic sector is sector D which reacts in the direction of the economic cycle in the time of the Great recession and its absolute value is quite small compared to the other sectors of the group. This feature can be explained by regulated prices and general government supervision over this sector.

The effective corporate tax rates were quite stable in the tertiary sector at the beginning of the observed period. Greater fluctuations are connected with the Great recession and are the most obvious in the sector L. The most sensible on the economic changes is quaternary sector. ECTR fluctuated in all sectors involved to the quaternary sector. Positive finding is that there is no visible tax discrimination in this sector.

The ECTR is sensible on the economic changes in the case of different sized companies. The existence of tax discrimination was also confirmed between different sized companies. The Nicodèmes (2001) assumptions which states that bigger companies give more effort to lower their taxation is confirmed as the lowest ECTR are evaluated for group of big companies.

The ECTR as the only one effective tax rate is sensitive on the economic cycle which was proved by chart analysis and connection of time series by the line connecting extreme values. It can be concluded that (i) taxation is volatile with accordance of economic cycles in all economic sectors; (ii) taxation between different sized companies is not similar and is discriminatory.

8 Acknowledgement

This paper has been funded by a grant from Students Grant Project EkF, VŠB-TU Ostrava within the project SP2014/145 “The Influence of Structure of Government Spending and Taxes on Selected Sectors and Economic Growth in the Czech Republic”.

This paper was supported by the European Social Fund within the project CZ.1.07/2.3.00/20.0296.

References

- [1] Auerbach, A. J. and J. Slemrod, 1997. The economic effects of the Tax Reform Act of 1986. *Journal of Economic Literature*, vol. 35, pp. 589-632.
- [2] BACH. *Bank for the Accounts of Companies Harmonise Database 2014*. [online]. [2014-04-01]. Available from: <http://www.bach.banque-france.fr/?page=documentation>.
- [3] Baranová, V., 2012. The Possibilities of the Tax Burden Measurement: A Practical Case Of European Union Countries. In: Z. Machová, ed. *Proceedings of the 2nd International*

Scientific Conference Taxes in the World: Reviewed papers. Trojanovice, Czech Republic, pp. 7-26.

- [4] Blechová, B., 2008. Charakteristika přístupů používaných v EU pro hodnocení efektivního daňového zatížení příjmů korporací. In: *Proceedings of the XIII. International Conference Teoretické a praktické aspekty veřejných finance: Reviewed papers.* Praha: VŠE, pp. 1-11.
- [5] Buijink, W. et al., 2002. Evidence of the effect of domicile on corporate average effective tax rates in the European Union. *Journal of International Accounting, Auditing and Taxation*, vol. 11, issue 2, pp. 115-130.
- [6] Collins, J. H. and D. A. Shackelford, 1995. Corporate Domicile and Average Effective Tax Rates: The Cases of Canada, Japan, the UK and USA. *International Tax and Public Finance*, vol. 2, pp. 55-83.
- [7] ČSÚ. Databáze Ročních národních účtů: M000104a Hrubá přidaná hodnota podle odvětví (běžné ceny) 2002-2012. [online]. [2014-04-17]. Available from: <http://apl.czso.cz/pll/rocenka/rocenkavyber>.
- [8] Devereux, M. P. and R. Griffith, 1998. *The Taxation of Discrete Investment Choices.* The Institute for Fiscal Studies Working Paper Series No. W98/16.
- [9] Devereux, M. P. et al., 2012. *Effective tax levels within an enlarged EU*, (update) (TAXUD/2011/CC/099). Mannheim and Oxford: Centre for European Economic Research.
- [10] European Commission, 2014. *Taxation trends in the European Union: Annex B: Methodology and explanatory notes. Statistical book.* [online]. [2014-04-12]. Available from: http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/index_en.htm.
- [11] European tax database. *European Commission - European Tax Database 2014.* [online]. [2014-04-13]. Available from: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database.
- [12] Eurostat. *Browse / Search database 2014.* [online]. [2014-04-13]. Available from: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database.
- [13] Janíčková, L., 2012. Effective Tax Rates in the Moravian-Silesian Region. In: Z. Machová, ed. *Proceedings of the 2nd International Scientific Conference Taxes in the World: Reviewed papers.* Trojanovice, Czech Republic, pp. 27 - 40.
- [14] King, M. A. and D. Fullerton, 1984. *The Taxation of Income from Capital.* Chicago: University of Chicago Press.
- [15] Kotlán, I. et al., 2011. Vliv zdanění na dlouhodobý ekonomický růst. *Politická ekonomie*, vol. 5, pp. 638-658.
- [16] Martinez-Mongay C., 1997. *Effective Taxation and Tax Convergence in the EU and the OECD.* Economic paper, DG ECFIN II/603/97-EN.
- [17] Mendoza E. G. et al., 1994. *Computing Effective Tax Rates on Factor Incomes and Consumption: An International Macroeconomic Perspective.* CEPR Discussion Paper No 866.
- [18] Nicodème, G., 2007. Comparing Effective Corporate Tax Rates. *Frontiers in Finance and Economics*, vol. 4, issue 2, pp. 102-131.
- [19] Nicodème, G., 2001. *Computing Effective Corporate Tax Rates: Comparisons and Results.* Directorate General for Economic and Financial Affairs ECONOMIC PAPER, ECFIN E2/358/01-EN, NO. 153.

- [20] Scholes, M. S. and M. A. Wolfson, 1992. *Taxes and Business Strategy: A Planning Approach*. Englewood Cliffs, N.J: Prentice Hall.
- [21] Shackelford, D. A. and T. Shevlin, 2001. Empirical tax research in accounting. *Journal of Accounting and Economics*, vol. 31, pp. 321–387.
- [22] Slemrod, J., 1990. *Do Taxes Matter? The Impact of the Tax Reform Act of 1986*. Cambridge: MIT Press.
- [23] Szarowská, I., 2011. Jak vysoké je korporátní daňové zatížení? *Acta academica karviniensia*, vol. 2, pp. 196-207.

ECONOMICS AND SOCIAL ASPECTS OF LONG-TERM CARE IN THE CONTEXT OF THE CZECH REPUBLIC AND THE SLOVAK REPUBLIC EU MEMBERSHIP

Miroslav Barták¹, Beáta Gavurová²

¹*Jan Evangelista Purkyně University, Faculty of Social and Economic Studies, Moskevská 54, 400 96, Usti nad Labem,
Czech Republic
email: miroslav.bartak@ujep.cz*

²*Technical University of Kosice, Faculty of Economics, Nemcovej 32, 040 01 Kosice, Slovak Republic
email: beata.gavurova@tuke.sk*

Abstract

There is a growing interest to coordinate social and health services in the EU both at the level of the national states and between the member states. It is because of the large demographic changes in countries, which are related with the process of global aging. In European countries, it is expected that with the increasing number of elderly dependent persons will drastically increase costs of the formal and informal long-term healthcare for chronically ill people. This raises the need to make the most effective use of available resources, as well as efforts to compile the optimum range of long-term healthcare for the individual and for the community to satisfy the attributes of geographic accessibility, quality and financial capacity for the individual and for society. On the foregoing facts reflects the contribution, the primary objective is to point out to the successful models of long-term healthcare in selected countries, to assess the expenditure on long-term care in EU countries and the social and economic requirements of countries relating to the ongoing process of aging. Based on the findings we analyze the interface management between social and health systems in the Czech Republic and Slovakia in order to serve for elderly and to create conditions for healthy and active aging.

Keywords

Healthcare, Long-term Care, Aging, Formal Healthcare, Informal Healthcare, Financial Sustainability of the System.

JEL Classification

I 18, I 38.

1 Introduction

At present, we may observe a rapid increase in the amount of older population that results in increasing demand for long-term care (LTC) services. The influence of a rapid development of science and technologies and increase of investments into health services deepen disparities in some groups of population for whom the availability of health care is either limited or impossible. It especially includes the senior's group (over 70 years and significantly over 80 years) who suffer from numerous chronic diseases as well as other mobility difficulties that significantly worsen the quality of their lives and creates dependency on social services system.

Population ageing, according to the WHO, is caused by an increasing social and economic requirements in each country at which between EU countries are significant differences. This requires more attention to enacting reforms and also reorganization of social and health systems in order to make them available to older citizens, and simultaneously to form the conditions for healthy and active ageing process (Buzink et al., 2012; Michalski, 2009, 2014).

Active ageing process represents a process of optimization of opportunities for health, participation and safety in order to increase life quality in its individual age periods (Szabo et al. 2013). It means that an active ageing also focuses on achieving and maintenance of the highest potential of life – physical, mental and social comfort during the whole life except of an adequate availability of health services in case of a disease (Šoltés, 2011; Šoltés and Radoňak, 2012). Interest in effective coordination of social and health services is conditioned by a constant increase of chronic diseases which still spend larger rate of resources (by increasing the age of patients, improving a treatment, etc.). Effective coordination of health and social services in the countries is also influenced by their fragmentation except of the abovementioned factors (Užík and Šoltés, 2009). The LTC

expenses are estimated on 2-4% in the OECD countries (Sedláková, 2010). In the EU countries, the LTC has its origin in charity activities, volunteer organizations, social services for people of health disability, as well as in insufficient legislative (Leichsenring, 2004; Kerschen et al., 2005). In the conditions of the Czech Republic and the Slovak Republic, there is also a problem in the management interface, where health and social services are often implemented without the necessary coordination of involved ministries. The linking between increasing age and health and social restrictions is very strong. In the last decades, the LTC has a character of a controlled policy that is oriented to aspects of quality availability as well as range of benefits and services of LTC. In a context of social care, the LTC has a decentralized character and in many countries it is controlled on a regional and local level in contrast to health system (Huber et al., 2009). Complexity of the controlled level, structure of providers and differences in rights, funding levels, as well as cultural and political heritage significantly influenced heterogeneity of LTC as among countries so inside them. The article reflects on these aspects, which aims to provide a view on the issue of LTC framework in the Czech Republic and Slovak Republic, and to draw attention to critical areas of its development in the context of global aging.

2 Demographic changes and their determinants in the Czech Republic and the Slovak Republic

LTC in the literature is defined as the provision of comprehensive medical, nursing and home care for a longer or a long time, possibly as a permanent care (Hegyi, 2007, 2008). Slovak legislation does not recognize explicitly defined term "long-term care", "formal respectively informal care sector." To explicit definition of LTC in Slovakia has been occurred in 2006 by releasing the "National Report on Strategies for Social Protection and Social Inclusion document", which allowed implicitly infer the definition of formal and informal care sector, particularly in relation to older people (Repková et al., 2010).

Informal care is defined as care provided to persons who are:

- longer period dependent on others for daily living activities (self-servicing operations, home care, basic social activities because of severe health disability),
- primarily ensured by the closest of the home,
- which does not require carers with special qualifications.

Formal health care is care:

- provided to persons who are dependent on others for daily living activities, or are at risk for serious reasons,
- provided by professional social services workers ensured by local or regional authorities or by private providers,
- provided in the form of social services at home or in an installation in daily, weekly or year-round form,
- with the extent of the right to care for at least 2 hours per day,
- primarily financed from the budgets of local and regional government, social service user's reimbursement or from other sources,
- require them to meet legally defined qualification requirements on the part of employees of social services (Repková et al., 2010).

Informal care are largely carried by individuals (relatives, friends, etc.). Problem throughout the EU is that the informal care usually provides women, who often take care of minor children. In contrast to child care is care for elderly family members not adequately socially valued, which can be a problem for example in calculating the retirement pension of carers women. Formal care according to the Social Services Act no. 448/2008 Coll, is performing a public or non-public provider of social services. Public provider is a legal entity established by the municipality or regional governments. All other established legal entities and individuals are private LTC

providers. Social Services Act no. 108/2006 Coll. in the Czech Republic regulates conditions for providing LTC, which aims to address the social situation of the individual. Satisfying health needs are dealt separately. In the Czech Republic are residential social services in the region constituted generally at the municipal level, respectively counties level, also civil society organizations have an important role. This form allows controlling network services in other ways than through grants and subsidies.

2.1 Expected demographic changes in the EU and demographic ageing

All European countries expect that increasing number of older people who need a help will simultaneously increase with explicit and implicit costs of formal and informal health care. Therefore, we look for possibilities of optimal forming of a spectrum of LTC services for an individual, as well as the whole communities that should be geographically available, qualitative and financially sustainable for an individual and the whole society, as well. In this aspect, it is inevitable to appeal to importance of prevention in a process of increase elimination, or deterioration of chronic diseases of older people in order to maintain the costs of the LTC within the bounds of social capacity in present provision of optimal life quality for disabled. A range and speed of population ageing is influenced by life expectancy, birth rate and migration. The expected life expectancy of men should increase from 76.7 years in 2010 to 84.6 years in 2060 and of women from 82.5 years to 89.1 years according to the statistics of the European Commission (2012). The birth rate should slightly increase from 1.59 births per one woman in 2010 to 1.71 births in 2060. It is supposed that the total clear migration to EU will be in 2060 represent 60 millions of people. These data prove a projected dramatic change of age profile in the EU in the following decades. The population will be much older in spite of a slight increase of total number of inhabitants in 2060 (from 502 millions in 2010 to 517 millions in 2060). 30% of Europeans should be 65 years old or even more, while less people will be in a productive age (from 15 to 64 years). The number of people in a productive age per one pensioner will decrease from 4 to 2 (caused by projected increase of people in a productive age from 67% to 56%). The given demographic changes will have a significant influence on public funds in the EU. If we only focus on public expenses that are related to age, such as pensions, health care and LTC these should increase till 2060 of 4.1% GDP (in comparison to 2010), i.e. from 25% to 29% GDP. The pensions' expenses are expected to increase from 11.3% to approximately 13% GDP; while there will be significant differences among countries, which will be determined by a structure and a method of applying the pension reforms. This requires a support of effective measures formation in the field of politics of each country (EC, 2012).

It is inevitable to differentiate the absolute and relative ageing in evaluation of a process of demographic ageing. The absolute ageing represents an increasing number of older people as a consequence of mortality decrease and extension of lifespan. Relative ageing conveys an increase of a rate of older people as a consequence of a decrease of number of people in pre-productive and productive age. Demographic ageing is possible to determine by means of many indices, e.g. age index, ageing index, Billeter index, index of young population dependency, index of old population dependency, etc.). Some international organizations, such as OECD, Eurostat and the World Bank use different methods of their calculations except the availability of various indicators. Eurostat uses two indicators in forming the index of age dependency: “*Young age dependency ratio*” and “*Old age dependency ratio*”. “*Young age dependency ratio*” indicates a rate of people of 0 – 14 years old (1st variant) or from 0 – 19 years old (2nd variant) that are divided by number of people in a productive age in two variants: 15-64 years (1st variant) or 20-59 years (2nd variant). “*Old age dependency ratio*” presents a number rate of people in a post-productive age (65 years old and more – 1st variant or 60 years old and more – 2nd variant), to number of people in a productive age, or in 15-64 years old – 1st variant or 20-59 years old – 2nd variant).

The total ratio of age dependency represents a sum of “*young age*” and “*old age*” ratios of age dependencies. We chose the ageing index out of Eurostat data as well as according to its methods to

evaluate the ageing development in the European countries. Table 1 and 2 show the values of ageing index in the European countries in the first and the second variant.

Table 1. Ageing Index of EU countries - 1st variant

Country, area / Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
European Union (28)	48.7	48.8	48.8	48.9	48.9	49.1	49.5	49.8	50.3	51.1
Euro Area (18)	49.3	49.6	49.9	50.1	50.1	50.5	50.9	51.1	51.6	52.3
Czech Republic	41.2	40.8	40.6	40.5	40.6	41.0	42.0	43.1	44.6	46.3
Hungary	45.7	45.5	45.4	45.2	45.3	45.4	45.7	45.6	45.7	46.2
Poland	43.3	42.6	41.9	41.3	40.7	40.4	40.2	40.2	40.7	41.4
Slovakia	41.1	40.4	39.8	39.3	38.9	38.6	38.8	38.9	39.2	39.8

Source: own processing according to data from Eurostat.

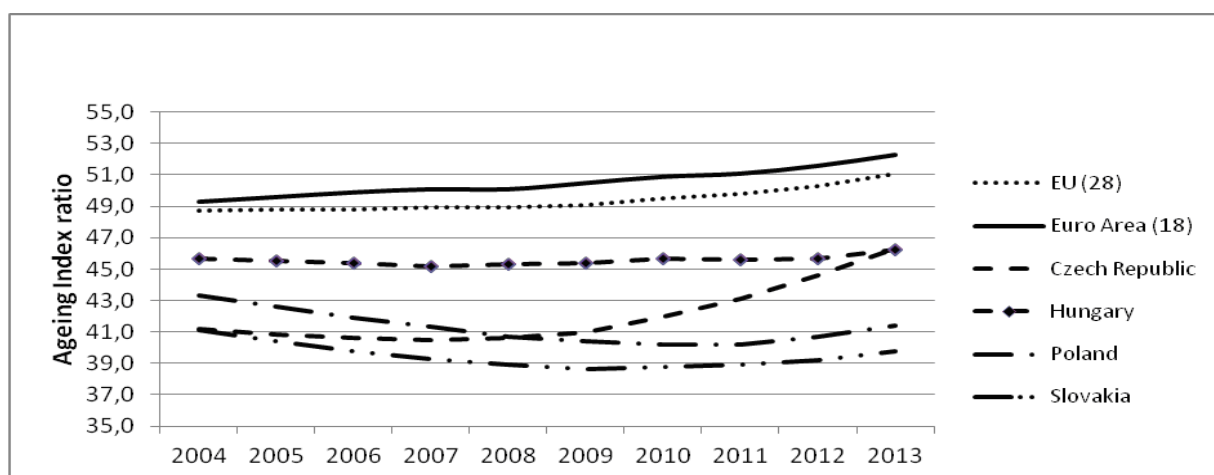


Figure 1. Ageing Index of EU countries - 1st variant (Source: own processing according to data from Eurostat)

The Figure 1 illustrates the Slovak Republic and the Czech Republic that achieved the lowest value of ageing index till 2008, since 2009 till 2013 it was the Slovak Republic and Poland. Hungary reached a slightly unstable development of ageing index during 2004 – 2013 even above the level of values of such countries as the Slovak Republic, Poland and Czech Republic. Ageing index had a constant increasing trend in aggregated evaluation within countries of the EU or the Eurozone.

Table 2. Ageing Index of EU countries - 2nd variant

Country, area / Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
European Union (28)	79.4	79.2	78.8	79.1	79.5	80.1	80.8	81.4	82.1	82.9
Euro Area (18)	79.5	79.5	79.4	79.7	80.2	80.8	81.6	82.3	83.0	83.8
Czech Republic	69.5	69.7	69.7	70.6	71.5	72.3	73.4	74.7	75.7	77.0
Hungary	76.1	76.2	75.6	75.3	75.5	75.9	76.3	76.7	78.3	78.7
Poland	73.6	71.3	69.3	68.6	68.4	68.7	69.1	69.7	70.5	71.5
Slovakia	70.6	69.3	68.0	67.0	66.6	66.4	66.6	66.9	67.5	68.2

Source: own processing according to data from Eurostat.

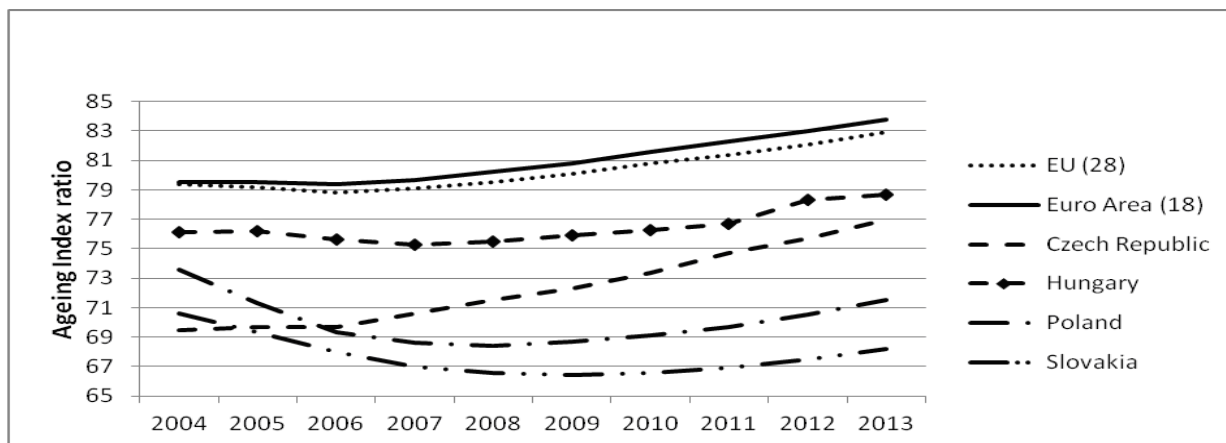


Figure 2. Ageing Index of EU countries - 2nd variant (Source: own processing according to data from Eurostat)

If we look at the development of ageing indices formed on the basis of Eurostat methods of the second variant (Figure 2), we may observe that the lowest values of ageing index had been recorded in the Slovak Republic and Poland from 2006 - 2013, similarly as in the first variant. The constant increase of ageing index values has been observed since 2004 in the Czech Republic and Hungary, while Hungary reaches the highest values in all analyzed years from all the countries of V4.

2.2 Long-term care in the Czech Republic and the Slovak Republic

The LTC is significantly determined by demographic processes as presented in the subchapter 2.1. The demographic processes in the regions of the Czech Republic and the Slovak Republic are not homogeneous and they are in progress in a different speed and intensity, while they deepen a differentiation from the point of view of demographic ageing. The Czech Republic and the Slovak Republic belong to the youngest countries in the Europe and in the future, they will grow old by uneven age structure and as a consequence of a rapid decline of birth rate, various mortality rates and life levels. The process and concept of ageing in these countries are predominantly determined by lifespan, economic conditions in a society, level of health care, family background, quality of environment, lifestyle of individuals, their education, etc. It is inevitable to pay attention to some particularities as well as to quantify some chosen components in order to help visualize the reasons of future development, or reveal some critical fields (Table 3) in comparing the LTC systems of these countries.

Table 3. Comparison of the selected LTC aspects in the Czech Republic and the Slovak Republic

	Czech Republic	Slovak Republic
I.TC use	• People above 65 years formed in 2008 almost 15% of the total population, • People above 80 years formed 3.4% of the population, • In 2008 almost 1.8% of the population above 65 years used the LTC, • In 2008, the LTC provision expenses represented ratio of 0.2% GDP, • In 2008, 18.2 beds of the LTC and 2.5 employees fell to 1000 inhabitants older than 65 years.	• People above 65 years formed in 2009 12.2% of population. • In 2009 almost 3.3% of the population above 65 years used the LTC, • In 2006, the LTC provision expenses represented ratio of 0.2% GDP, • Inhabitants (200,230) in , draw compensation allowances for severe disability and 52 161 inhabitants draw allowances for the LTC.
Organization	• There absents responsibility centralization for integrated LTC, • Decentralization of the LTC realization: sector of social services, health care, various levels of state administration (local, regional, national), • Responsibility: Ministry of Health, Ministry of Labour, Social Affairs, Municipalities and Regions (community planning of social services, domiciliary and residential services).	• Responsibility for LTC provision and its monitoring is controlled by the Ministry of Labour, Social Affairs and Family and by the Ministry of Health, and the LTC is also provisioned by autonomous groups (senior houses, domiciliary service houses, specialized facilities, physiotherapist centers, organizations providing accommodation, etc.).
Forms	• Three types of the LTC are financed: resident, daily and institutionalized, • We differ within a resident LTC also resident nursing care – personal assistance, • In 2007, there were registered 475 agencies of resident nursing acre (ADOS).	• Three types of the LTC are financed: resident, daily and institutionalized, • Formal LTC is provided by professional LTC employees (either institutionalized, or at home of a resident), • Care of dependent seniors or people of severe disability are provided by informal LTC employees.

Source: own processing according to various sources (OECD, 2011; Repková et al. 2010).

In both countries, we also focused on the development of expenses on LTC except the LTC provision methods (Table 4), as well as the development of healthy population (Table 5), unhealthy population (Table 6), and also on a severe disabled population (Table 7).

Table 4. Long term care expenditure (% of GDP)

	2007	2009	2011
Czech Republic	0.26	0.28	n.a.
Slovak Republic	0.03	0.03	0.02

Source: own processing according to Statistical Office of the Slovak Republic

Table 5. Population with very good health (%)

	2008	2010	2012
Czech Republic	19.9	21.2	19.0
Slovak Republic	19.3	21.7	21.4

Source: own processing according to Statistical Office of the Slovak Republic

Table 6. Population with very bad health (%)

	2008	2010	2012
Czech Republic	2.4	2.4	2.5
Slovak Republic	4.5	2.9	2.6

Source: own processing according to Statistical Office of the Slovak Republic

Table 7. Severe long-standing limitations in usual activities due to health problems (%)

	2008	2010	2012
Czech Republic	5.6	6.0	6.2
Slovak Republic	11.2	10.4	10.0

Source: own processing according to Statistical Office of the Slovak Republic

The LTC in the Slovak Republic has a curative character and it is realized on the basis of a formation of health and social issue, or a demand of a dependent person, or a family member. Social Services Act (No. 108/2006 Coll.) in the Czech Republic defines the conditions and forms of assistance (financial and material). The granting of aid is linked to health assessment by expert physician. However, there has still been absenting more systematic primary prevention to eliminate a dependency of a person, as well as continuity (interface management) of social and health care. Social sector provides three fundamental groups of measures to provide the LTC in Slovakia:

- Financial allowances to compensate a severe disability for people with such a disability – *financed from a state budget and realized by bodies of specialized state administration,*
- Social services provided off-road, in ambulant way or in a form of a stay at a health resort– *financed from regional and local budgets, client payments, or other resources and realized by bodies of local, regional municipalities and private providers,*
- Subsidy policy for a municipality and civil sector – it includes donations to new types of social services, physiotherapist stays of dependent people, etc. *This form is finance from state budget, donations, foundations, by means of philanthropy, etc.*

In Slovakia, there are registered 3.988 facilities of social services to this day. If we look at the structure of these providers, we may divide them into three groups: facilities for seniors, home of social services and nursing service (Figure 3).

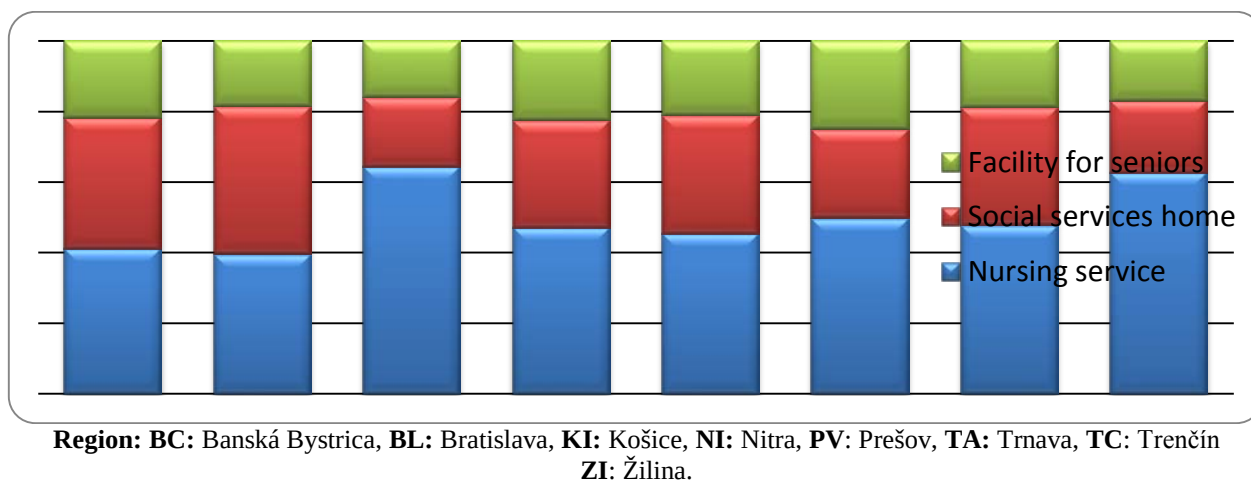


Figure 3. Facilities of health care according to the type of social service (Source: own elaboration)

One of the ways to improve the LTC process in Slovakia is the using of personal assistance, which substantially supports family members' of dependent person, as well as support from the state (in Slovakia is providing subsidies Ministry of labour, social affairs and family). In the Czech Republic the social services are provided to 7% of population. Provision of social services is not evenly distributed across the country. The availability in the cities is higher than in villages, disparities are evident in individual regions of the Czech Republic. According to the Ministry of Work and Social Affairs the Czech Republic is about 2084 registered providers of social prevention, 3040 social care providers and 758 specialized social counseling providers (basic social counseling have to offer all providers of social services). In the social services in the Czech Republic work about 56,000 employees. The most commonly registered services are nursing services, second are homes for the

elderly. In homes for the elderly are available about 37,000 beds, from which is a significant majority in subsidized organizations. The long-term health care should have a highly conceptual character, it should emerge from a responsible prognosis and planning based on a combination of evaluation of future generations' needs of older people in effective allocation of necessary resources. There must be preferred the integrated and coordinate services that will replace fragmented and episodic care in providing the necessary structure of providers of health care. The particular significance in this process has an individualized health care. Many countries form their own models of long-term health care provision. If we focus on their particularities, we may divide them into two concepts:

- Concept that focuses on formation of safe network of health care that minimizes state area interventions. Its role lies in a concentration of supporting those groups of inhabitants that are not able to provide the LTC services by themselves
- Concept that focuses on universal support of all people who reached a certain age or they suffer from a certain disease.

The first concept has its strengths in the system of effective control of public expenses, but on the other hand, it requires a vast apparatus, permanent process of monitoring in order to support those groups of inhabitants that are entitled to this concept. The second concept is bureaucratically less demanding, however, it may be financially more demanding due to the tendencies of a constant increase of number of older people. It would be appropriate to coordinate these processes among countries as all the member states of the EU face the same challenges. The mutual information exchange in using the experiences of successfully applied models not only within Europe, but also in the whole world is very important.

Status of family members carers respectively other close persons is characterized by, that the contributions to care (under Act 108/2006 Coll.) are not included in income for purposes of carers tax and benefit systems, the contribution is paid concurrently with the parental contribution (up to seven years of age), time care is generally counted as compensatory time for the purpose of pension (but it has an impact on its height), health insurance for man in care is paid by the state, the carer can be active on the labor market and it is not tested their income situation. According to research in 2007, where carers of people with disabilities were interviewees has been found that man in care is increasing feeling of loss of work responsibilities, social isolation and worsening of health. Carers should also feel a lack of social recognition and are often worried about the future (Valenta and Michalik, 2008).

3 Conclusion

If the LTC system should be perpetually sustainable, it has to be flexible and fair, which requires a consensus of its function and finance mechanisms in each country. The adjusted health and social policy of countries should provide a synergy and coordination of all LTC sub-systems in order to set a mutual cooperation not competition. It is inevitable to elaborate the quality standards separately for formal and informal LTC, and also to provide the necessary education in the process of active network managing of LTC providers. Education process should reflect the necessity of knowledge transformation of LTC into curricula of health and social employees', and other specialists 'education, who participate in formation of dignified life conditions for seniors. The countries deal with solving this issue of LTC differently. Even they are developing different models that reflect particularities of a given group of inhabitants, it is also important to use the examples of good practice. It means that provided services should provide the necessary health and social needs as well as evoke "satisfaction and good feeling of life" in dependent people. In a context of the above mentioned, it is necessary to provide a particular level of personal control over the provided health care from the point of view of quality, range, financial costingness and security.

We consider as a significant demographic aspect the structure of family status that is necessary to know in forming the policy of active ageing. The family status is a significant factor that influences

physical and mental health of a person, his/her overall life comfort, as well as life quality as the results of numerous researches prove. If we take into consideration the activities of seniors, changes in their way of living, lifestyle are very important. If we succeed in proving the assumption that even in a higher age, there will be many active and independent people in the future, we may support the possibilities of people to create values during their long lives on a contrary to the present state. It is also possible to form proper conditions for healthy and active ageing of seniors by enacting active reforms and effective reorganization of social and health systems. It requires effective regulation of health and social policy that is implemented in a health state policy of these countries.

References

- [1] Bednárík, R. et al., 2010. Národná správa o neformálnej starostlivosti v systéme dlhodobej starostlivosti 2010. In: K. Repková et al., eds. *Dlhodobá starostlivosť o starších ľudí na Slovensku a v Európe. Neformálna starostlivosť*. Bratislava: Inštitút pre výskum práce a rodiny.
- [2] Buzink, S., M. Šoltés, J. Radoňák, A. Fingerhut, G. Hanna and J. Jakimowicz, 2012. Laparoscopic Surgical Skills Programme: Preliminary Evaluation of Grade I Level 1 Courses by Trainees. *Videosurgery and other Miniinvasive Techniques*, vol. 7, No. 3, pp. 188-192.
- [3] Eurobarometer. 2007. *Health and Long-term Care in the European Union*. [online]. [2014-04-04]. Available from: http://ec.europa.eu/public_opinion/archives/ebs/ebs_283_en.pdf.
- [4] Európska komisia. 2012. *Európa starne, musíme sa pripraviť*. [online]. [2014-04-04]. Available from: http://ec.europa.eu/news/economy/120515_sk.htm.
- [5] Hegyi, L., 2007. Perspektívy dlhodobej starostlivosti. *Geriatrics*, vol. 13, No. 3, pp. 99-103.
- [6] Hegyi, L., 2008. Dlhodobá starostlivosť v praxi. *Geriatrics*, vol. 14, No. 2, pp. 51-54.
- [7] Huber, M. et al., 2009. *Facts and Figures on Long-Term Care – Europe and North America*. Vienna: European Centre for Social Welfare Policy and Research.
- [8] Kerschen, N. et al., 2005. *Long-term care for older persons*. Bulletin Luxembourgeois des questions sociales No. 19. [online]. [2014-04-04]. Available from: http://ec.europa.eu/employment_social/spsi/studi_on_health_care_en.htm.
- [9] Leichsenring, K., 2004. Providing Integrated Health and Social Care for Older People – A European Overview. In: A. Alaszewski and K. Leichsenring, eds. *Providing Integrated Health and Social Care for Older Persons – Issues, Problems and Solutions*. Aldershot: Ashgate, pp. 9-52.
- [10] Michalski, G., 2014. *Value-Based Working Capital Management. Determining Liquid Asset Levels in Entrepreneurial Environments*. New York: Palgrave Macmillan.
- [11] Michalski, G., 2009. Inventory management optimization as part of operational risk management. *Economic computation and economic cybernetics studies and research*, vol. 43, No. 4, pp. 213-222.
- [12] OECD. 2011. *Help Wanted? Providing and Paying for Long-Term Care*. [online]. [2014-04-21]. Available from: www.oecd.org/health/longtermcare
www.oecd.org/health/longtermcare/helpwante.
- [13] Repková, K. et al., 2010. *Dlhodobá starostlivosť o starších ľudí na Slovensku a v Európe. Neformálna starostlivosť*. Bratislava: Inštitút pre výskum práce a rodiny.
- [14] Sedláková, D., 2010. Zdravotnícke systémy a dlhodobá starostlivosť o starších ľudí z pohľadu Svetovej zdravotníckej organizácie (WHO). In: K. Repková et al., eds. *Dlhodobá starostlivosť*

o starších ľuďoch na Slovensku a v Európe. Neformálna starostlivosť. Bratislava: Inštitút pre výskum práce a rodiny.

- [15] Statistical Office of the Slovak Republic, 2014. *SLOVAKIA IN THE EÚ 2014*. No. 600 - 0024/2014.
- [16] Szabo, Z. K., M. Šoltés and E. Herman, 2013. Innovative Capacity and Performance of Transition Economies: Comparative Study at the Level of Enterprises. *E+M Ekonomie a Management*, vol. 16, No. 1, pp. 52-68.
- [17] Šoltés, M., 2011. Ekonomické aspekty laparoskopickej chirurgie. *Miniinvazívna chirurgia a endoskopia: chirurgia súčasnosti*, vol. 15, No. 3, pp. 7-10.
- [18] Šoltés, M. and J. Radoňák, 2012. Hodnota demografických a anamnestických údajov pre predpoveď náročnosti elektívnej laparoskopickej cholecystektómie. *Slovenská chirurgia: časopis Slovenskej chirurgickej spoločnosti*, vol. 9, No. 1, pp. 23-26.
- [19] Užík, M. and V. Šoltés, 2009. The Effect of Rating Changes on the Value of a Company Listed in the Capital Market. *E + M Ekonomie a Management*, vol.12, No. 1, pp. 49-55.
- [20] Valenta, M. and J. Michalík, 2008. *Výzkum pracovních kompetencí osob pečujících o člena rodiny se zdravotním postižením na území hlavního města Prahy*. [online]. [2014-04-19]. Available from: <http://www.vcizp.cz/doc/vcizp-quality-life-zprava-celek.pdf>.

CONVERGENCE AND INTEGRATION OF THE CENTRAL EUROPE

Hana Bartůšková¹, Ingeborg Němcová²

¹*University of Economics in Prague, Faculty of International Relations, nam. W. Churchilla 4, 130 67 Prague 3, Czech Republic*
email: hana.bartuskova@vse.cz

²*University of Economics in Prague, Faculty of International Relations, nam. W. Churchilla 4, 130 67 Prague 3, Czech Republic*
email: inge@vse.cz

Abstract

Ten years of membership and almost twenty years of more or less intensive convergence of the Central and Eastern European countries to the EU requires some evaluation of results of this integration process. Therefore a mutual relation between convergence and integration will be discussed and defined using traditional and system approaches. The recent history of the main theoretical and practical attempts of measuring integration will be presented and discussed: The European integration, including economic, social and political integration is a complicated process with a high level of complexity, it is a dynamic process with a number of important feedbacks. On the other hand there has been a desire to describe this process as simply as possible, ideally with a one number only. The Eastern Enlargement development with special attention to the Visegrad Group during the last decade will be analyzed from aspects of convergence and measured with different indices reflecting different aspects of integration.

Keywords

Convergence, Integration, Central Europe, Index of Integration.

JEL Classification

F00, F02, E60, E63.

1 Introduction

The tenth anniversary of the first wave of the Eastern Enlargement of the European Union has been attracting attention to evaluation of this unprecedented step and evaluation of the process of integration of the new member states. The process of integration itself started more than twenty years ago when these countries signed their European Agreements expressing a will of both the candidate countries and the EU to their future membership. The next milestone could be seen in submitting of the Application on Membership of the candidate countries and the following process of screening and negotiations. All these processes have been extending the integration process from ten to twenty and more years. Time series of statistical data covering this long-run period must be taken with a respect to a process of system transformation and transition and not only as a documentation of integration only.

The following article will focus on process of integration itself. It will try to name the forces which are running the EU integration and giving to it a direction and dynamics. Illustration will be presented at the V4 countries.

2 Convergence - types and measuring

A term of convergence express generally a tendency, direction of movement getting closer and rise homogeneity. The term itself is based on Latin “con-vergere” – “turning together”. In economy and policy we can talk about convergence of countries, their economies or some features of these economies, usually described with some indicators. Considering process of the EU integration we can mention some well described and researched areas of convergence:

- Real convergence
- Nominal convergence
- Price convergence

Concepts of convergence in economic research are based on neoclassical theories of economic growth. Convergence is measured with two types of convergence:

- β – Convergence
- σ – Convergence

The β – Convergence is describing process of potential catching-up of less developed countries to a more developed ones, watching a speed and direction (alternatively process of divergence) of the development. The most important is the presumption of higher rates of growth in weaker countries - those with lower level of the starting point.

The σ – Convergence is based on reducing of statistical dispersion of measured indicators. Usually a variation index is used. The Figure 1 is illustrating this process among the Visegrad countries and the EU28.

Both the concepts are frequently used not only in economic research - for overview see Smrčková et al., 2008; Ždárek, 2011; Kovářová and Šulganová, 2012 - but also in area of geographical and especially regional studies. A basic overview of approaches, models and theories might be found in Blažek (1999).

Although all the research is focused on behavior (moving, development) of two or more “units” a system approach is not mentioned at all or marginally only. A system approach might be helpful especially if a system dynamic is used. This may allow to investigate the processes of convergence and integration with respect to their dynamics eventually introduce system feed-backs. This approach might be useful for economic policy concepts and making because it may ask important questions.

3 System approach

Using a system approach we can describe an integration of two or more systems into a system of higher level. Integration itself might be described as a growth of quantity (and quality) of relations between elements of different systems, relations crossing borders of the systems and creating a new structure of the new system of a higher level – a result of integration. With a simplification we can describe such an integration process as a melting of the former systems, melting of their borders. Respecting the process of the EU integration we have to distinguish two forces leading into the “melting” process of the borders. These two forces are not isolated but they work together affecting each other and drawing limits each other. First one is a market, the other one is economic policy.

A market in a growing economy of one country is requiring larger and larger space for its operations and pushing economic policy to removal of barriers to its grow. Economic policy from passive approach is changing to a more active as Tinbergen’s negative integration is switching into a positive one. The same process is observed in other countries of the integration area. Mutual cooperation of the countries is creating the larger and larger space required by the market and business community. Former national economic policies are getting “integrated”, too. They are moving from national independent policy via consultations and coordination to a common shape. Common level policy is representing an economic policy of the new system of the higher level, a system formed with integration. This process is called deepening. We have to note that not only economic policy but also other policies are moving through the integration process respecting the inner logic of widening. A snapshot of the process itself will show very different stages of integration for different policies.

For analytical purpose we can distinguish the limits and role of the two mentioned integration forces – market and economic policy. A market is supposed to create the fundamental pattern of linkages among the economic elements of different countries in integration. It is the market who is telling *who* will do *what*, *when* and *where* and at *what costs*. Competition among the businesses respects their allocation optimum. This is the base and glue of the integrated system.

Economic policy – at different levels with different enforcement power is supposed to determine the overall conditions and principles: to watch and guarantee a fairness of competition, to formulate

size of income distribution and redistribution, create size, principles and efficiency limits of use of sources (social and environmental) of the countries etc.

Starting the year of 2000 the EU has step by step settled a goal orientation of the integrated system – competitiveness. Besides cohesion the competitiveness has been the main goal for using common budget funds. If the EU would like to keep the standard of living in the global competition there is no alternative to the EU competitiveness, a political importance is huge.

Was the orientation to competitiveness just a change of one of the conditions already existing in the EU economic policy or are we witness a new role of economic policy of the EU? The way of the EU integration assumes that we will have competitive national economies of the member states and a competitive EU. Is this assumption realistic? Are there other alternatives to this “win-win” version? What should be an approach of national political representation in this case? Should be the national and the EU competitiveness goals of the same priority for them?

The article is not going to research competitiveness itself but points out a methodic and logic problem of the European integration. Can we simplify a process of integration into a requirement of convergence of all or majority aspects of the former systems – for us national economies and societies of the member states?

The article would like to emphasize moreover the fact that we have a very little information about the final shape of competitive integrated system of the EU. Is there still a dynamic balance between the forces of integration – market and economic policy? Are not there too many conditions, preconditions, partial goals and especially general goal shifting the weight of regulation on account of limited market? The answer of practice might be in an escape of businesses out of the EU.

A research carried in regional development and regional convergence can bring some more information about the relation of integration and convergence.

4 Convergence and heterogeneity of the EU member states

The aspect of convergence of the EU member states can be described by variation coefficient. A comparison of the development of the variation coefficient during specific period can give us a simple view on the convergence or divergence of the countries compared. In Figure 1 we can follow development of the variation coefficient of all EU member states and also the convergence process in Visegrad Group countries.

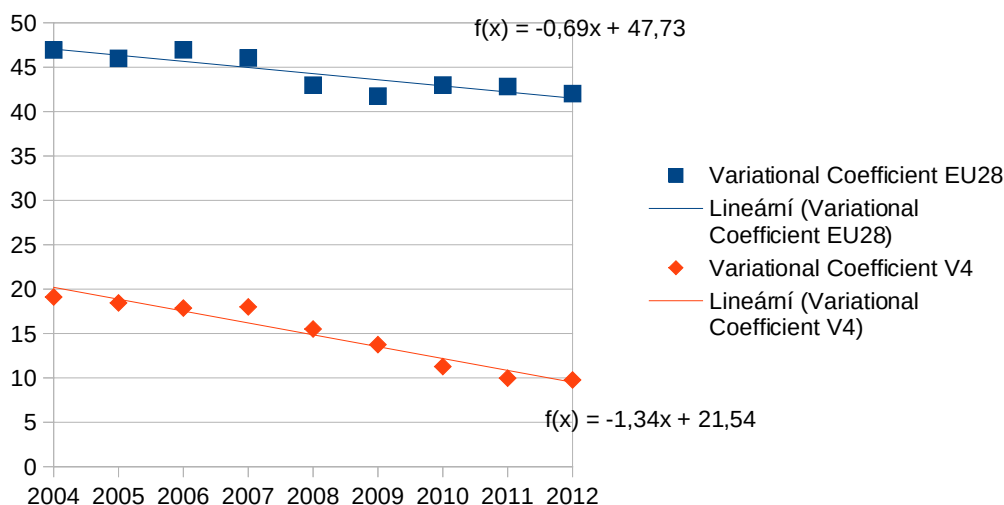


Figure 1. Convergence process in EU28 and V4 between 2004 – 2012: Variation coefficient of GDP per inhabitant in PPPs (Source: Eurostat (2014), authors’ own calculation)

We can see from Figure 1 that all EU countries are converging and the difference in GDP per inhabitant in PPPs are diminishing. If we compare the development in EU28 group with group of 4 countries from Visegrad Group we can notice two main features.

First Central and Eastern European countries from V4 are much less diversified than the whole EU group of 28 countries. The same historical experiences and the same economic development have had the main impact on the same economic level in these 4 countries.

Second the Visegrad Group countries are converging among each other faster than the 28 EU member states as a whole. The regression line is steeper in case of V4 countries than of the EU. The slope of the regression line is twice as big in case of V4 countries as of the EU.

4.1 The EU-Index

Now we use an older but fully internationally recognized scale of integration by Balassa (1961). The theoretical scale of economic integration has five stages. The basic stages of the economic integration are as following: non-formal cooperation – preference trade area – free trade area – custom union – single market – monetary and economic union – political union. The first two stages are mainly non-formal part of the integration process. We could assume that the current European Union can be find somewhere in a fourth stage. The single market was implemented, even though not really completely flawlessly, in 1992 and can be find in all EU countries. The monetary union has been established in 18 countries and we could in a way assume that the EU is on its way to some kind of fiscal and economic union. Mainly due to measures made during last few years.

For our purposes it is important to look at the single countries and examine how these countries are integrated as part of the EU. For this examination we are going to use the so called EU index as stated in König and Ohr (2012). The index shows on a scale of 100 the quantitative dimension of the qualitative integration stages as stated in Balassa (1961). We are taking the index as a black-box at this moment and we do not discuss the theoretical concept of the indicator, assumed mechanism of integration and importance of the composite parts for the final result.

Index is constructed with 25 criterions. Each one of them has an importance in the index and the total index is made as a weighted average of all the parts. The most important part of the index are an economic integration and the movement of goods, services, labor and capital as a part of the single market's four economic freedoms. The other criterions consist of homogeneity of the EU members, synchronization of the economic cycles and also the institutional parts of the integration, for example implementation of euro or the Schengen area. (König and Ohr, 2012).

Countries and their EU-indexes can be find in Table 1, where we can follow also the development of the integration process in each of these countries in period of 2004 – 2012.

Table 1. EU-25 Index

Selected countries	2004	2012
BE	66.32	75.30
NL	59.92	65.51
IE	58.33	70.45
FI	57.81	65.11
DE	56.13	66.06
FR	52.94	65.98
UK	48.16	56.75
IT	50.13	60.43
EL	46.24	46.80
AT	55.99	69.64
CZ	47.39	61.33
SK	46.92	65.49
HU	43.73	51.85
PL	44.92	50.68
SI	47.81	63.33

Source: König and Ohr (2014).

All countries have increased their integration participation in the EU during period of 2004 – 2012. Even Greece increased its index. There is no surprise that among the most integrated countries are Belgium, Germany, Netherlands and France. These are the founders of the EHS and the economic cooperation between these countries is traditionally high. Now we are going to focus on the Visegrad Group (V4 Group) countries: Czech Republic, Slovakia, Hungary and Poland.

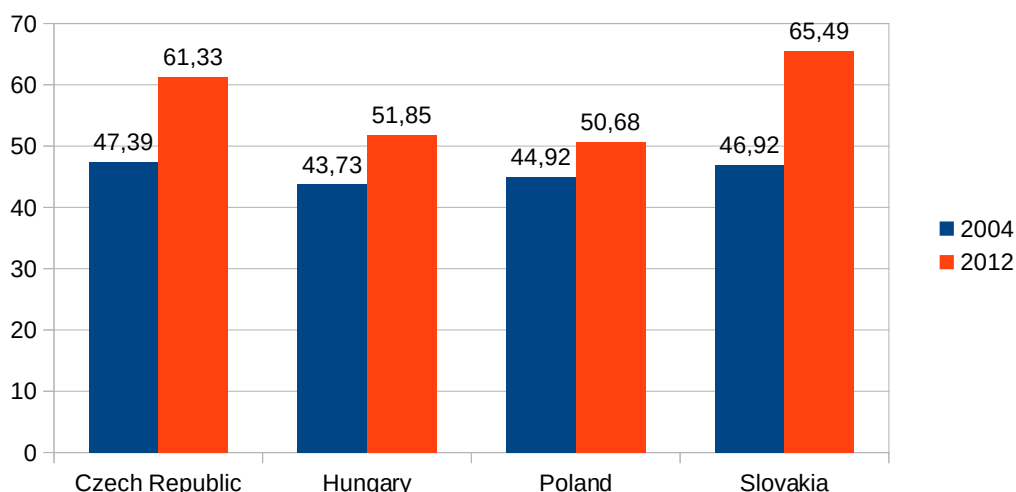


Figure 2. EU-25-Index in Visegrad Group Countries in 2004 and 2012 (Source: König and Ohr, 2014; authors' own calculation)

In Figure 2 you can find development in the countries of V4. You can notice that the integration has been rising much more in the Czech Republic and Slovakia than in Poland and Hungary. There are two main reasons for this development. In case of Slovakia the Euro implementation instantly rose the Slovak index as Slovakia joined the Euro area and the European monetary union. In case of the Czech Republic the main reason is a high economic symmetry with Germany as the economically strongest EU country. This increasing the overall integration index in the Czech Republic and the symmetry of Czech economic cycles even gained more importance during economic crisis in 2008 and 2009. And the Czech economic cycles are synchronized even though a lack of common currency implementation (Gogas, 2013).

5 Conclusion

The tenth anniversary of the first wave of the Eastern Enlargement of the European Union allows to ask questions about mutual relation between processes of convergence and integration. Could the integration content also processes of divergence or must be there only convergence ones? And if not what are the limits? The EU integration is a result of combination of a market and an economic policy, a combination of a high complexity. The question is discussed on a case of competitiveness as a top priority goal of the whole EU. Are there any alternative implications for national economic policy of the member states? There are alternative way to answer these questions. We recommend to use a system approach, we recommend to evaluate results from research of regional convergence. And we recommend to explore more composite indicators of integration like the EU-Index is. Illustration has been presented at the selected member states and the V4 countries.

6 Acknowledgement

The article was written with a support of IGS F2/7/2014 project: Nové směry governance ve světle finanční a dluhové krize.

References

- [1] Balassa, B., 1966. *Teorie ekonomické integrace*. Praha: Svoboda. Ekonomie a společnost.
- [2] Blažek, J., 1999. Teorie regionálního vývoje: je na obzoru nové paradigma či jde o pohyb v kruhu? *Geografie – Sborník ČGS*, vol. 1999, issue 3, pp. 141-159. [online]. [2014-06-20]. Available from: web.natur.cuni.cz/ksgrsek/socgeo/people/blazeksbornik99.doc.
- [3] Eurostat. *GDP and main components - Current prices*. [online]. [2014-0615]. Available from: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama_gdp_c&lang=en.
- [4] König, J. and R. Ohr, 2014. *EU-index*. [online]. [2014-06-15] Available from: http://www.eu-index.uni-goettingen.de/?page_id=231.
- [5] König, J. and R. Ohr, 2012. *Homogeneous groups within a heterogeneous community evidence from an index measuring European economic integration*. Centre for European Governance and Economic Development Research discussion paper No. 138. [online]. [2014-06-15]. Available from: <http://www.uni-goettingen.de/de/document/download/8dfdcbae376ee9e8d45325615dd48d7b.pdf/DP%20138.pdf>.
- [6] Kovářová, J. and M. Šulganová, 2012. The Price Convergence of the Czech Republic and Euro Zone Countries. *Journal of Competitiveness*, vol. 4, issue 2, pp. 49-68.
- [7] Smrčková, G., I. Vlček and F. Cvengroš, 2009. *Reálná konvergence – souvislosti a příčiny*. Ministerstvo financí ČR, Výzkumná studie 3/2008. [online]. [2014-06-14]. Available from: <http://www.mfcr.cz/cs/o-ministerstvu/odborne-studie-a-vyzkumy/2009/vyzkumne-studie-9446>.
- [8] Žďárek, V., 2011. Empirická analýza průběhu cenové konvergence ČR a nových členských zemí k eurozóně. *Politická ekonomie*, vol. 15, issue 4, pp. 454-474.

INTERNATIONAL TAX REVENUES – CASE OF GRANGER CAUSALITY

Ondřej Bayer

University of Economics in Prague, Faculty of Finance and Accounting, nam. W. Churchilla 4, 130 67 Prague 3, Czech Republic
email: xbayo00@vse.cz

Abstract

The aim of this paper is to analyze the dependence of tax revenues in Czech Republic, Germany, Poland and Slovakia. To achieve this aim are used methods of regression analysis and Granger causality. In the case of regression analysis is to use international explanatory variables in the tax revenues estimating models. The second method is Granger causality, which compares the dependence of in tax revenue in each country. Dependent variables are used most important taxes (CIT, PIT and VAT). The first part of the article is devoted to the introduction and analysis of the factors that affect tax revenues. The second part deals with the methodological definition of regression analysis and Granger causality test results and observations. In the third section are estimated models described and evaluated for significant differences. The results of Granger causality show some influence of the German economy on tax revenues Czech Republic, Poland and Slovakia.

Keywords

Tax Revenues, Regression Analysis, Granger Causality, Econometric Models.

JEL Classification

H20, H29.

1 Introduction

Currently, for a balanced fiscal policy is very important to have good estimating of tax revenues, which must be taken into consideration that tax revenues make up the vast majority of government revenues. The actual revenue can be in the creation the state budget only estimated, so the quality of these estimates depends above public budget deficit. Given the increasing trend of globalization is necessary to do tax estimates manifested as well as international elements affecting on tax revenues.

The paper aims to describe the dependence of tax revenues to international factors, namely the dependence of tax revenues in selected Central European countries and Germany each other. Considering the complexity of the tax system in each country were selected relatively important taxes - personal income tax (PIT), income tax (CIT) and value added tax (VAT). For a description of the tracking is used methods of regression analysis where explained variables are described as specific tax income tax and as explanatory variables are the economic development of the countries under using GDP. As the second method is used Granger causality directly for individual tax returns.

The issue of forecasting tax revenues deals Danninger (2005), Pindyck and Rubinfeld (1991), Clements and Hendry (1995). The construction of estimated models for Czech Republic deals Bezděk and Stiller (2000). Time series analysis in relation to the taxes deals Leal et al. (2008) and Martens and Rayn (2013). The issue of actual dependence of tax revenues in selected countries deals Bayer (2013, 2014).

In the first part of the paper is briefly summarized the development of the monitored variables for selected countries, the development is compared with developments in the Czech Republic, which is here taken as the assessment base. The second section briefly describes the used statistical methods and data used mainly in terms of limiting their explanatory power. The third part is devoted to a summary of observations and conclusions.

2 Development in observed countries

The following section describes trends in the monitored variables in selected countries. As explained variables are selected major elements of the tax system: PIT, CIT and VAT. These taxes make up a relatively large percentage of tax revenues and are relatively similarly constructed and are relatively harmonized within the EU (VAT is harmonized at most). Selected countries are: Czech Republic (CZ), Poland (P), Slovakia (SK) and Germany (G). The first three countries are selected for post-communist past and relatively the same starting conditions to transform the economy. Germany is here taken as the dominant recipient of exports from these countries and represents a developed country.

2.1 Czech Republic

In the context of this paper is taken Czech Republic as the basis for evaluating developments in other countries, especially for monitoring changes in the economic crisis and subsequent periods. The actual economic development with GDP demonstrates the following Figure 1.

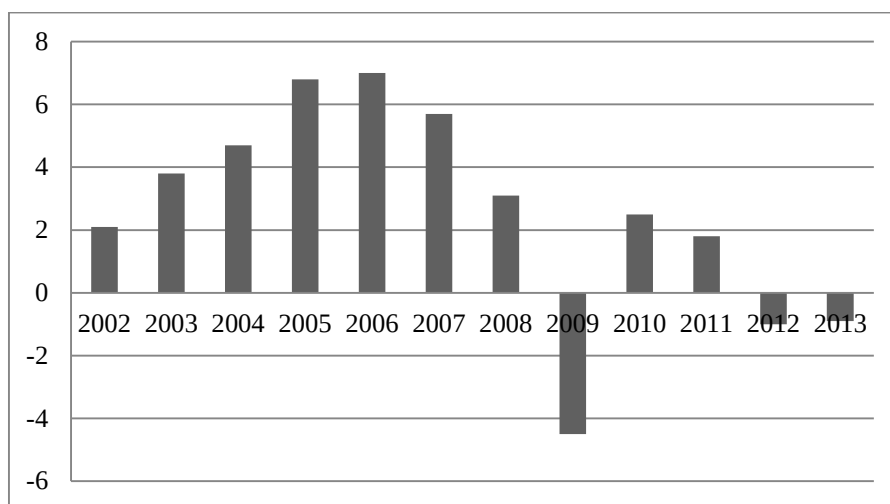


Figure 1. Real GDP growth in the Czech Republic in % (Source: Eurostat, 2014)

The development of GDP is visible impact of the crisis on the Czech Republic in 2008-2009. The economy reached its bottom in 2009, declining by 4.5% from the previous year. The actual economic uncertainty is also reflected in the significant decline between 2012 and 2013. For a small open economy such as the Czech Republic, it is clear that the global recession will suffer greatly because it is focused mainly on exports of engineering products.

Figure 2 describes the development of tax revenues in millions of EUR. When it is seen that from analyzed point of view that the most important component is value added tax and income tax are both relatively equal, except for 2006 and 2007, when the company benefited from higher profits thanks to economic growth, which in taxes occurs with a lag. In particular, income taxes are affected by economic crisis, which documents the decline in receipts in 2009.

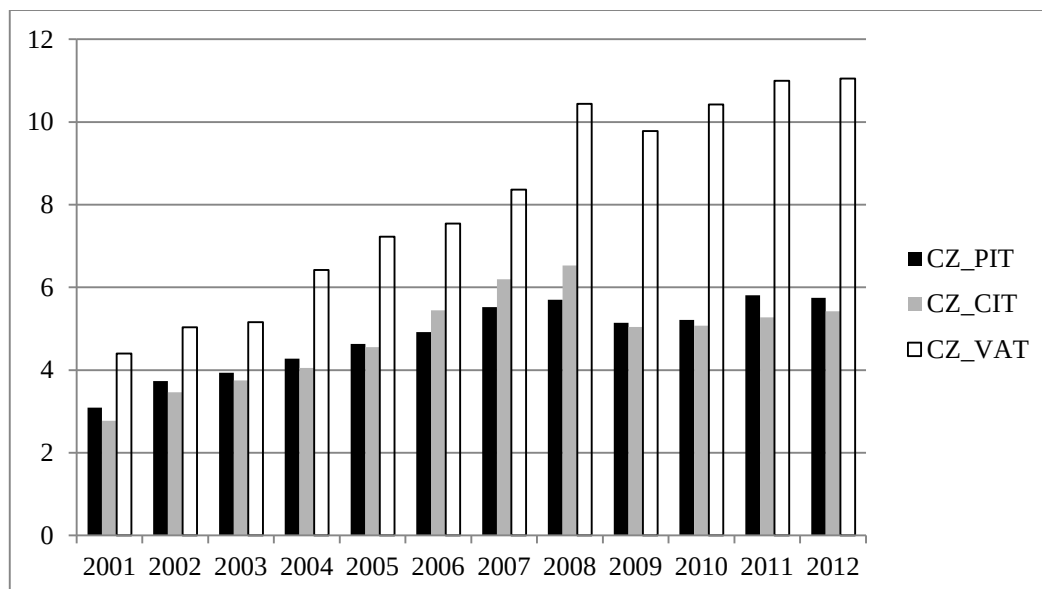


Figure 2. Tax revenues in the Czech Republic in millions of EUR (Source: OECD, 2014)

2.2 Germany

Germany in this paper represents the advanced Western European economies, which is the main trading partner for other selected countries. The actual economic situation is shown in Figure 3.

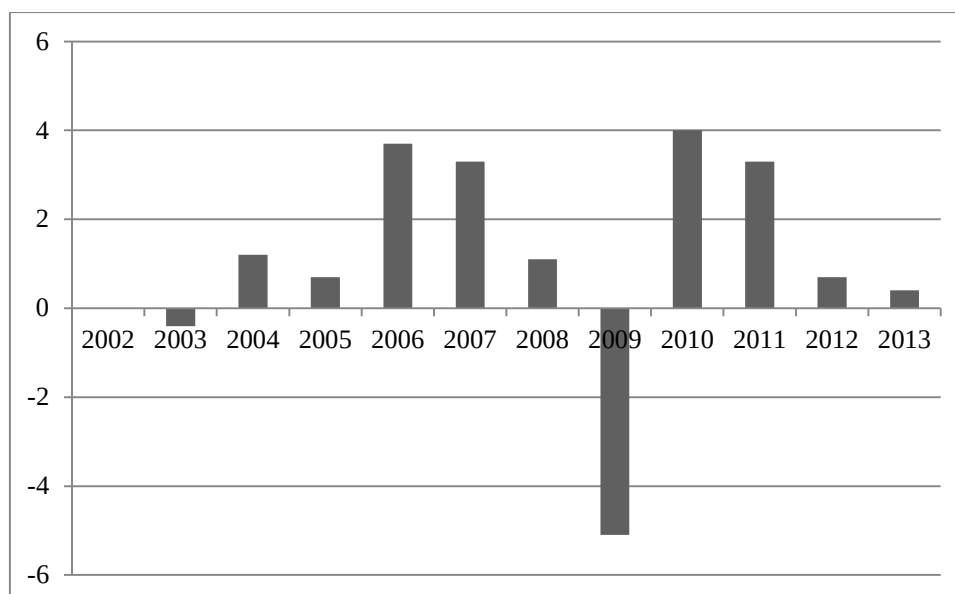


Figure 3. Real GDP growth in Germany in % (Source: Eurostat, 2014)

Compared to the Czech economy can be seen relatively greater stability of the German economy, which shows a relatively high decline in 2009 due to the economic crisis. On the other hand, the ability to recover after the recession is clearly seen from the growth between 2010 and 2011. Germany exhibits greater stability and tax collections, which develops relatively stable, as shown in Figure 4.

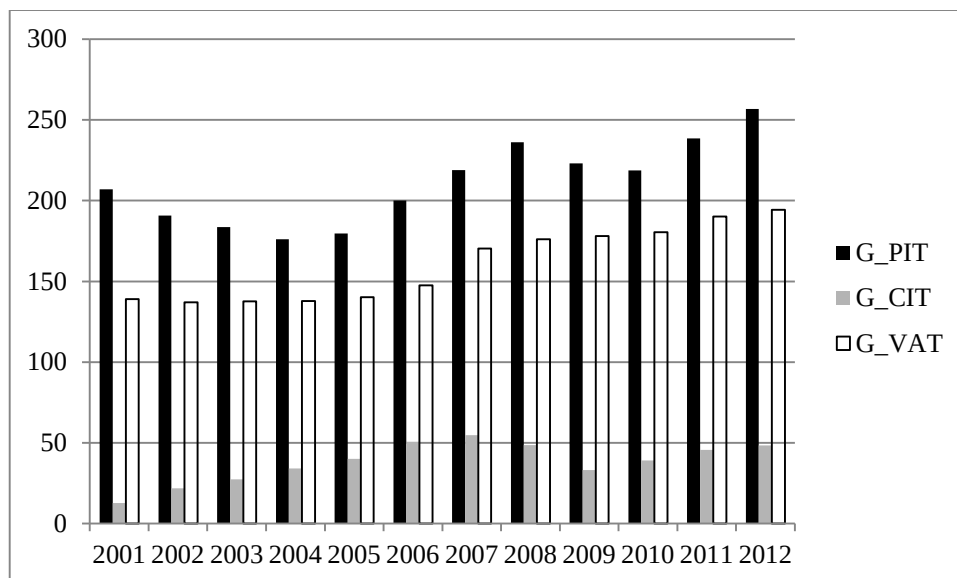


Figure 4. Tax revenues in Germany in millions of EUR (Source: OECD, 2014)

The dominant component of tax revenue is the personal income tax, which shows an increasing cyclical trend, where the lowest selection was in 2004, which is correlated by the development of annual GDP, that indicates delay of tax revenues to GDP development.

In the case of corporate taxation is seen relatively low proportion of the tax under the tax mix, and this duty follows the evolution of GDP. An interesting phenomenon is relatively stable collection of VAT, which is relatively constant. Revenue growth in 2007 can be attributed to political influence rather than economic phenomena.

2.3 Poland

Poland in the selection of countries representing relatively export-oriented agricultural economy, the actual development of the Polish economy is documented in Figure 5.

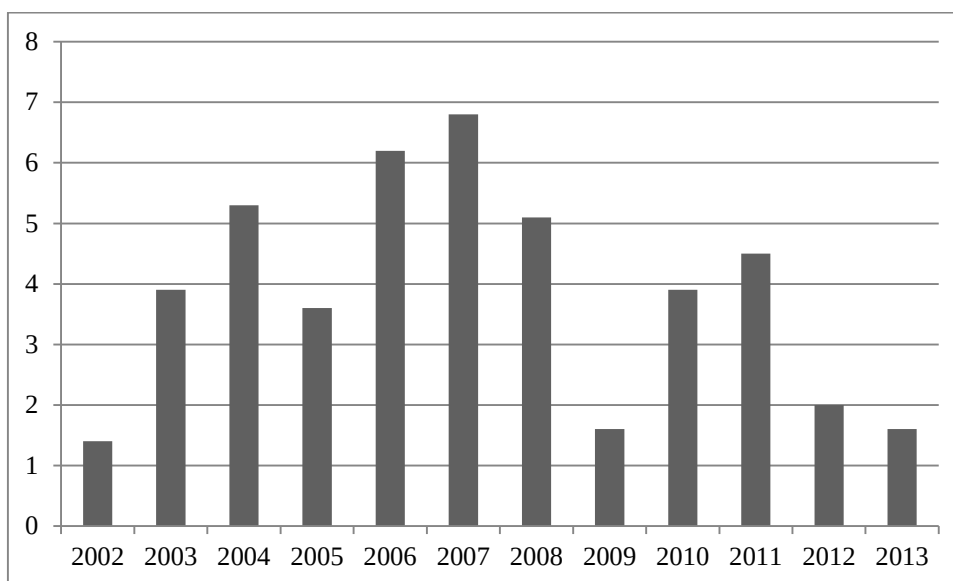


Figure 5. Real GDP growth in Poland in % (Source: Eurostat, 2014)

Polish economy as one of the countries surveyed in 2009 does not show negative GDP growth. This phenomenon may be caused by that Poland is one of the major food exporters to the EU.

In comparison with the Czech Republic demonstrates a higher rate of GDP growth. Again, you can see a fairly significant decline between 2011 and 2013, which may be associated with some global economic uncertainty. The development of tax income in Poland are follows:

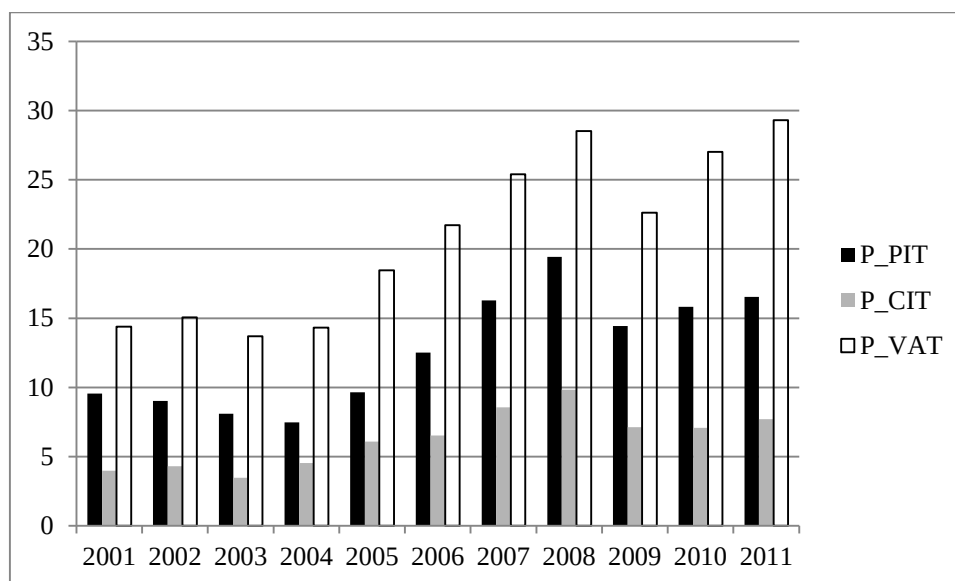


Figure 6. Tax revenues in Poland in millions of EUR (Source: OECD, 2014)

Clearly dominant tax is value added tax, which constitute the majority of income and you can see that this tax is relatively linked to economic development (decline in 2009 is due to the one-year delay). The second most important duty is PIT, which also has a relatively stable development (in the case of a change in the PIT receipts reflected political rather than economic development interventions). What is surprising is the relatively low proportion of corporate taxes in the total tax mix, which follows the economic development by lag.

2.4 Slovakia

Compared to selected countries as Slovakia, while the smallest economy, but on the other hand, it is in our case the only post-communist country that switched to the euro in 2009.

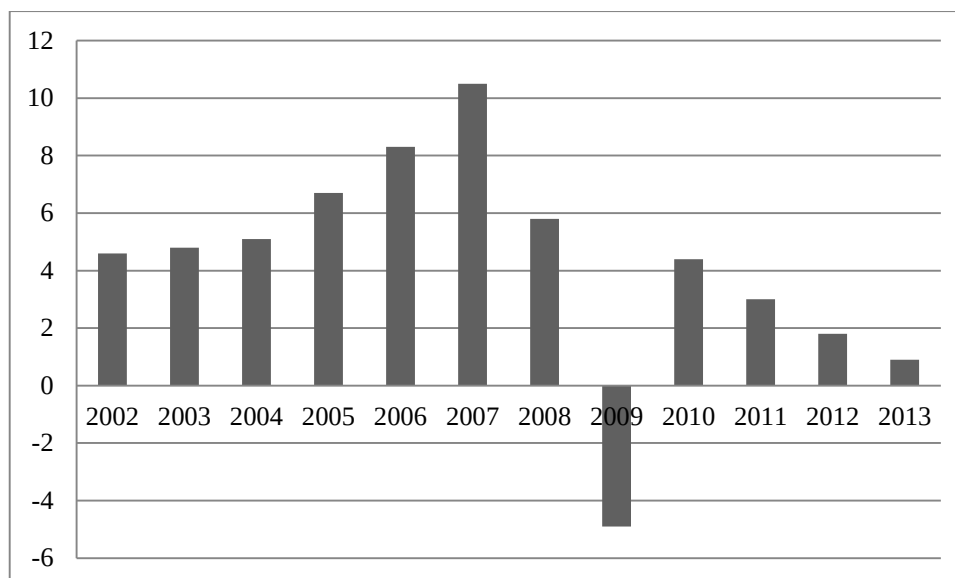


Figure 7. Real GDP growth in Poland in % (Source: Eurostat, 2014)

In terms of the economy, Slovakia developed in 2008, very promising, especially in 2007 surpassed GDP growth of 10%. Following economic crisis affected Slovakia quite hard, especially in conjunction with a transfer to the single currency. In 2010 you can see the relative recovery of the economy, which seems to be only temporary due to the growth rate in the coming years.

Development of tax revenue is relatively similar to the case of the Czech Republic, which is documented in the following figure.

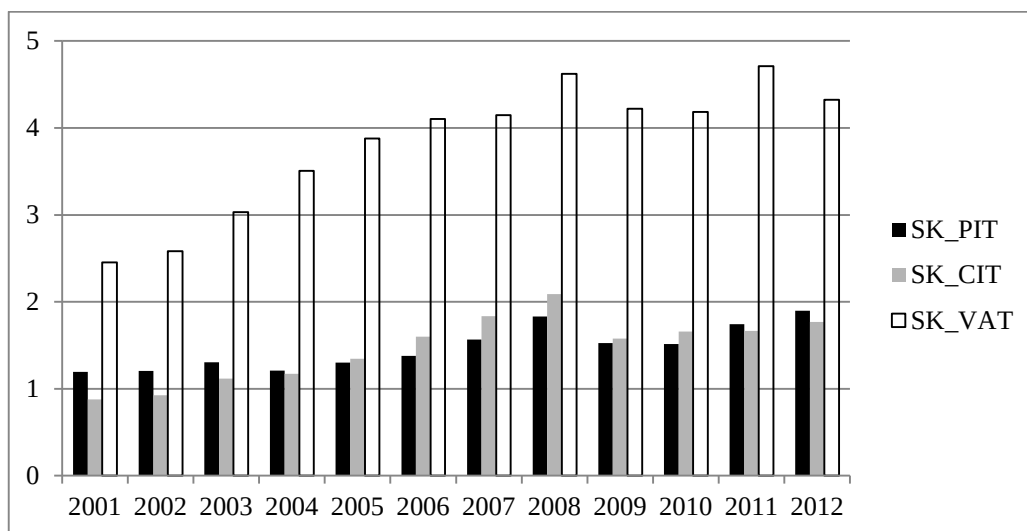


Figure 8. Tax revenues in Slovakia in millions of EUR (Source: OECD, 2014)

A very high proportion of VAT revenue to the tax mix is unambiguous. It can be said that revenues from VAT since 2006 are relatively stable. Due to the proximity to the Czech Republic is an interesting development collection of direct taxes, which are relatively similar, while in the Czech Republic is slightly higher relative collection of PIT.

3 Methodics

The following section is devoted to a description of the methods used and the input data.

3.1 Regression analysis

Regression analysis is an econometric method based on the explanation of observed variables using other variables. Regression analysis can be divided into several different types, but in the case of this article is used the linear multiple regression. The actual regression function can be written as:

$$TR_j = \gamma + \delta * A_j \quad (1)$$

where T_j = tax revenue,
 γ = regression constant,
 δ = regression parameter,
 A_j = independent variable.

An important part of the evaluation of regression analysis is to test the quality of the models. The model is evaluated using the F-test, which evaluates the statistical significance of the model as a whole. The second test is notable t-test, which evaluates the statistical significance of individual partial explanatory variables. For further evaluation of the quality of the regression is used the coefficient of determination R^2 , which indicates how much the variance of monitored variables model is able to describe. In the case of multiple regressions are also sometimes used Aike's information criterions, which are able to evaluate the quality of the individual partial models.

Given that the regression analysis is based on the Gauss-Mark's assumption induces that violation of any of these assumptions to unfavorable distortion. In our case, it may be the autocorrelation, which is caused by addition explanatory variables on itself over time. The presence of autocorrelation causes the F-test results, and the coefficient of determination are the significantly biased. To determine the presence of autocorrelation can be used Durbin-Watson test (DW), which rejects autocorrelation if the resulting value is about 2. However, coverage of the test decreases with the number of observations, so is not exactly ideal for a small number of observations. The presence of autocorrelation can also detect even using graphical analysis of residues.

Another unpleasant things resulting from the breach GM assumptions is multicollinearity that arises dependence of individual explanatory variables with each other and causes distortion of the t-test and partial coefficients of determination. As a simple test for the presence of multicollinearity can be used correlation matrix of individual independent variables.

In the case of this article are the response variable revenues from PIT, CIT and VAT.

3.2 Granger causality

Granger causality examines the causal relationship between econometric time series. Description of Granger causality by Arlt and Arltová (2009) is: if there are a series X cause to a series of Y so X series would be improved range forecasts of Y. In the case of Granger causality should take the notion of causality econometric due, so as not to influence, but rather to predict.

If granger causality exists, it can be one-way or bilateral. In case of Granger causality in tax revenues Bayer (2014) assumes, that the validity of causality in the philosophical sense could be true, because if it is the result of two-way Granger causality in revenues due to the corporate income tax, it can be assumed the possibility of a partial harmonization of tax competition, or frontier business.

3.3 Data

The actual quality of the model is most influenced by the quality of the input data and their possible modifications.

For this contribution was used data from the OECD database for the years 2001 to 2012 (in the case of Poland until 2011). Unfortunately, not all relevant OECD data denominated in one currency, so the nominal exchange rate was used by the ECB, according to which the data is denominated. To describe the development of GDP data from the Eurostat database were used.

The length of observed time series is unfortunately relatively small, which leads to some fairly serious limitations of the model. Short time series reduces the significance of the DW test and sometimes prevents utilization of shorter time series, because within the model as a whole was elected a compromise solution not to reduce the length of the time series despite the possibility of distortion of each model, as it may cause a reduction in the overall statistical coverage.

4 Observation

The following section describes the results of measurements and observations. Regression analyzes summarized in Table 1.

Table 1. Regression analysis result

tax revenue	model	R ²	DW
CZ_PIT	CZ_PIT = + 5.213 - 0.003039*G_GDP + 0.07862*SK_GDP	0.87	1.4
CZ_CIT	CZ_CIT = + 1.196 - 0.03245*P_GDP + 0.241*SK_GDP	0.86	1.1
CZ_VAT	CZ_VAT = + 12.25 - 0.09872*CZ_GDP - 0.005005*G_GDP + 0.3145*SK_GDP	0.97	1.3
G_PIT	G_PIT = + 62.92 + 1.824*SK_GDP	0.85	1.9
G_CIT	G_CIT = - 8.405 + 0.9882*CZ_GDP - 0.06231*G_GDP	0.64	1.4
G_VAT	G_VAT = + 81.9 - 0.03621*G_GDP + 1.969*SK_GDP	0.95	2.4
P_PIT	P_PIT = - 8.791 - 0.0708*P_GDP + 0.6988*SK_GDP	0.92	2.2
P_CIT	P_CIT = - 1.502 - 0.05104*P_GDP + 0.4068*SK_GDP	0.89	2.1
P_VAT	P_VAT = - 14 - 0.07531*P_GDP + 0.8981*SK_GDP	0.90	1.6
SK_PIT	SK_PIT = + 2.571 - 0.02211*CZ_GDP + 0.03741*SK_GDP	0,78	1.7
SK_CIT	SK_CIT = + 0.1527 - 0.01048*P_GDP + 0.0796*SK_GDP	0,89	1.3
SK_VAT	SK_VAT = + 5.494 - 0.003122*G_GDP + 0.06499*SK_GDP	0,88	1.4

Source: own calculation.

In the case of the Czech tax return is clearly evident significance of the development of the German economy, because in all the taxes G_GDP is statistically significant. Another important variable is the development of the Slovak economy. The actual results are not surprising, because in the case of the Czech Republic, it is the largest trading partners. These results may be slightly biased because DW test does not exclude the presence of autocorrelation, but here it is only a distortion of the DW test due to the relatively low number of observations.

The German tax system is relatively autonomous, because the actual development of the German economy is relatively good indicator for CIT and PIT. Furthermore, the German tax revenues affect the development of the Slovak economy, there is a possible explanation, it is a euro-area countries.

Polish tax revenues show a similar dependence as Germany, when the best explanatory variable is the domestic economy and Slovakia. For the Polish economy, which is mainly export-oriented agricultural products, it is relatively expected development. Effect of Slovakia can be explained partly by commercial relations between the two countries.

Slovak tax systems are relatively autonomous, because as a statistically significant variable in all the studied taxation occurs Slovak GDP. It is interesting dependence on tax revenue of each another country. In the case of PIT is possible that it is a tax competition with the Czech Republic, where are relatively large amounts of Slovak citizens working. Reason depending on the Polish CIT may be caused by border trade and VAT dependence on the German economy developments within EMU.

Table 2 describes the utilization of Granger causality, the revenues from PIT, the dependence is measured at various levels of significance (* 10%, ** 5% and *** 1%).

Table 2. Granger causality for PIT

Subset Chi ² (1)	CZ_PIT	G_PIT	P_PIT	SK_PIT
CZ_PIT_1	-	7.2247 [0.0072]***	3.8442 [0.0499]**	4.1270 [0.0422]**
G_PIT_1	1.5063 [0.2197]	-	0.70562 [0.4009]	1.2422 [0.2650]
P_PIT_1	2.1125 [0.1461]	0.42512 [0.5144]	-	0.0032502 [0.9545]
SK_PIT_1	0.0046052 [0.9459]	0.58220 [0.4455]	0.57288 [0.4491]	-

Source: own calculation.

Compared to the results of the regression analysis shows that the development of the Czech tax collection affects the yield of other countries, but this is only a one-sided causality, which is surprising. One explanation may be the number of Czechs working abroad.

In the case of development causality within CIT is an interesting occurrence bilateral causality between Czech, Slavic and Polish tax revenues, which can be explained by tax competition these three countries, as described in Table 3. Another interesting phenomenon is the dependence of Poland to other countries where they may be an effort to attract foreign bodies into their territory. Dependence Slovakia and Germany may again result not only from tax competition, but also from the common currency.

Table 3. Granger causality for CIT

Subset Chi ² (1)	CZ_CIT	G_CIT	P_CIT	SK_CIT
CZ_CIT_1	-	0.36359 [0.5465]	7.3407 [0.0067]***	9.0777 [0.0026]**
G_CIT_1	0.41560 [0.5191]	-	10.081 [0.0015]***	2.9521 [0.0858]*
P_CIT_1	4.0716 [0.0436]**	0.23081 [0.6309]	-	0.79532 [0.3725]
SK_CIT_1	3.5300 [0.0603]*	0.061861 [0.8036]	5.1348 [0.0235]*	-

Source: own calculation.

Table 4 shows the dependence of revenues from VAT, which is somewhat surprising that when it comes to most harmonized tax, so there is relatively little causality.

Table 4. Granger causality for VAT

Subset Chi ² (1)	CZ_VAT	G_VAT	P_VAT	SK_VAT
CZ_VAT_1	-	1.0906 [0.2963]	1.1372 [0.2862]	0.67964 [0.4097]
G_VAT_1	2.6388 [0.1043]	-	1.0694 [0.3011]	2.0317 [0.1541]
P_VAT_1	0.58896 [0.4428]	1.9651 [0.1610]	-	0.25369 [0.6145]
SK_VAT_1	2.7128 [0.0995]*	4.5863 [0.0322]**	3.0839 [0.0791]*	-

Source: own calculation.

Only the Slovak VAT revenue from affects the revenue of other states. In the case of dependence Germany and Slovakia, can again be partially based on the common currency. Furthermore, this dependence is a possible indicator of the overall state of the economy in the monitored area, where the Slovakia is recipient import from Czech and Poland.

5 Conclusion

The results of the regression analysis show a rather interesting development. The development of the Slovak economy can be used as one of the explanatory variables for all monitored tax in all states. In the case of the German tax revenue may be the effect of a common currency and, in the case of other countries on the ongoing convergence of the economy and tax competition, but this result was relatively surprising. In addition, regression analysis shows the relative autonomy of tax revenues to the development of the economies of the other (except the Czech Republic) Czech case is identical to the author's earlier conclusions (Bayer, 2013). This phenomenon is quite surprising, but given the small size of the data could not be used tracking problems by using lagged endogenous variables.

Use of Granger causality revealed many interesting phenomena. Confirmed tax competition among post-communist countries in the yield of CIT. In the case of the Czech revenue from PIT Granger causality has shown that tax competition together with the labour mobility can have a significant impact on the collection of this tax. On the other hand, it is strange that it is only a one-sided causality. The results for the VAT are surprising, because it was not assumed that only Slovakia will influence other countries. Granger causality itself is quite volatile econometric method, since you only need slightly longer time series and the results are completely different (Arlt and Arltová, 2009).

Therefore, it is possible that the results do not completely coincide with the (Bayer, 2014). Another important limitation of the issue is relatively difficult availability of sufficiently long time series of observed variables that can affect the overall quality of the model and results.

6 Acknowledgement

The contribution is processed as an output of a research project “*Public finances in developed countries*” registered by the IGA VŠE under the registration number F1/2/2013.

References

- [1] Arlt, J. and M. Arltová, 2009. *Ekonomické časové řady*. Praha: Professional Publishing.
- [2] Bayer, O., 2014. The dependence of tax revenues of the Czech Republic and Germany: Case of elasticity and Granger causality. In: *XIX. ročník mezinárodní odborné konference Teoretické a praktické aspekty veřejných financí*. Praha: Wolters Kluwer ČR.
- [3] Bayer, O., 2013. The dependence of tax revenues of the Czech Republic in the development of Czech and German macroeconomic indicators. In: *XVIII. ročník mezinárodní odborné konference Teoretické a praktické aspekty veřejných financí*. Praha: Wolters Kluwer ČR.
- [4] Bezděk, V. and V. Stiller, 2000. Modelování hlavních daňových příjmů české rozpočtové soustavy. *Finance a úvěr*, vol. 50, issue 2, pp. 66-77.
- [5] Clements, M. P. and D. F. Hendry, 1995. Macro-economic forecasting and modelling. *The Economic Journal*, vol. 105, issue 431, pp. 1001-1013.
- [6] Danninger, S., 2005. *Revenue Forecasts as Performance Targets*. IMF Working paper No. 14. [online]. [2014-06-20]. Available from: <http://www.imf.org/external/pubs/ft/wp/2005/wp0514.pdf>.
- [7] ECB. *Billateral exchange rates*. [online]. [2014-06-20]. Available from: <http://sdw.ecb.europa.eu/browse.do?node=2018794>.
- [8] EUROSTAT. *Real GDP growth rate*. [online]. [2014-06-20]. Available from: <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tec00115>.
- [9] Leal, T., J. J. Pérez, M. Tujula and J. P. Vidal, 2008. Fiscal Forecasting: Lessons from the Literature and Challenges*. *Fiscal Studies*, vol. 29, issue 3, pp. 347-386.
- [10] Mertens, K. and M. O. Rayn, 2013. A reconciliation of SVAR and narrative estimates of tax multipliers. *Journal of Monetary Economics*. [online]. [2014-06-20]. Available from: http://www.homepages.ucl.ac.uk/~uctpmo0/Reconciliation_revision.pdf.
- [11] OECD. *OECD Revenue statistics*. [online]. [2014-06-20]. Available from: <https://stats.oecd.org/Index.aspx?DataSetCode=REV>.
- [12] Pindyck, R. S. and D. L. Rubinfeld, 1991. *Econometric Models and Economic Forecasts*. New York: McGraw-Hill.

EUROPEAN MODEL OF AGRICULTURE IN THE CONDITIONS OF THE WORLD AGRIBUSINESS

Věra Bečvářová¹, Ivo Zdráhal²

¹*Mendel University in Brno, Faculty of Regional Development and International Studies, trida Generala Píky 2005/7,
613 00 Brno, Czech Republic
email: vera.becvarova@mendelu.cz*

²*Mendel University in Brno, The Faculty of Regional Development and International Studies, trida Generala Píky
2005/7, 613 00 Brno, Czech Republic
email: ivo.zdrahal@mendelu.cz*

Abstract

This article aims to introduce and analyse the principles as well as the economic implications of the change in the competitive environment of the agrarian businesses caused by the globalization. These processes are reflected in the stages of processing and distribution of food and other products of agricultural origin as well as in the pre-production stages. The development of cooperation and division of economic activities in the group of sectors interconnected with agriculture resulted in the formation of commodity/food chains and agribusiness. To succeed in these conditions requires knowledge of the economic context as well as the demand of newly formed agribusiness markets on the global and local scale. It is confirmed that the impact of globalization processes in agribusiness with their positive and negative implications has been significantly gaining grounds also in Europe. So the important aspect here is also how to fulfill the vision of the European model of agriculture and its support associated with the strategy of the Common Agricultural Policy of the European Union and the member states that must react not only to the internal problems of development but also to the changes in the global environment characterized above.

Keywords

Agribusiness, Agricultural Economic, Agricultural Policy, CAP, Czech Republic.

JEL Classification

Q13, Q18.

1 Introduction

Globalization creates new winners and losers who not only create this phenomenon in the certain way, but also apprehend in another way corresponding with their position. The redefining of winners and losers in current social processes is influenced by the globalization to such extent, that concrete conditions and assumptions for success of a given subject are often determined by events and decisions at the other side of the world.

The decisive criterion is the success in the competition not only on the national, but mainly on the international level. To success in this competition, the Czech and European agrarian subjects must be accordingly prepared. That is why the structures of agrarian and food companies are changing in the sense of bigger cohesion, where various forms of integration play the role.

The character of agrarian work is also changing in a way of bigger and bigger industrialization. The aim of these changes is to create the most appropriate assumptions for success in the competition especially on the international level, which can be acquired by the highest efficiency possible, with the smallest unit costs. The effort of companies in this way is also to buy their inputs at the lowest prices. If they do not succeed at home, they start looking abroad.

Because the processing of agrarian products is determined also by the input price of labour, especially the food companies try to enter the places, where the labour price is the lowest. In this sense, in the last twenty years, the labour of Eastern and Central Europe is really attractive because of its low price and high quality. But, in the world scale, the competition on the labour market is growing. Companies start to create work places in cheaper foreign countries. That is beneficial for poorer states, but there are doubts about, what does it mean for rich states

Regarding the fact that international companies are completely free in going all over the world and they are looking for territories with lowest transactional (social) costs (for example costs for negotiating of the price of labour, costs for setting the ecological rules), they go to those states where certain limitations and interventions from the state are the lowest possible ones. The question of so called minimization of the state is more and more actual and especially of the state's social aspect which is significantly increased by the demands for example on the minimal wage or protection of the workers.

So the possibility and opportunity of the primary production business to get involved in as the supplier of the raw material into the commodity chain of agribusiness now becomes the necessary condition for the agrarian prosperity from the point of view of development of their production and income development.

2 Data and methods

The aim of the contribution which presents certain research as a part of the solution of a research task by the Faculty of Regional Development and International Studies of the Mendel University Brno is to characterize and analyse crucial signs of changes caused by the aforementioned processes in the agrarian sector and their consequences for achieving competitiveness of agriculture holdings. In this context deals with specific issue related with transaction cost problem and rising coordination in today's agribusiness. It is also one of the issues Czech and European farmers and policy makers should deal with.

The problem is methodically based on systems analysis using the necessary comparisons and presented on two levels: first, as a generalization of environmental changes agribusiness and its influence on changes in the conditions of segmented markets within the commodity chain, as well as the basis for the formulation of the basic requirements for a new type of knowledge necessary for success agricultural entrepreneurs in the new conditions of the economy of food production.

3 Results and discussion

If we should specify the influences of processes of globalization in the context of making the today's competitive environment of today's agrarian business, then it is obvious that they project as decisive factor of development in inner and outer conditions.

3.1 The business environment of today's agrarian business

Regarding the fact that the development of the world agribusiness (which is among other things also broadening the spectrum of usage of the agrarian products) is more and more significant in the overall conditions of the agriculture development of agriculture in the current model, it becomes the factor which influences the competitive criteria and also the prices of producers in the world markets in the regional context.

Therefore, it can significantly influence the forming of relations in the whole scale of mutually connected markets of food verticals, influence the course and angle of the demand curve in agrarian commodities in the given stage of development. It can also influence the criteria of the raw material offer including the price on the level of all relevant markets of a given commodity verticals. In its results, it determines the conditions of the production of basic raw materials and also the acceptable offer in time and space.

In these coherences, the competition of producers projects on the level of horizontal and vertical relationships.

In the environment when the flow of food and agrarian products is affected by the whole range of companies and organizations of often non-agrarian character, the development of global food nets is accelerating and the influence of the companies which are concerned not only with identification, but also on the influencing of concrete demands of consumers and consumer segments.

As the result, the efficiency of any protection of inner food markets if individual states are declining. The agrarian markets are, despite the current barriers and range of regulation interferences, liberalizing, the integrity of the food market in the world deepens.

The accompanying phenomenon in this process is also the consolidation of businesses in all segments of the food chain enabling the usage of contributions from the extent as well as optimization of the transactional costs in the whole chain. The control and coordination of subsequent actions is deepening, in common relationships the e-commerce, forward contracts etc. come into effect.

The demand, as today determining relationship in the whole sequence of markets in the given vertical (and usually not strictly symmetrically transferred from the final phases to the markets of agrarian commodities) changes also the content and criteria of competition. Its interpretation, influenced by the demonstrations of the market power in the differentiated market structure of verticals, also projects in the proportion and content of individual links of commodity chain on created added value realized in the final product from the agrarian raw materials.

Analyses show that the dependency of producers and also manufacturers of agrarian products in the subsequent (higher) levels of finalization is growing, even with the significant commodity and area differentiation. The conditions are changing from the point of view of the position of agrarians in the commodity vertical (flow of raw material vs. participation on the added value) and also in horizontal relations (cooperation vs. competition on the side of the raw material offer). The offer of agrarian products is formed on the base of mutual interactions of markets in the whole agribusiness chain, while the final demand has the decisive influence on the amount and structure of production and supplies in time and space.

Global processes of forming of the agribusiness have also very important regional dimensions. The generally accepted (and connected with the liberalization tendencies) is the influence of globalization on extending the relevant markets in horizontal coherences. However, other demonstrations and consequences of these processes are less transparent, they project in the influence of other branches and institutions immediately or implicitly following-up the processes of the making of the products of agrarian origin which are more of the vertical character, but in their interactions they project in the whole range of functions and assumptions of the competitive ability of subjects in this economic segment.

Current agrarian business in the demand-determined model is forced to actively react to the conditions of the competitive business not only in the relevant market, but in significantly broader, regional and global context.

However, its decision process is affected by the concrete agrarian policy (on the level of according regions and international groups) by its strategy, system of regulation and other forms of intervention.

3.2 About motives of the coordination in the agribusiness vertical

According to Carlton and Perloff (1994) advantages/motives of using the vertical coordination are: (1) Decline of the transactional expenses. Those are the expenses connected with the ensuring of the coordination of activities of the sellers and buyers. They include the costs connected with planning, modifying and monitoring of economic activities of subjects in the market. Even though these functions are not directly productive, they are necessary for these processes. Transactional costs connected with the coordination in the open market include the costs of the buyer connected with the search for the supplier which offers the goods of demanded quality for acceptable price and expenses of the seller connected with the setting of price and consumer preferences. Buyer and seller can partially reduce these costs by the contract ensuring before the end of the production. Vertical integration can reduce the costs of the contract measurement and trade in the open market, but it can also cause the formation of new costs. The choice of individual methods of vertical coordination depends on the character if performed transaction which can be characterized with measurement of the product specifics (and this product is the subject of transaction, measurement of uncertainty which is also connected with performing of the transaction and height of expenses for the measurement; (2)

ensuring of the key product input – in this case we talk about so called reverse vertical integration. The ensuring of the inputs is important in markets where the price is not the only tool of allocation of goods. The special case of mostly vertical integration is so called quasi-vertical integration. It consists in the fact that the vertical integration is not complete, only partial. The company does not own the previous company as such, but only specific assets which are necessary for preventing of the opportunistic behaviour of the consumer; (3) pursuit of internalization (mostly positive) externalities, for example good name or reputation of the company or try to avoid the regulations or restrictions from the state, because transactions are not usually subjects to control; (4) increase of the market power of a given subject. In this case, the supplier of the input either buys a manufacturing company which produces his input (forward vertical integration) or the manufacturer reinforces his position in the market by buying the company of its supplier (reverse vertical integration). Both these forms contribute to the increase/making of the monopoly profit by enabling the price discrimination, eliminate the competition and limit the access into the branch; (5) the reason for vertical integration can also be the try to eliminate (or limit) the consequences of effect of the market power of other company in the frame of reciprocal precautions.

Grega (2004) sums the motives for application of the vertical coordination into two basic groups. First is the motive of efficiency, when the reason is mainly the try to minimize the costs and increase of the productivity of production inputs. It is important to differentiate, if the motive of efficiency is derived from pursuits to save the production costs of transaction costs. The saving of the production expenses can be acquired on the technological level as same as on the market or storage level. However, it does not always mean that the integration increases the efficiency, in the cases of existence of advantages arising from the big content of production, the specialization may seem as more appropriate. The technological connection or possibility of savings of production costs can contribute to the integration; the productive efficiency is mostly the complementing fact for reasoning of the integration. The decisive factors are usually the transaction costs. The second one is the motive of the market power. While the motive of efficiency is the undoubted factor when deciding about the amount and form of vertical coordination, the motive of enforcing the market power does not always have to be that obvious. From the economic theory arises that the monopoly powers created as the result of the horizontal company expansion and not the vertical integration which is motivated by the efficiency. The claim that the monopoly profits can be acquired without vertical integration will be valid only with the very restrictive assumptions about the substitutability of the production inputs. The company with the monopoly position in the certain phase of product vertical could get all monopoly profit only in the case of non-changing proportions of production methods for the given technology. In opposition to that, in the case of variable proportions of production inputs the vertical integration can contribute to the making of the market power and thus to the increase of the content on the final consumer price.

Among other motives for vertical integration which can be more or less connected with already mentioned categories, are for example the effort to simplify the observability in the frame of food chains in the interest of ensuring the food safety, effort to get bigger market share and keeping the control, effort of better satisfaction of the consumer's needs and possibility to react in the right way to the market signals.

On the other hand, the company which wants to integrate vertically must solve increased cost related to (1) the delivery of claim that inputs/distributions of outputs, (2) with law aspects of vertical connection of companies and of course (3) costs for management of a newly established integrated subject.

3.3 The consequences of globalization in the socio-economic sphere

Globalization creates new winners and losers who not only create this phenomenon in the certain way, but also apprehend in another way corresponding with their position. The redefining of winners and losers in current social processes is influenced by the globalization to such extent, that concrete

conditions and assumptions for success of a given subject are often determined by events and decisions at the other side of the world.

Global demonstrations of globalization in the frame of commodity production vertical (whether it represents as agribusiness or company fusion) have its positive and negative aspects.

Among positive aspects of globalization are listed especially these ones:

- the access to the newest technologies,
- the access to the instruments for financing the productions,
- the access to the market,
- solution of employment (where the international company set its production),
- increase of the competition as a driving engine of economic development,
- the access to cheaper products.

All these questions which the globalization helps to solve are in the Central and Eastern Europe considered as very important and their unfulfilment as alarming. That is why it is no surprise that globalization is often very well accepted here, because the positive aspects which it brings, project especially in the social sphere, for example by increasing the standard of living. However, this increase involves only those states which became winners in the process of globalization.

It is also possible, from the point of view of companies which are not included in these processes, to identify some of the negative aspects, especially:

- the loss of sovereignty of economic subjects and their obedience to international companies without any possibility of influencing them in any way,
- the impossibility of the access to the market (if the economic subject is not somehow connected with economically powerful and influential international company),
- the difficulty to get advantageous refinancing of production or a new technology,
- the growing unemployment rate and lowering of the standard of living (were the international company cancelled its production and moved it somewhere else),
- the devastation of home producers whose goods are replaced by the imported one and that can lead to the changes of food habits of the home population.

These negative aspects project in the social sphere, especially by stagnation or breakdown of the standard of living of those people who are among losers in the process of globalization.

For current phase is typical further focus of the attention on the food safety and quality, the emphasis is put more on the ethical questions, the customers become more critical when buying food, EU organs and national governments develop regulative precautions for preventing the safety crises in the sector, small business chains adopt sophisticated system of managing the quality, new norms and standards. The mutual relationships between the actors on the different levels of commodity verticals become more complicated and more complicated types of coordination relationships appear, not only between those who are involved in the flow of product and information, but also between the agrarian producers themselves. For current agrarian-food verticals is typical the hybrid structure form of management, enabling to use the contributions of centralized coordination and control, as well as the impulses and information advantages of decentralized business. The members of these nets share the important sources and they rely on the relation contacts more than on the strictly formulated written documents and they create formalized defence mechanism. The typical aspect is also the competition between member of hybrid organization and this organization form with other forms. There is constant net transformation.

According to Ménard and Valceschini (2006), research results in this area show the significant development of these types of organizations in commodity verticals of agribusiness, where the broadening of these structures is connected with the evolution of the offer side of the market, as well as with the evolution of the demand side and redefinition of control of quality with bigger emphasis on the control of the processes and products.

We can generally draw from three ways of organization of these networks:

- the net is organized around the dominant leader. It is often a big manufacturer who coordinates and monitors extended net of suppliers, sometimes even in different countries with different institutions and regulation precautions. To manage these contracts and achieve the regularity and quality of supplies and keep the adequate impulses for the supplier, the leading company tends to maintain the stable net of producers,
- net grouping unifying the big amount of members with the same rights and obligations to guarantee quality, reduce the contract hazard and prevent the dead-head; there are mechanisms construed between the law independent partners (authority which can act also as the third part) monitoring individual members and solving eventual disputes or aberrances,
- other type of net organization is new types of production collectives. Organization of these types of hybrids has traditionally suffered from vaguely defined ownership rights which led to many conflicts. Newer forms enable the solution of this problem in various forms like for example possibilities of limiting the membership, enabling the transfer of property share and more flexible diversification of product lines.

The development of such types of nets also happens especially in the EU countries. According to Ménard (2006) research, many causal connections project here and they motivate this development, especially:

- adjusting of agrarian policy in the last fifty years when there was an effort to restructuralize the sector, but with maintaining of the family; massive concentration in the processing and especially in distribution and such diffused ownership cause problems in coordination as one of the key assumptions,
- when the concentration of processors and distributors happened and their demands for quality have increased, there were created the nets of small agrarian producers reinforcing their negotiating position,
- the opinions of the European consumers, who significantly increased their demand on the quality certification and, new quality regulations and growing pressure of customers on the certification of quality and definition of the origin of products led the producers to better coordination of their,
- dependence on the previous development (path dependence), when significant amount of small agrarian producers still persist in the frame of the EU, as a consequence of historical development, geographic factors and traditional rules regulating the land holding and its transition,
- the incorporation of effort to transform the traditional agrarian structures into modern agrarian production in programs of agrarian policy since the 1960s and 1970s. The crating of nets enabled these transformational processes to a certain extent. In many states (for example France and Italy) these nets were incorporated and officially supported,
- growing involvement into the international business and corresponding necessity to coordinate with producers or distributors in other states or regions including the negotiations with state organs on many levels.

Another factor which has significantly projected in the conditions or the agrarian development and position of agrarian producers in the European region, was the realization of economic reforms at the beginning of the 1990s in the states of Middle and Eastern Europe, and consequently also the preparation and accession of these states into the EU.

4 Conclusion

The role of agriculture in 21st century in general and especially in the European model is specifically defined in the complex of relationships of all relevant sectors in both horizontal and vertical linkages.

The key to being able to compete in the predominance of supply on the European market for agricultural products (in the situation of continued market liberalization) becomes necessarily reduce

unit costs of production, ie the intensity of production. At the same time it is changing the nature and structure of demand for raw material. Therefore, it is necessary not only to efficiently produce at high technological level, but also constantly monitor and predict the evolution, structure and demand conditions in the markets for agricultural products and be able to decide which changes are long-term in nature and they then react to any change in the structure of production.

However, the decision process of agriculture producer is affected by the concrete agrarian policy (on the level of according regions and international groups) by its strategy, system of regulation and other forms of intervention. In the conditions of the EU, the influence of this policy was and still is quite visible, but the possibility to take part in commodity food chain on a position of supplier of the material is in current conditions as necessary requirement of agricultural company's prosperity in perspective of its production dimension and utilization of income potential from regional perspective.

5 Acknowledgement

The paper has been worked out within the topical concept of the 04 Research project MENDELUM MSM 6215648904 The Czech economy in the processes of integration and globalization and development of the agrarian sector and services under new conditions of the EU integrated market.

References

- [1] Carlton, D. V. and J. M. Perloff, 1994. *Modern Industrial Organization*. New York: Prentice Hall.
- [2] Grega, L., 2004. *Teoreticko-metodologické aspekty posuzování konkurenceschopnosti zemědělství*. Brno: MZLU Brno.
- [3] Ménard, C., 2006. Hybrid organization of production and distribution. *Revista de Analisis Economico*, vol. 21, issue 2, pp. 25-41. [online]. [2012-07-08]. Available from: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1239162.
- [4] Ménard, C. and E. Valceschini, 2006. New institutions for governing the agri-food industry. *European Review of Agricultural Economics*, vol. 32, issue 3, pp. 421–440. [online]. [2013-02-10]. Available from: <http://erae.oxfordjournals.org/content/32/3/421.abstract>.

DOES ECONOMIC FREEDOM DEPEND ON DEGREE OF GLOBALIZATION?

Pavla Bednářová

*Technical University of Liberec, Faculty of Economics, Studentska 1402/2, 461 17, Liberec 1, Czech Republic
email:pavla.bednarova@tul.cz*

Abstract

This paper focuses on the relationship between globalization and institutional quality in developed and developing countries. Globalization is often understood as increasing global economic integration, global forms of governance and globally inter-linked social and environmental development. One of the important factors of institutional quality is economic freedom. The aim of this article is to map, analyze and evaluate, by means of statistical analysis, the mutual relationships between three dimensions of globalization (economic, social and political) and economic freedom. The first part provides the methodology of measuring overall globalization using the composite Index of Globalization KOF 2014. The index of economic freedom according to The Heritage Foundation is used to measure the economic freedom and the second part of the paper deals with it. The third part compares indices and scores together and analyzes them. It is possible to conclude from the results that a statistically significant link between economic globalization and economic freedom was demonstrated for both groups of countries. Improvement in economic freedom is tied with the social dimension of globalization only in developing countries; it is not significantly correlated in developed market economies. The link between political globalization and economic freedom was not statistically demonstrated for both groups of countries neither.

Keywords

Globalization, Institutional Quality, Economic Freedom, Developed Market Economies, Developing Countries.

JEL Classification

O17, O57, F69, P16.

1 Introduction

Globalization is a multidimensional process that affects many aspects of economic, social and political development. One of these aspects is institutional quality. Institutions are considered to be a key building block in building a competitive and innovation-based economy; they form legal and regulatory foundations for effective competition in business, trade and innovations. Institutional quality can be understood as an evaluation of how monitored institutions function. This evaluation is carried out by various international organizations through a series of indices and indicators that focus on partial aspects, in addition, these international organizations create a ranking of individual countries. Most of the empirical literature revolves around economic globalization, measured by either openness to trade or inflows of foreign direct investments (Bjørnskov, 2006). Rodrik et al. (2004) argue that the effects of openness on economic performance come about only through its positive influence on the quality of institutions, e.g., the rule of law. Among the critiques, Dollar and Kraay (2003) find that in the very long run, the effects of institutions and economic integration can probably not be separated while in the shorter run the effects of the latter dominate.

The main hypothesis of this paper is that higher globalization positively influences the quality of institutions in terms in economic freedom.

At the beginning, the methodology of measuring globalization and economic freedom will be introduced. The substance of the article consists of verifying and testing the strength of mutual relationships between three dimensions of globalization (economic, social and political) and the chosen index of economic freedom. The paper will show the results for a selected sample of developing and developed economies (the developed market economies are the 35 countries with the highest values of the composite Human Development Index), analyze it, and confirm or reject the hypothesis about the significant linkages of globalization and economic freedom.

2 KOF Globalization Index¹

Globalization is often understood as increasing global forms of governance, global economic and politic relations, and globally inter-linked social and environmental developments. It is possible to expand this word with other meanings, such as the growing integration of markets, the threat to national sovereignty by trans-national actors, the transformation of national economies, and the spread of inequalities or disparities, how emerging markets have increased the degree of integration into world finance etc. Axel Dreher, an architect of a composite index of globalization (KOF) basing its work upon the following statement regarding the meaning of globalization: “it is a process that erodes national boundaries, integrates national economies, cultures, technologies and governance, and produces complex relations of mutual interdependence” (Dreher, 2006, p. 1092).

The composite Index of Globalization KOF 2011 is used to measure overall globalization. The **KOF Globalization Index** produced by the KOF Swiss Economic Institute was first published in 2002 (Dreher, 2006). Globalization is conceptualized as the process of creating networks among actors at multi-continental distances, mediated through a variety of flows including people, information and ideas, capital and goods. The KOF globalization index is based on the variables used in ATK/FP (A. T. Kearny / Foreign Policy Globalization Index), but it covers a far larger number of countries and has a longer time span. The overall index covers the economic, social, and political dimensions of globalization:

- economic globalization includes the long distance flows of goods, capital, and services and has two dimensions: 1) actual economic flows and 2) international trade and investment restrictions.
- social globalization has been classified by the KOF index into three categories: 1) personal contacts, 2) information flows, and 3) cultural proximity.
- political globalization is characterized by the diffusion of government policies.

In constructing the indices of globalization, each variable is transformed to an index ranging from zero to the value of ten. Higher values denote a higher degree of globalization. The year 2000 is used as the base year. When higher values of the original variable indicate higher globalization, the following formula (1) is used for transformation:

$$\frac{V_i - V_{\min}}{V_{\max} - V_{\min}} \times 10 \quad (1)$$

Conversely, when higher values indicate less globalization, the formula (2) is:

$$\frac{V_{\max} - V_i}{V_{\max} - V_{\min}} \times 10 \quad (2)$$

An updated version of the original 2002 index was introduced in 2007 as so-called 2007 KOF Index of Globalization. The 2007 KOF Index of Globalization features a number of methodological improvements compared to the original version. Each of the variables is transformed to an index on a scale from 1 to 100. Higher values again denote higher levels of globalization. The data are transformed according to the percentiles of the original distribution. Table 1 indicates updated weights of variables in the 2011 KOF Index of Globalization. It shows that economic and social integration obtained approximately equal weights (36%, 38%), while political globalization has a substantially smaller weight in the overall index (26%).

¹ Due to the fact that this article is part of a comprehensive research on the relationship between representatives of institutional quality and globalization measured by the KOF Index of globalization, this sub-chapter is just updated versions of the same chapters in other articles, which were created on the basis of that research.

Among the first to use the KOF Index for empirical analysis was Ekman (2003), who finds a positive, non-linear correlation between the KOF Index and population health measured by life expectancy at birth. In later studies, Sameti (2004) has found that globalization increased the size of governments, while Tsai (2007) has shown that globalization increased human welfare. Bjørnskov (2006) analyses the three dimensions of the KOF Index and shows that economic and social globalization affect economic freedom, while political globalization does not. Dreher, Gassebner and Siemers (2010) empirically analyzed whether globalization and economic liberalization affect governments' respect for human rights. Laboutková, Bednářová, Kocourek (2011, 2012, and 2013) have proved in empirical studies that the overall index of globalization KOF and Inequality-adjusted Human Development Index IHDI are very tightly connected although there is a much more significant relationship between economic globalization and IHDI than the social and political dimension of globalization and human development. Also Kocourek (2013) quantifies the beneficial social impacts of the pace of globalization in the developing countries. Last published papers have shown a statistically significant association between globalization and governance matters for both groups of countries with one exception: the quality of governance in developed and developing countries is not significantly correlated with the country's political dimension of globalization and a statistically significant association between globalization and the ease of doing business index only in the case of the developing countries (Laboutková and Bednářová, 2013a,b).

Table 1. Weights of variables in the 2011 KOF index of globalization

Indices and Variables		Weight (%)
Economic globalization		36
(I)	Actual flows	50
	Trade (% of GDP)	22
	Foreign direct investment, stock (% of GDP)	29
	Portfolio investment (% of GDP)	22
	Income payments to foreign nationals (% of GDP)	27
(II)	Restrictions	50
	Hidden import barriers	22
	Mean tariff rate	28
	Taxes on international trade (% of current revenue)	27
	Capital account restrictions	23
Social globalization		38
(I)	Data on personal contact	33
	Telephone traffic	26
	Transfers (% of GDP)	2
	International tourism	26
	Foreign population (% of total population)	20
(II)	International letters (per capita)	25
	Data of information flows	36
	Internet users (per 1 000 people)	36
	Television (per 1 000 people)	37
	Trade in newspapers (% of GDP)	28
(III)	Data of cultural proximity	31
	Number of McDonald's Restaurants (per capita)	43
	Number of IKEA (per capita)	44
	Trade in books (% of GDP)	13
Political globalization		26
Embassies in country		25
Membership in international organizations		28
Participation in U. N. Security Council missions		22
International Treaties		25

Source: Dreher et al. (2010, p. 48).

3 Indices of Economic Freedom

The quality of the institutional environment clarifies specific aspects of economic freedom; these evaluate the role of the state in an economy. According to the Heritage Foundation, economic freedom is the fundamental right of every human to control his or her own labour and property. In an economically free society, individuals are free to work, produce, consume, and invest in any way they please. In economically free societies, governments allow labour, capital and goods to move freely, and refrain from coercion or constraint of liberty beyond the extent necessary to protect and maintain liberty itself (Heritage Foundation, 2014). The indices of economic freedom represent a complex and well defined methodology, which is built on a wide range of sub-indicators using hard and soft data.

The methodology is used for a wider international comparison. The index of economic freedom has been monitored and processed by three organizations: the Freedom House, Fraser Institute and Heritage Foundation. Indices of economic freedom help to demonstrate weaknesses and some limitations of soft data. Although all three organizations publish the index of economic freedom, they do not assess the same phenomena and the indices cannot be compared. For the purpose of this article the Heritage Foundation index of economic freedom was selected for the two main reasons:

- 1) it focuses mainly on the evaluation of economic factors whereas the Freedom House is primarily engaged in political rights and civil liberties and the Frazer Institute index provides information mainly on the political system, the functioning of the legal environment, law enforcement, and the market environment in a given country.
- 2) Bjørnskov (2006) have already empirically confirmed the relationship between economic and social components of KOF and index of economic freedom measured by Fraser Institute.

The Heritage Foundation index is based on conservative values; it focuses mainly on the evaluation of economic factors with an emphasis on the development of a market economy and minimizing governmental intervention. The **Index of Economic Freedom** has been issued annually since 1995. The last issued report *The 2014 Index of Economic Freedom* (Miller, Holmes and Feulner, 2012) summarizes the development of 186 countries in six regions. The index consists of ten components that are rated on a scale from 0 (minimum) to 100 (maximum): **business freedom, trade freedom, fiscal freedom, government size, monetary freedom, investment freedom, financial freedom, property rights, freedom from corruption, labour freedom.**

The total evaluation is reached by a non-weighted average of these ten areas. Based on this evaluation, countries are divided into a free country (80 points), almost free (70-80 points), moderately free (60-70 points), not free (50-60 points) and the oppressed (under 50 points). The global average economic freedom score has reached 60.3 in 2014, the highest ever recorded in the 20-year history of the *Index*. World economic freedom has improved by 0.7 point from last year and 2.7 points from 1995. Much of the momentum toward greater freedom that had been lost during the past five years has been regained.

The *Index* results, when compared with data measuring economic and social conditions in countries around the world, provide strong evidence of the free-market system's success in promoting prosperity, human development, and democratic governance. Key features of that system, including private property rights, openness, and flexibility, are virtually uncontested as desirable features of economic policy (Miller, Kim and Holmes, 2014)

Table 2 compares regional average scores to the global average in 2014. For the purposes of this research, countries were divided by HDI into two groups: developed and emerging. Table 2 is more complex and offers six world regions: the developed market economies, in addition to South Korea, Israel, Chile, Argentina and Austria belong to the regions of North America and Europe. The table shows that up to two indicators - *fiscal freedom and government spending* - all countries covered by

the HDI between developed countries achieve better results in various areas of economic freedom than the global average².

Table 2. Comparing regional average scores to the global average (2014)

	North America	Europe	Middle East/ North Africa	South and Central America/ Caribbean	Asia- Pacific	Sub- Saharan Africa	Global Average
Overall	74.1	67.1	61.5	59.7	58.5	54.6	60.3
Property Rights	73.3	61.0	43.3	40.0	38.2	30.5	43.1
Freedom from Corruption	63.2	55.5	41.7	38.3	35.8	29.3	40.3
Fiscal Freedom	75.5	71.8	88.3	78.3	80.2	75.3	77.3
Government Spending	58.1	41.7	66.1	69.6	66.6	73.5	62.7
Business Freedom	85.1	78.1	67.6	61.6	65.5	51.8	64.9
Labor Freedom	79.5	62.1	62.6	59.4	67.2	55.9	61.6
Monetary Freedom	76.4	77.2	72.5	74.5	72.6	72.7	74.2
Trade Freedom	86.9	86.3	72.4	73.7	71.3	67.9	74.8
Investment Freedom	73.3	74.0	51.3	54.3	44.3	49.3	55.5
Financial Freedom	70.0	63.0	48.7	47.2	43.3	40.2	48.9

Source: Miller et al. (2014).

4 Methods

For the analysis only countries with complete available data files were chosen. The countries were divided into two groups. The developed market economies consist of 35 countries (out of 47 developed member states of the United Nations – e.g. Japan, Malta, or New Zealand are missing), in the group of developing countries, there are 75 countries (out of 140 developing member states of the United Nations – e.g. South Africa, Congo, or Saudi Arabia are missing).

For the analysis, data from both the 2013 Heritage Foundation EFI and 2014 KOF Globalization Index (and of their components) were used. To determine the links between the data, the methods of regression analysis was used. For easier comparison and interpretation of the examined relationships, correlation analysis was chosen as a suitable tool, although it assumes the linear character of the regression between the variables. This simplification makes it possible to compare not only the statistical power (robustness) of the identified links (statistically significant at the customary 5% significance level), but also the intensity with which globalization is connected to competitiveness, or the slope of the linear relationship between the individual pairs of variables expressed by the regression coefficient β_1 in the standard equation for linear regression (3):

$$\hat{y} = \beta_0 + \beta_1 \cdot x \quad (3)$$

where x is the value of the independent variable (in this case the value of KOF, EG_KOF, SG_KOF and PG_KOF) and represents the model (estimated) value of the dependent variable (EFI). Both regression coefficients (β_0 and β_1) can be estimated using the following equations (4) and (5):

$$\beta_0 = \frac{\sum y_i \cdot \sum x_i^2 - \sum x_i \cdot \sum y_i \cdot x_i}{n \cdot \sum x_i^2 - (\sum x_i)^2} \quad (4)$$

$$\beta_1 = \frac{n \cdot \sum y_i \cdot x_i - \sum x_i \cdot \sum y_i}{n \cdot \sum x_i^2 - (\sum x_i)^2} \quad (5)$$

² The gray color in the table 2 highlights the results that are above or equal to global average.

where y stands for the real value of the dependent variable (EFI) and n is the number of statistical units (35 developed market economies, 75 developing countries). Individual correlation models will be evaluated based on their individual indices of correlation R_{XY} and also according to the calculated p -value of significance, according to which the robustness of a particular model is evaluated at the 5% significance level.

For the following calculations and statistical analysis, the statistical software Stat graphics Centurion XVI was used. The thick black straight line represents the estimated correlation model, the narrow dark gray bordered strip shows the confidence interval for the mean forecast; the broader light gray bounded strip is the confidence interval for predictions. It can be assumed that the average values for a given level of KOF index will fluctuate with a 95% confidence within the dark gray limits, expected specific values of the dependent variable will then, with the same probability, fall into the area between the light gray borders.

5 Results

All the correlation analyses for the developed market economies and developing countries have been summarized in Table 3. Correlations which are statistically insignificant at the 5% level of significance are colored gray in the table.

Table 3. Correlation characteristic

	EFI (developing countries)	EFI (developed market economies)
KOF	$\alpha = 0,0000$	$\alpha = 0,0179$
	$R_{XY} = 0,5308$	$R_{XY} = 0,3979$
	$\beta_1 = 0,3938$	$\beta_1 = 0,3851$
EG_KOF	$\alpha = 0,0000$	$\alpha = 0,0032$
	$R_{XY} = 0,5416$	$R_{XY} = 0,4842$
	$\beta_1 = 0,2934$	$\beta_1 = 0,3393$
SG_KOF	$\alpha = 0,0000$	$\alpha = 0,0543$
	$R_{XY} = 0,4964$	$R_{XY} = 0,3281$
	$\beta_1 = 0,2426$	$\beta_1 = 0,2326$
PG_KOF	$\alpha = 0,6112$	$\alpha = 0,8262$
	$R_{XY} = -0,0596$	$R_{XY} = -0,0385$
	$\beta_1 = -0,0303$	$\beta_1 = -0,0274$

Source: own construction.

A statistically significant correlation has been identified between globalization and corruption in the sample of both the developing and developed market economies; the linkage between KOF and EFI is characterized by a coefficient of correlation R_{XY} in the value of 0.5308 or 0.3979 respectively, with the slope of the regression line $\beta_1 = 0.3938$ or 0.381 respectively (see Figure 1 or Figure 2). Economic freedom shows a statistically significant relationship with two of the three components of globalization (EG_KOF; SG_KOF) in the case of developing countries. In the case of developed economies a statistically significant link was demonstrated only in the economic component of globalization.

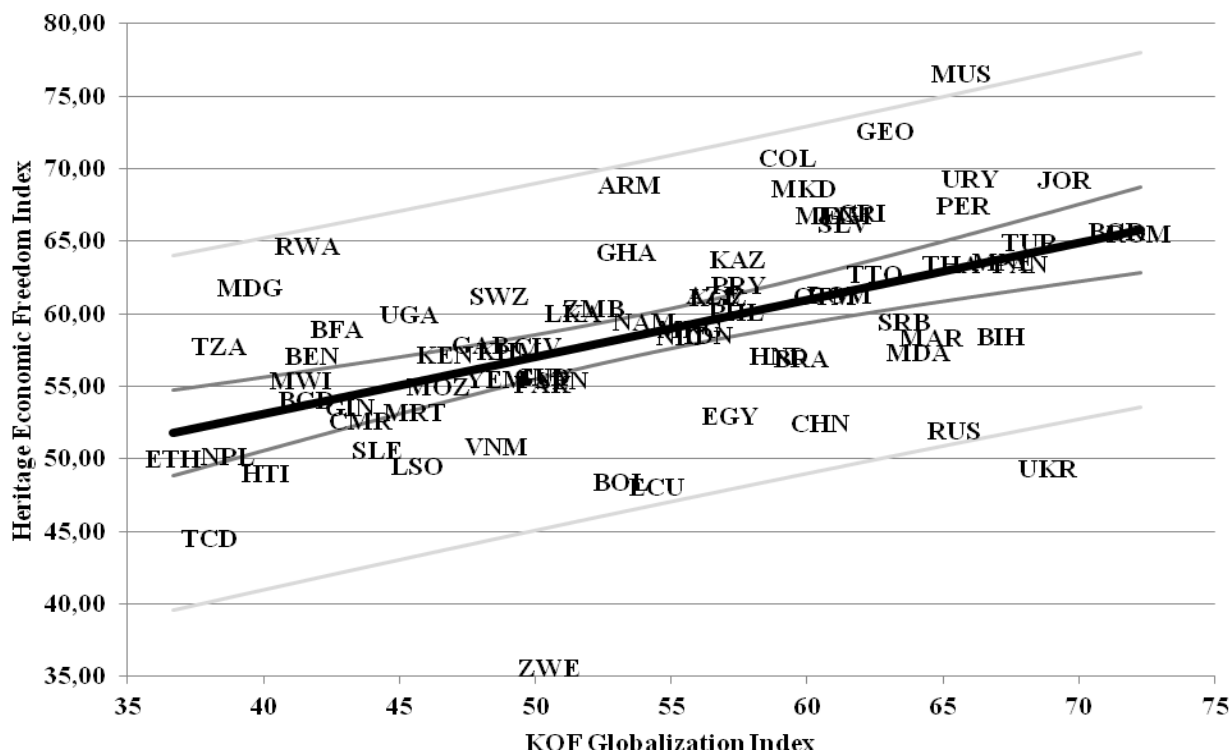


Figure 1. Relationship between KOF and EFI in developing countries (Source: own construction)

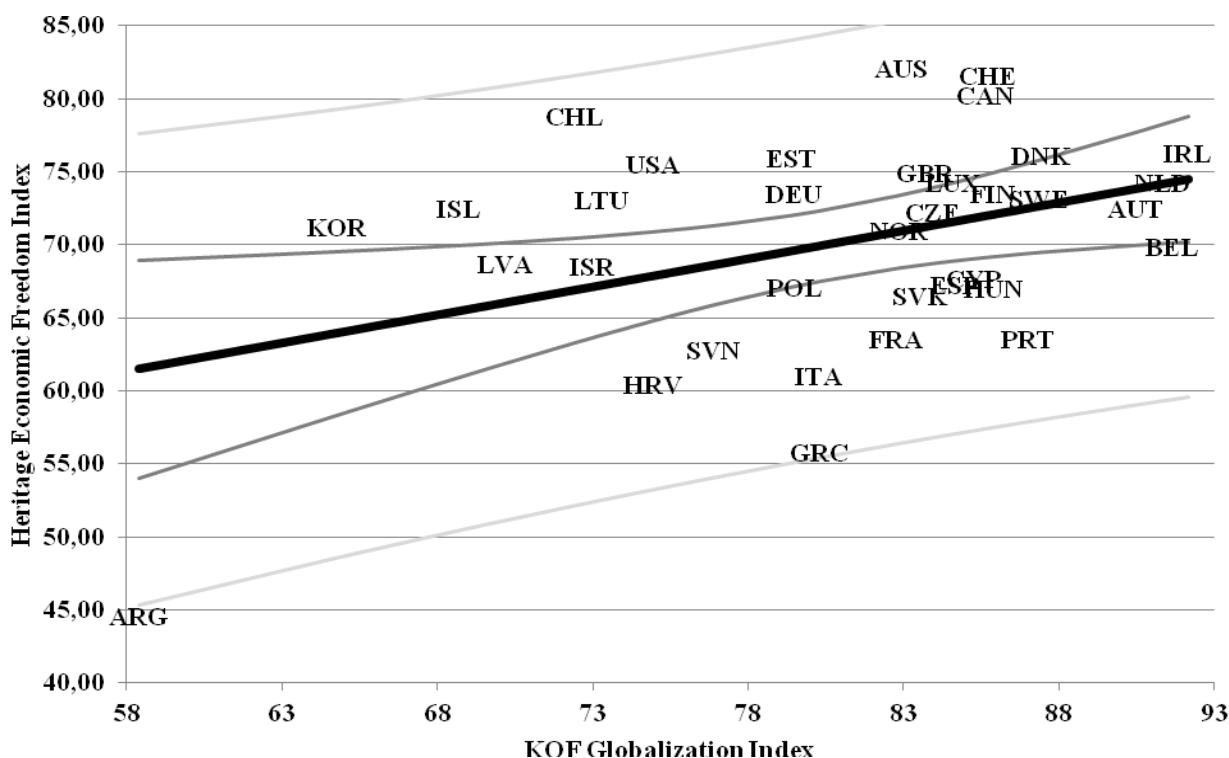


Figure 2. Relationship between KOF and EFI in developed market economies (Source: own construction)

This, however, does not represent an intensive relationship; a correlation index R_{XY} of 53.08% indicates a moderately correlated relationship between the indices in developing countries and an even weaker correlated relationship between the indices in developed countries – a correlation index

R_{XY} is 39.79%. The slope of the model line $\beta_1 = 0.3938$ indicates that a KOF increase of one point brings an increase in average EFI by 0.3938 points in the developing countries and $\beta_1 = 0.3393$ indicates that a KOF increase of one point brings an increase in average EFI by 0.3393 points in the developed market economies. The results of a statistical relationship of the individual components of the index of globalization and index of economic freedom vary for the two groups of countries. In developing countries a statistically significant link was demonstrated both in the economic and social elements of globalization, but not in the political, whereas in developed countries only the relationship between economic globalization and economic freedom has been statistically proved.

The degree of political involvement on the world political scene has no effect on the economic freedom inside the economy. This may be a result of the fact that the coefficient of political globalization index is merely the quantification of embassies, International Treaties, and participations in multinational organizations does not reflect the activity of these countries and their position or influence in these organizations.

The most powerful relationship is between EG_KOF and EFI in developing countries: a correlation index R_{XY} is 54.16% (see Figure 3), in developed countries the correlation index R_{XY} is 48.42% (see Figure 4).

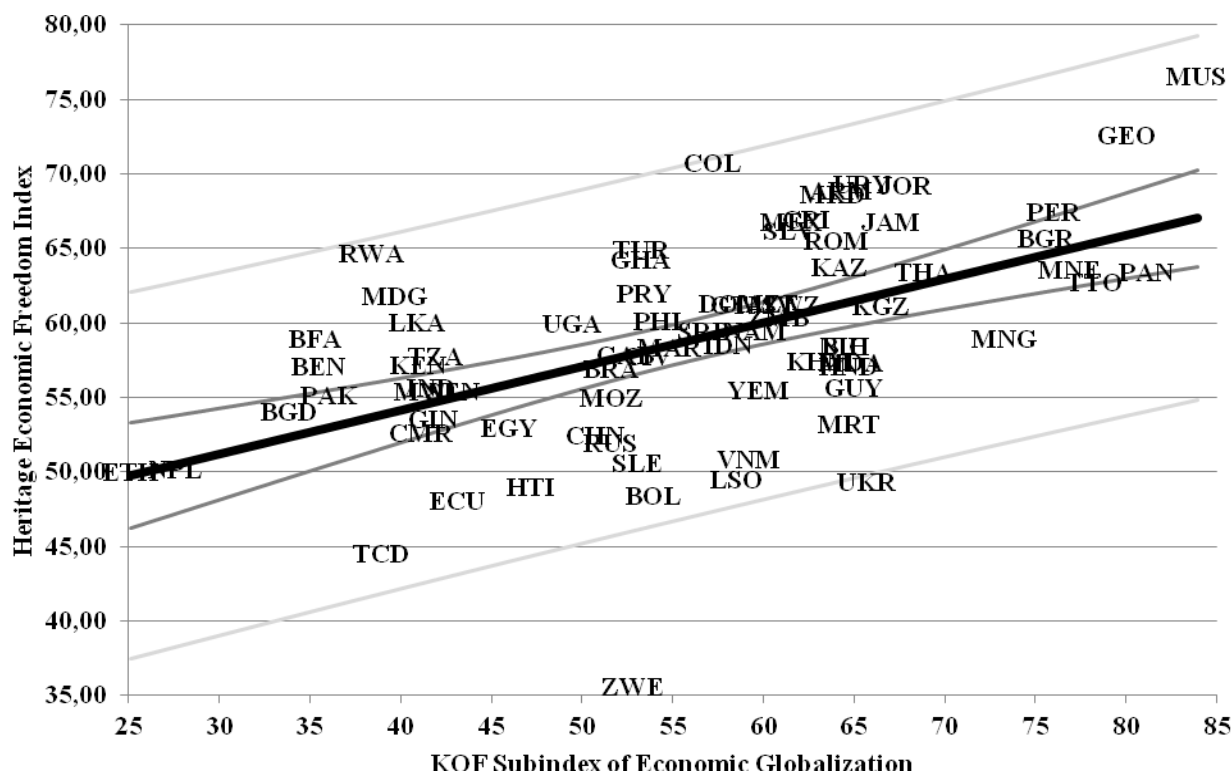


Figure 3. Relationship between EG_KOF and EFI in developing countries (Source: own construction)

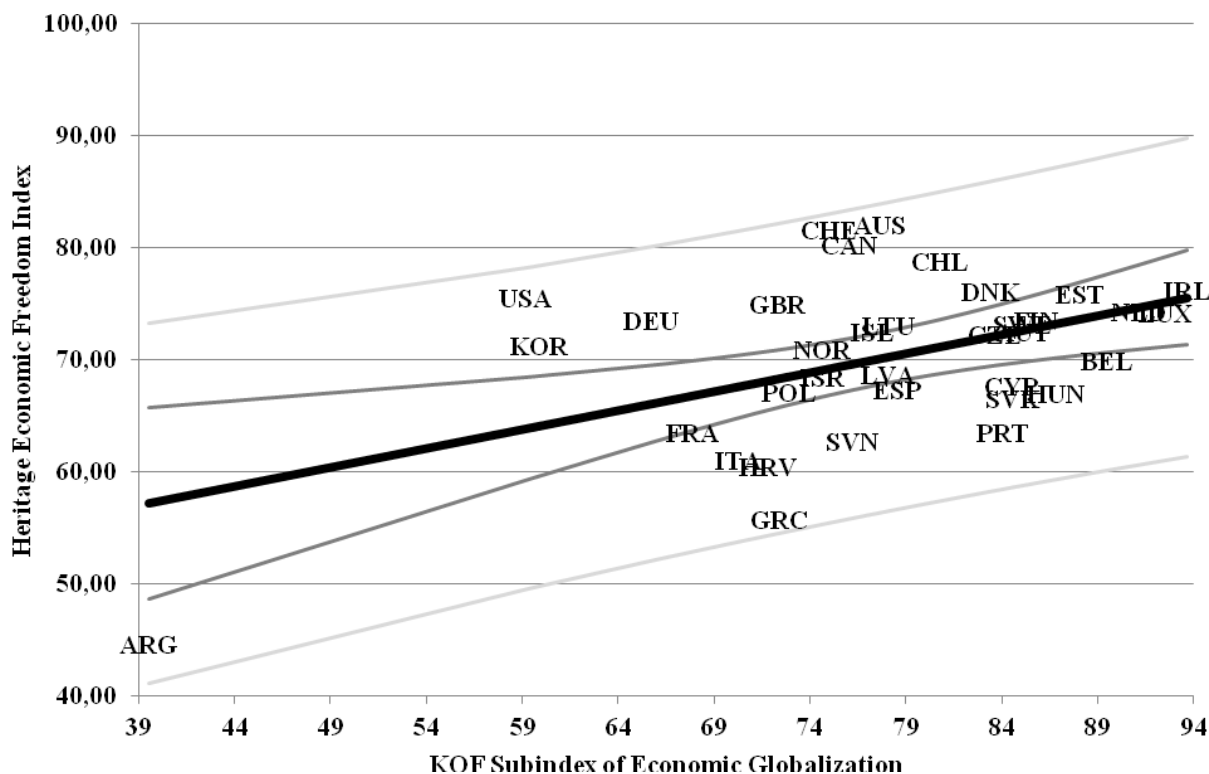


Figure 4. Relationship between EG_KOF and EFI in developed market economies (Source: own construction)

6 Conclusion

The main hypothesis of this paper was that a higher level of globalization increases the economic freedom in developing and developed economies.

It is possible to conclude from the results that a statistically significant association between globalization and economic freedom was demonstrated for both groups of countries. There are moderately correlated relationships between the economic dimensions of globalization and economic freedom: in the case of developing countries it has been shown that an increase in the economic sub-indicator of globalization by one point will produce slightly better results in improving the level of economic freedom in emerging markets. The economic freedom in developed market economies is the result of highlighting the democratic approach to the development in those countries, their political environment, rather than a direct reflection of the globalization process.

This conclusion is probably valid particularly for the case of the links between social globalization and economic freedom in developed countries - this relationship has been shown as statistically insignificant. Another reason might be the nature of the selected index of economic freedom: it focuses mainly on the evaluation of economic factors with an emphasis on the development of a market economy and minimizing governmental intervention. Thus the social globalization and economic freedom are already on such a high level that the improvement in SG_KOF (more in detail than fundamental) does not influence the economic factors of economic freedom. In contrast, in developing countries, it is possible to see a statistically significant association between social globalization and economic freedom. In most cases emerging countries achieve worse results in various areas of economic freedom than the global average, and so, any improvement in the parameters in the sub-index of social globalization such as data or information flows or the number of internet users might contribute to greater economic freedom.

The economic freedom is not significantly correlated with the political dimension of globalization. This may be a result of the fact that political globalization does not reflect the qualitative aspects of the involvement of countries in political globalization.

7 Acknowledgement

This article was created as a research project at the Faculty of Economics TUL years 2014-2016 funded from institutional support for long-term strategic development research organizations.

References

- [1] ATK/FP 2011. Globalization Index. A. T. Kearney Consulting Group and Foreign Policy Magazine (2002 and following years). [online]. [2014-05-27]. Available from: <http://www.foreignpolicy.com/>.
- [2] Bednářová, P., Š. Laboutková and A. Kocourek, 2011. On the relationship between globalization and human development. In A. Kocourek, ed. *Proceedings of the 10th International Conference Liberec Economic Forum 2011*. Liberec: Technical University of Liberec, pp. 61-71.
- [3] Bjørnskov, C., 2006. *Globalization and Economic Freedom: New Evidence*. The 2nd Danish International Economics Workshop, University of Aarhus.
- [4] Dollar, D. and A. Kraay, 2003. Institutions, Trade and Growth. *Journal of Monetary Economics*, vol. 50, pp. 133 – 162.
- [5] Dreher, A., 2006. Does Globalization Affect Growth? Evidence from a new Index of Globalization. *Applied Economics*, vol. 10, issue 38, pp. 1091-1110.
- [6] Dreher, A., N. Gaston and P. Martens, 2010. *Measuring Globalization – Gauging Its Consequences*. 2nd Ed. New York: Springer Science+Business Media.
- [7] Ekman, B., 2003. *Globalization and Health: An Empirical Analysis Using Panel Data*. Lund: Lund University.
- [8] Kocourek, A., 2013. Analysis of Social-Economic Impacts of the Process of Globalization in the Developing World. In A. Kocourek, ed. *Proceedings of the 11th International Conference Liberec Economic Forum 2013*. Liberec: Technical University of Liberec, pp. 297–306.
- [9] Kocourek, A., P. Bednářová and Š. Laboutková, 2013. Vazby lidského rozvoje na ekonomickou, sociální a politickou dimenzi globalizace. *E+M Economics and Management*, vol. 16, issue 2, pp. 10-21.
- [10] *KOF Index of Globalization*. [online] Zurich: Eidgenössische Technische Hochschule Zürich, 2014. [online]. [2014-06-10]. Available from: http://www.globalization.kof.ethz.ch/static/rawdata/globalization_2014b_long.xls.
- [11] Laboutková, Š., P. Bednářová and A. Kocourek, 2012. An Analytic Study on Internal Linkages Between Human Development and Globalization. *Journal of Modern Accounting and Auditing*, vol. 8, issue 12, pp. 1823 – 1837.

- [12] Laboutková, Š. and P. Bednářová, 2013a. Quality of Governance in Developing and Developed Countries and Its Relation to the Dimensions of Globalization. In: *Proceedings of the 11th International Economic Policy in the European Union Member Countries*. Ostrava: Vysoká škola báňská – Technická univerzita v Ostravě.
- [13] Laboutková, Š. and P. Bednářová, 2013b. Easy of Doing Business and Globalization – Linkages between Both in Developed Market Economies and Developing Countries. In: *The 7th International Days of Statistics and Economics*. Praha: Vysoká škola ekonomická v Praze, pp. 88 – 98.
- [14] Miller, T., A. B. Kim and K. R. Holmes, 2014. *Index of Economic Freedom*, Washington, D.C.: The Heritage Foundation and Dow Jones & Company, Inc., [online]. [2014-06-20]. Available from: <http://www.heritage.org/index/download>.
- [15] Rodrik, D., A. Subramanian and F. Trebbi, 2004. Institutions rule, the primacy of institutions over geography and integration in economic development. *Journal of Economic Growth*, vol. 9, pp. 131–165.
- [16] Sameti, M., 2004. *Globalization and Size of Government Economic Activities*. Isfahan: Isfahan University.
- [17] Tsai, M. C., 2007. Does Globalization Affect Human Well-Being? *Social Indicators Research*, vol. 81, issue 1, pp. 103-126.

THE COMPETITIVENESS OF THE CZECH REPUBLIC WITHIN THE EUROPEAN UNION FROM LABOUR COSTS PERSPECTIVE

Vlastimil Beran¹, Jiří Franek²

¹*Research Institute for Labour and Social Affairs, Palackého nám. 4, 128 00 Praha 2, Czech Republic
email: vlastimil.beran@vupsv.cz*

²*VSB – Technical University of Ostrava, Faculty of Economics, Sokolská třída 33, 701 21 Ostrava, Czech Republic
email: jiri.franek@vsb.cz*

Abstract

Governments are continuously trying to attract foreign direct investment and new ventures. One of their typical approaches to increase the country's competitiveness is through lower labour costs. This is the reason why the labour costs are the main focus in the last two decades. There has been a development of different methodologies and this in turn led to fragmentation of this area. The need for cost monitoring in the Czech Republic has led to introduction of a new methodology by Research Institute for Labour and Social Affairs (RILSA). This methodology is the main focus of this paper. Its main set of indicators consists of the labour costs, the relative proportion of labour to overall costs and the unit labour costs. The Czech Republic is compared to the European Union member countries and the United States in the period from 2007 to 2012. The European Union represents a partnership of countries that are on the contrary in the economic sense natural competitors. In this situation it is valuable to know the position of the Czech Republic against its direct competitors and its development.

Keywords

Competitiveness, Cost Labour, Productivity, Unit Cost Labour.

JEL Classification

E2, J3.

1 Introduction

Labour costs are among the most important macroeconomic information that is an incremental part of analysis and prognostic about the country economic performance. It influences generally observed indicators of unemployment (employment), inflation, GDP, Foreign Direct Investments (FDI), standards of living, etc.

There are two extremes that can be perceived as a country's competitiveness guaranteed by labour productive factor. The first option can be represented by cheap labour force. The second option is then represented by highly skilful labour force (human capital), that has no relevant competitiveness. The term competitiveness of particular economies is defined according to modern approach by Beneš (2006) that is based on Porter (1998).

The Czech Republic can be generally put in a category of a country with cheap labour force that is relatively highly educated. But if the potential of this skilful labour force will not be appropriately exploited, it can lead to stagnation or even decrease of competitiveness. Since 1990s more countries have emerged that could supply cheaper labour force, for example China and India that have incomparable labour resources to the Czech Republic. These countries have literally pulled off large part of the world's production that is based on cheap labour force. So it is not by chance that China is marked as the “world's factory”.

Fassmann (1997) claimed that for a developing economy competitive strategy based on cheap labour in the long term is not sustainable. If the amount of the cheap labour reaches certain level it works as a barrier for further growth. This is the reason to change in certain time towards higher level of economic growth.

Despite the relatively cheap labour force the Czech Republic is still qualitatively further then developing countries. That's why it is not advantageous for the Czech Republic to rely only on the cheap labour force in this even more globalized world.

The real competition of the Czech Republic is represented by other countries and foremost by member states of the EU (Kadeřábková, 2003). In these countries the demands for the labour force as a production factor are different than in developing ones. The Czech Republic has to hold its ground against them. This paper is focused primarily on these competitive countries in the period before and after the world's economic crisis (2007-2012).

In the Czech Republic cheap labour represents a barrier in the process of replacement of the labour by the capital (as a productive factor). This phenomenon of technical and technological backwardness leads to decrease of country's competitiveness. It has created a cycle that paradoxically cannot be diminished by fiscal policy of cutting the labour costs.

An assessment of labour costs represents an option how to investigate the nature of the Czech Republic competitiveness from the labour cost point of view within the EU area. In other words how is the Czech Republic standing against other member states (Baštýř et al., 2004).

The dataset necessary for calculation of labour costs are gathered from the Eurostat, Organisation for Economic Co-operation and Development, U.S. Department of Commerce and Bureau of Economic Analysis.

2 Labour costs

Monitoring of labour costs in the Czech Republic has started not long ago and thus before they were more or less overlooked. The Czech Statistical Office has started to monitor then in the 1994. The methodology was based on Eurostat and corrected with regard to Czech legislative¹. Based on this data an in-depth analysis has not been performed yet.

The systematic monitoring of labour costs in the Czech Republic can be dated back to the period of EU membership establishment. In the 2004 the vice-premier initiative had brought together a meeting of members of the Government office of the Czech Republic, the Czech-Moravian Confederation of Trade Unions, the Confederation of Industry of the Czech Republic, CERGE, Research Institute for Labour and Social Affairs and other social policy partners. The result of this meeting was establishment of the committee for monitoring of labour costs. In the 2005 after the 52nd plenary meeting of the Council for economic and social agreement a decision has been made to start a systematic labour costs and labour's effectiveness monitoring. The labour costs monitoring has been delegated to the RILSA with particular focus on labour costs, labour taxation and unit labour costs. The RILSA has developed its own methodology (a pilot) in the 2010 and in the 2012 it was certified. It includes monitoring of labour costs, labour as productive factor (proportion of labour on overall costs and unit labour costs) in the international comparison using national price levels and purchase power parity as well.

The major problem in monitoring of labour costs is the time delay of two years because of the statistical survey postponement. Thus the actual data in particular year are only gross estimates. Their value of evidence in most cases equals zero.

2.1 Labour costs

From the macroeconomic perspective the labour costs represent a set of costs related to productive factor function and reproduction of economic and social relations (Kozelský and Vlach, 2011).

The labour costs consists of wages and salaries (including natural wages added to the income), wage compensations for non-working hours, social benefits, social costs and expenditures (legal and voluntary), personnel costs and taxes, and subsidies related to employment. In this paper the costs are calculated in Euros, monthly for a sole employee.

¹ In the Czech Republic the wage as a compensation for labour is not a part of the social benefit as it is in the original EU member states. The social status of an employee and a family is not a problem of the employers but it is a problem of the government and its public budgets.

In different times other scholars have calculated labour costs using different methodology. This is due to different available statistic and because there was a time when there was no statistic in this area at all. In the International Labour Office in Geneva Ark and Monnikhof (2000) had created a study, where the labour costs were calculated based on industry (based on estimates). In the conditions of the Czech Republic a similar study was published by Holý (2002). Andersen (2003) has developed its own study for the EU based on labour cost as a whole. Hájek and Mihuka (2009) have studied the labour costs with regard to economic growth.

Table 1. Monthly labour costs in the EU in EUR, national price level

	The level in EUR						increase in % 2012/2007	Annual increase in % 2012/2007
	2007	2008	2009	2010	2011	2012		
Belgium	4 113.2	4 296.2	4 414.7	4 562.5	4 767.4	4 879.4	18.6	3.5
Czech Republic	1 174.4	1 380.0	1 348.2	1 479.1	1 601.2	1 575.2	34.1	6.0
Denmark	4 355.4	4 507.8	4 610.8	4 728.8	4 812.6	4 895.5	12.4	2.4
Germany	3 270.6	3 305.5	3 295.9	3 375.8	3 468.6	3 549.7	8.5	1.7
Estonia	1 099.5	1 279.9	1 174.9	1 190.0	1 266.6	1 322.3	20.3	3.8
Ireland	-	3 853.3	3 785.8	3 713.7	3 685.6	3 695.1	-	-
Greece	-	2 713.6	2 846.0	2 856.0	2 752.3	2 542.5	-	-
Spain	2 329.5	2 688.5	2 852.9	2 887.7	2 976.8	2 950.5	26.7	4.8
France	-	3 879.2	3 876.3	4 020.7	4 149.6	4 227.5	-	-
Italy	-	3 786.3	3 851.9	3 957.5	4 016.5	4 029.6	-	-
Luxembourg	4 265.2	4 071.3	4 349.7	4 485.4	4 520.0	4 652.7	9.1	1.8
Hungary	1 218.4	1 288.1	1 162.9	1 142.8	1 202.0	1 180.3	-3.1	-0.6
Netherlands	-	3 456.8	3 506.1	3 579.1	3 639.3	3 717.2	-	-
Austria	3 865.2	3 896.2	3 891.6	3 906.0	4 098.7	4 318.3	11.7	2.2
Poland	1 157.6	1 247.0	1 071.4	1 164.0	1 179.0	1 189.6	2.8	0.5
Portugal	1 826.5	1 800.5	1 831.2	1 827.0	1 796.6	1 634.6	-10.5	-2.2
Slovenia	1 752.9	1 934.4	2 004.0	2 037.9	2 047.5	2 036.3	16.2	3.0
Slovakia	917.9	1 090.7	1 127.3	1 159.5	1 195.3	1 234.6	34.5	6.1
Finland	3 882.6	3 812.1	3 931.6	4 024.8	4 130.0	4 291.5	10.5	2.0
Sweden	4 165.0	4 258.1	3 955.5	4 578.0	4 962.5	5 295.3	27.1	4.9
United Kingdom	3 266.0	2 889.4	2 586.6	2 753.3	2 721.9	2 977.2	-8.8	-1.8

Source: Eurostat b, OECD.Stat Extracts, own calculation.

The Czech Republic has one of the lowest labour costs within the EU. Countries with lower costs are represented only by Estonia, Hungary, Poland and Slovakia. However, it has been said that in the Czech Republic the payments for social insurance are very high compared to other European countries. Thus it leads to threaten the Czech economy competitiveness because it makes the labour force more expensive and uncompetitive. It is obvious from the table Table 1 that this claim is misguided and makes no sense. Such arguments cannot be based solely on one component of the wage. This is possible only with regard to the total labour costs that are being considered in price calculations and are influencing the competitiveness of services and products.

Labour costs in the Czech Republic have experienced a very dynamic development. They reached one of the highest growths in the investigated countries. Despite this quick rise the businesses have enough time to adapt towards other EU member states, where are the labour costs much higher. The real approximation will not happen in the short run. This hypothesis is supported further by intervention by the Czech National Bank that has recently devalued the Czech crown. The Czech Republic is aiming towards the "manufacturing site" of the EU. There is no important pressure on technological change because the cheap labour is still paying off. The domestic labour costs reach a lower level than the domestic productivity.

2.2 Proportion of labour on costs

The indicator of proportion of labour on costs is important foremost for economies that traditionally report low cost of labour where the Czech Republic also belongs. This indicator is not monitored by other supranational institutions.

It can be calculated as follows:

$$PLC = \frac{\frac{NC}{emp_x}}{\frac{C}{emp_y}} \cdot 100 = \frac{\frac{NC}{emp_x}}{\frac{IC}{emp_y} + \frac{NC}{emp_x} + \frac{A}{emp_y}} \cdot 100 = \frac{\frac{NC}{emp_x}}{\frac{IC}{emp_y} + \frac{NC}{emp_x} + \frac{GOS - NOS}{emp_y}} \cdot 100, \quad (1)$$

where the *PLC* is the proportion of labour on overall costs. *NC* are nominal employee compensations, *emp_x* is number of employees, *C* are costs in common prices, *IC* represents the inter-consumption in common prices, *emp_y* represents the total employment (employees), *A* is amortization in common prices, *GOS* is gross operational surplus in common prices and *NOS* is net operational surplus. Results are shown of the Figure 1.

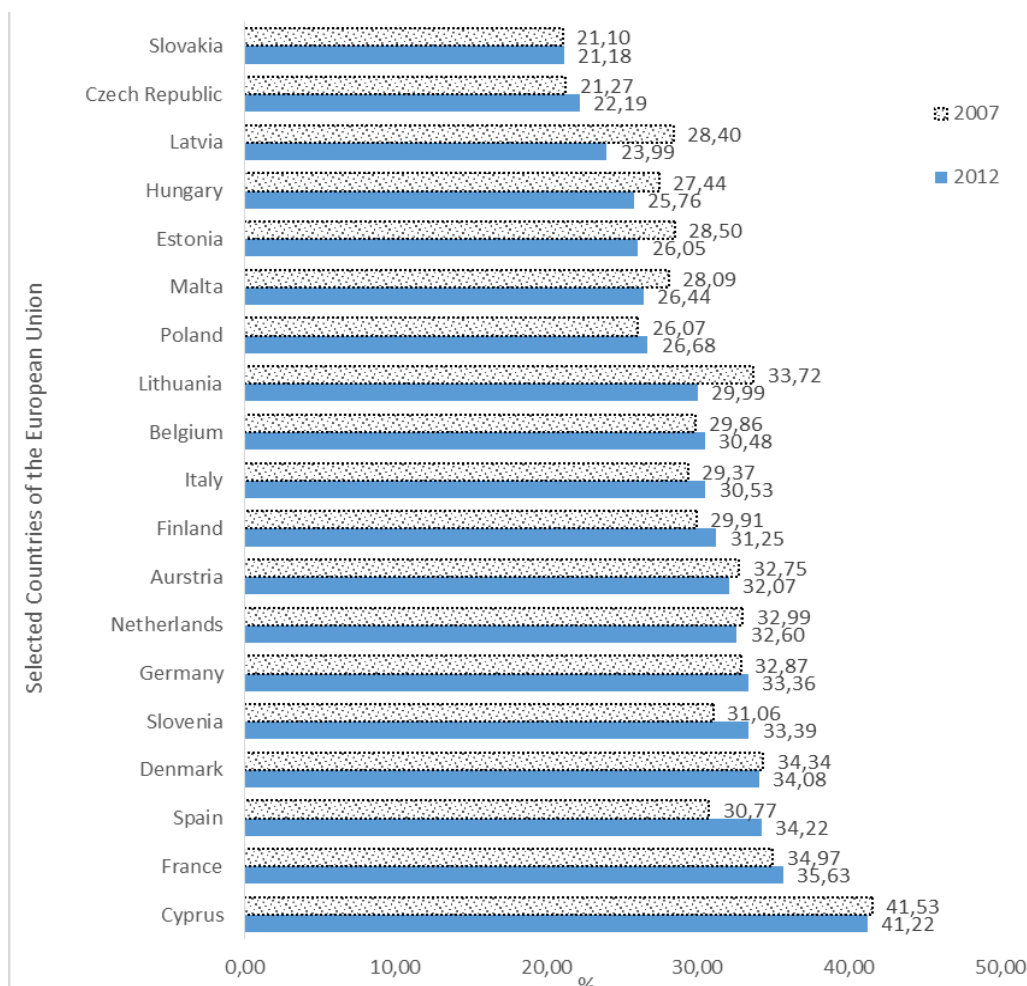


Figure 1. The development of PPN in selected EU countries in the national price level in 2007 to 2012
 (Source: Eurostat a, own calculation)

The intervention to labour taxation has a little effect on Czech businesses. I.e. when the labour tax is decreased by 1% of the wage the profit increased by 0.2%, this average is represented by industry with 0.1%, construction with 0.2% and 0.4% in the commerce (services). On the other

hand the lower labour tax creates an increase on public budget deficits in billions CZK. The direction towards lower labour costs in the Czech Republic is not reasonable. The competitive advantage towards developing countries will not be gained and within the EU it is still very competitive.

2.3 Unit labour costs

The indicator of unit labour costs is a composite statement of cost pressures in particular economy that are inflicted by labour force (Jílek and Vojta, 2001). Traditionally the central banks are monitoring this indicator in case of inflation rate prediction (cost factor of the inflation) or effective exchange rate. Furthermore it is used as an indicator of economy's competitiveness or as one of the factors considered in foreign direct investments decisions.

There are different definitions of the term unit labour costs with regard to its use and requirements of particular institution. One of the prominent methodologies has been developed by the Vienna Institute for International Economic Studies (Havlik, 2005). Similar situation of disunity methodologies for calculation and interpretation can be found also in the Czech Republic. The RILSA has developed its own methodology that is characterized by proportion of average labour cost expressed by employee compensations on employees and GDP per employee in common prices². Calculation is possible in national price levels as well as in purchase power parity.

The equation for unit labour costs is as follows:

$$ULC = \frac{\frac{EC}{emp_x}}{\frac{GDP}{emp_y}} \cdot 100, \quad (2)$$

where the *ULC* are unit labour costs, *EC* are nominal employee compensations, *emp_x* is the number of employees, *GDP* is gross domestic product and *emp_y* means the total employment (employees).

The Czech Republic belongs to countries with the lowest unit labour costs in the EU namely in the national price level and purchase power parity. Following table Tale 2 captures the unit labour costs in the national price level. The EU tries to be competitive against the USA. Thus the USA are considered as well for the calculation, so the comparison of particular countries can be made as well.

² Assuming that, the labour cost and the productivity are the same for the employee and the self-employed.

Table 2. Unit labour costs in the national price level in the European Union (EU) and the United States (US)

	Unit labour costs in national price level						increase
	2007	2008	2009	2010	2011	2012	in p.p. 2012-2007
EU (27)	57.0	57.6	59.4	58.6	58.2	58.6	1.6
EU (15)	56.7	57.4	59.2	58.4	58.1	58.6	1.9
Belgium	59.6	60.9	62.6	61.2	61.6	62.9	3.2
Bulgaria	46.1	47.9	51.6	52.8	51.6	52.3	6.2
Czech Republic	49.5	50.3	50.2	50.8	51.6	52.4	2.9
Denmark	58.3	59.4	62.4	59.5	59.1	58.7	0.3
Germany	55.1	55.9	58.4	57.1	57.0	57.9	2.8
Estonia	50.6	55.1	55.8	52.8	50.4	50.8	0.2
Ireland	50.4	55.4	56.1	53.2	50.7	50.4	0.0
Greece	53.5	53.6	55.7	55.0	53.4	50.9	-2.6
Spain	55.3	57.1	57.9	56.8	56.2	54.6	-0.7
France	56.8	57.2	58.9	58.7	58.7	59.0	2.2
Italy	53.7	54.7	55.7	55.4	55.2	55.5	1.9
Cyprus	55.0	53.5	55.6	55.2	55.3	53.0	-2.0
Latvia	53.1	56.7	52.9	48.0	45.8	45.9	-7.2
Lithuania	49.7	50.1	51.1	46.4	44.4	44.1	-5.7
Luxembourg	45.8	49.9	53.8	50.9	50.5	51.3	5.5
Hungary	52.9	52.5	52.1	50.6	50.4	50.1	-2.8
Malta	50.8	50.7	52.3	50.1	50.5	51.4	0.6
Netherlands	56.8	57.3	60.3	59.4	59.4	60.3	3.5
Austria	55.5	56.6	58.5	57.8	57.1	57.8	2.3
Poland	46.5	48.3	47.7	47.6	46.7	46.3	-0.2
Portugal	57.2	58.3	59.6	58.4	57.7	56.1	-1.1
Romania	56.6	60.4	59.7	55.1	49.2	49.4	-7.3
Slovenia	59.9	61.2	64.3	65.3	64.0	64.4	4.5
Slovakia	42.3	43.0	46.0	45.3	45.0	44.9	2.5
Finland	53.7	55.6	59.7	58.6	58.1	59.0	5.4
Sweden	56.9	56.9	58.2	56.4	55.7	56.8	-0.1
United Kingdom	60.7	60.7	63.1	62.2	61.6	62.1	1.5
USA	59.0	59.2	58.4	57.6	57.4	57.1	-1.9

Source: Eurostat a, U.S. Bureau of Economic Analysis, own calculation.

Following Figure 2 shows the unit labour costs in the national price level and purchase power parity of the EU, the Czech Republic and the USA.

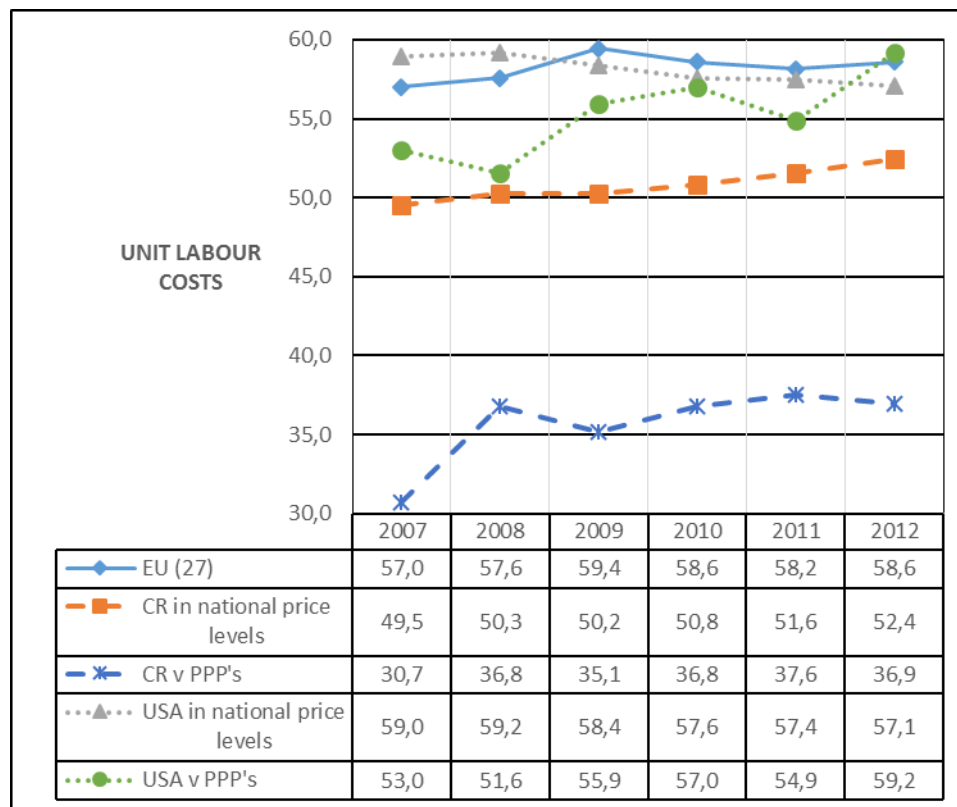


Figure 2. The development of the JNP in national and European price level in CZ, EU and USA in 2007-2012
 (Source: Eurostat a, U.S. Bureau of Economic Analysis, own calculation)

The Figure 2 also illustrates the difference between the Czech unit labour costs in the national price level and in the purchase power parity. While the national price level is experiencing stagnation during the period of conjecture and the crisis after that it starts to rise, the purchase power parity stagnates because of the exchange rate and inflation fluctuations. The swing in the 2008 was caused by concurrency of two phenomena in the form of high inflation rate caused by administrative measures and from previous period of continuous appreciation of the Czech crown. The indicator of unit labour costs in the purchase power parity underlines the competitiveness of the Czech Republic in the labour cost against other EU member countries.

3 Conclusion

Since the transformation the Czech Republic has very cheap labour force. This competitive advantage was sustained despite the world's economic crisis, when the “wage cushion” from the transformation period in the Czech Republic was not effective anymore. But this competitive advantage represents a real problem, because it is not attracting foreign direct investments in such proportion that could have a significant influence on the Czech economy. In the original EU member countries the capital is more represented as a productive factor. The lack of this productive factor hinders the development and growth of the Czech Republic. Czech firms are operating with obsolete equipment and are not pushed to purchase new ones that are in comparison with the cheap labour paying off in the long run. The solution of this problem does not lie in the lower labour costs. At this moment the cutting of labour costs would lead to even lower growth and would also postpone the opportunity for the Czech economic prosperity.

The globalization has opened new labour market opportunities. Investors are drawn to go long way to China in order to exploit cheaper labour cost. The another way round moves the production with higher added value and demanding on the capital factor or highly skilled workers (human

capital). These productions are concentrated in developed countries because it can be financed more effectively.

The Czech Republic is situated on the “half way point”. It does not possess such advantage in the labour costs as China even it also has not much real competitors in the EU (Poland and Slovakia). But it cannot provide specialized working places too. Even these are perceived as the main driving forces of the economic growth of developed countries, because they accumulate further job opportunities (within the industry, subcontractors and supply chain). The problem in the Czech Republic cannot be found in the inefficient qualified labour force. It is generated by education system in sufficient measures. As it was mentioned above the problem is related to the production capital factor and the financial capital. The Czech Republic has a potential for development but this potential is not properly utilized for a long time. As an example the time from the last FDI can be taken. To put aside such a potential is signatures future decline.

References

- [1] Andersen, T. M., 2003. *Wage formation and European integration*. Brussels: European Commission Directorate-General for Economic and Financial Affairs.
- [2] Baštýř, I., D. Prušvic and J. Vlach, 2004. *Náklady práce*. Praha: RILSA.
- [3] Beneš, M., 2006. *Konkurenceschopnost a konkurenční výhoda*. Centrum výzkumu konkurenční schopnosti české ekonomiky Working Paper No. 5/2006.
- [4] Eurostat a. *Economy and finance - National accounts*. [on-line]. [2014-05-26]. Available from: http://epp.eurostat.ec.europa.eu/portal/page/portal/national_accounts/introduction.
- [5] Eurostat b. *Population and social conditions - Labour market - Labour costs*. [on-line]. [2014-05-24]. Available from: http://epp.eurostat.ec.europa.eu/portal/page/portal/labour_market/labour_costs/database.
- [6] Fassmann, M., 1997. Mezinárodní srovnání úrovně mezd (nákladů práce) a produktivity práce s vyspělými evropskými zeměmi. *Pohledy*, vol. 6/97, pp. 23-52.
- [7] Hájek, M. and J. Mihuka, 2009. Analýza vlivu souhrnné produktivity faktorů na ekonomický růst České republiky. *Politická ekonomie*, vol. 57, issue 6, pp. 740-753.
- [8] Havlik, P., 2005. *Unit Labour Costs in the New EU Member States*. Vienna: The Vienna Institute for International Economic Studies.
- [9] Holý, D., 2002. Index nákladů práce v ČR a v EU. *Statistika*, vol. 6/2002, pp. 199-205.
- [10] Jílek, J. and M. Vojta, 2001. Vypovídací vlastnosti změn jednotkových pracovních nákladů a souvisejících ukazatelů. *Statistika*, vol. 38, issue 4, pp. 178-189.
- [11] Kadeřábková, A., 2003. *Základy makroekonomické analýzy. Růst, konkurenceschopnost, rovnováha*. Praha: Linde.
- [12] Kozelský, T. and J. Vlach, 2011. *Labour Costs. Unit Labour Costs and the Labour's Share in Costs in the Czech Republic in 2000 to 2008*. Praha: RILSA.
- [13] OECD. *Stat Extracts - Labour - Labour Force Statistics - Hours worked*. [on-line]. [2014-05-24]. Available from: <http://stats.oecd.org>.
- [14] OECD, 2008. *OECD 2007 Taxing Wages 2006-2007*. Paris: OECD Publishing.
- [15] OECD, 2009. *OECD 2008 Taxing Wages 2007-2008*. Paris: OECD Publishing.
- [16] OECD, 2010. *OECD 2009 Taxing Wages 2008-2009*. Paris: OECD Publishing.
- [17] OECD, 2011. *OECD 2010 Taxing Wages 2009-2010*. Paris: OECD Publishing.

- [18] OECD, 2012. *OECD 2011 Taxing Wages 2010-2011*. Paris: OECD Publishing.
- [19] OECD, 2013. *OECD 2013 Taxing Wages 2011-2012*. Paris: OECD Publishing.
- [20] OECD and Eurostat, 2012. Methodological manual on purchasing power parities. Luxembourg: Publications Office of the European Union.
- [21] Porter, M. E., 1998. *The Competitive Advantage of Nations: with a new introduction*. New York: Free Press.
- [22] van Ark, B. H. H. and E. Monnikhof, 2000. *Productivity and unit labour cost comparisons: a database*. Geneva: International Labour Office.
- [23] U.S. Bureau of Economic Analysis. [on-line]. [2014-05-26]. Available from: <http://www.bea.gov/national/nipaweb/DownSS2.asp>.

THE POSITION OF THE MORAVIAN-SILESIA REGION IN TERMS OF KNOWLEDGE POTENTIAL

Josef Botlík¹, Pavlína Pellešová², Milena Botlíková³

¹*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: botlik@opf.slu.cz*

²*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: pellesova@opf.slu.cz*

³*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: botlikova@opf.slu.cz*

Abstract

Among the regions always existed the differences, they dispose of various raw materials, natural resources and diverse human potential. Within the regional policy in states of EU, and in Czech Republic the government tries to reduce the disparities of regions so as to attend in each region to balanced socioeconomic growth and to increase their competitiveness. The competitiveness of the region we could understand as the region with prospering business and innovative environment and with functional market (science and research). Influence of technological development causes that knowledge potential of population, i.e. enough qualified workforce together with innovations is coming to forefront and is supplying another factors (for example the localization factors). The importance of analysis of knowledge structure results from considerable influence of education for the competitiveness and for development of region, when inadequately qualified population could have the negative influence on development of the business environment, it comes to following stagnation of economics development and following the loss of competitiveness. Within the paper will be search structure of populations education in work market in Moravian-Silesian Region and then to compare with level of education in other regions in Czech Republic. In the end will be predict the progress of knowledge groups in MSR, which could to take measures for the increase of education of population in region.

Keywords

Region, Knowledge, Competitiveness, Population.

JEL Classification

I21, C19.

1 Introduction

Analysis of the evaluation of educational structure will be based on evaluation of education in the national economy in separated territorial units for the period Q4 2006 to Q1 2013. These regions are defined by NUTS II such as cohesion regions (CSO, 2014). Due to the focus of the project we will primarily dealt with the development educational structure of the national economy. For the prediction of the educational structure of Moravia Silesia was used software for statistical analysis of data - SPSS. According to the CSO a fragmentation of the various levels of education is at primary education (PE), secondary education without school-leaving certificate, ie vocational certificate (SE wh. GCE, respectively SE, Secondary wh. GCE), high school graduation (HSG) and college (HI; Higher education).

2 The importance of education for economic development

According to an OECD study, the importance of human capital is increasing. Furthermore, the study indicates that quality human resources are one of the conditions of growth competitiveness. It is so among other things, that human capital is compared with other growth factors much more resistant overall globalization terms of economic growth.

Regarding the quality of human capital, it is measured by the level of education. Higher education is assumption for enhanced flexibility and adaptability, allowing routing of the economy to an economy based on the creation and use of new knowledge. According to economic literature, the quality human capital increases productivity and keeps the balanced value of production. In addition, increasing the innovative capacity of the country and supports knowledge look towards new technologies, products and processes, which promote growth and facilitate to spread and transfer of knowledge needed in society and helping the successful implementation of new technologies, which in turn promotes economic growth.

Furthermore, educated people (Bernanke 2007; Czechinvest, 2006) suffer from a lower unemployment rate, make better financial decisions, are healthier, so do not burden the public finances. Furthermore, it could be assumed that higher education reduces social problems damaging economic development. As written, the important factor is the quality of education of the population, ie "high" level of education. One of the strategic objectives of regional policy should be to reduce the number of people with primary education and to increase the share of university graduates for the working population.

3 The educational structure of the national economy

If we look at the separated regions in the Czech Republic, there are economic disparities even in the educational structure of the population (and the Cohesion Regions) is no different.

From Figure 1 it is evident that during the years 2006 to 2013 the population with primary education and secondary education without GCE decreased and on the other hand the growth was of the population having high education. As far as secondary education, in the regions in this segment decreased or stagnated, except regions Central Bohemia, North-West.

From Figure 2 is evident, during the years 2006 to 2013 in the region Prague was reported absolute value the lowest population with primary education employed in the national economy (NE). The maximum value of the population with primary education in the case of Prague, in many regions it is the minimal value. Less educated population of the regions have Moravia Silesia, South-west and Central Moravia. Most people with primary education resides in the North-west. In Central Bohemia, North-west, North-east and South-east regions except Central Bohemia, the most of the value of the time period is below their average (median is below the average). A similar trend as development of population with primary education showed the development in the case of secondary education without GCE. The lowest value was recorded in Prague again. The most of the population employed in the national economy with secondary education without GCE was in monitoring period in the North-east and South-east.

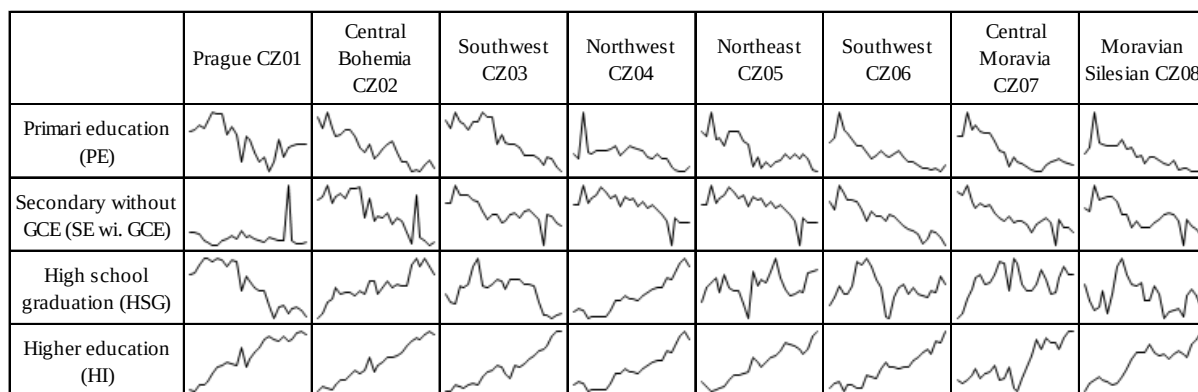


Figure 1. The development of education of the population in the national economy in cohesion regions of the Czech Republic (Source: CSO, own processing; x- period, y – education, person)

The highest number of population with secondary education and university graduates employed in NE is in region Prague again, even here the minimum number of university graduates in the case of

Prague is in the case of many cohesion regions the maximum value. From this perspective, we could speculate about the migration of university graduates from other regions to the capital city. The worst are the North-west, Central Moravia and Moravia Silesia. In the case of the Moravia Silesia we could speak about a higher number of graduates than is an average number of higher education in this region (average = 88.46) in the period Q1 2006 to Q4 2013 (see Figure 2).

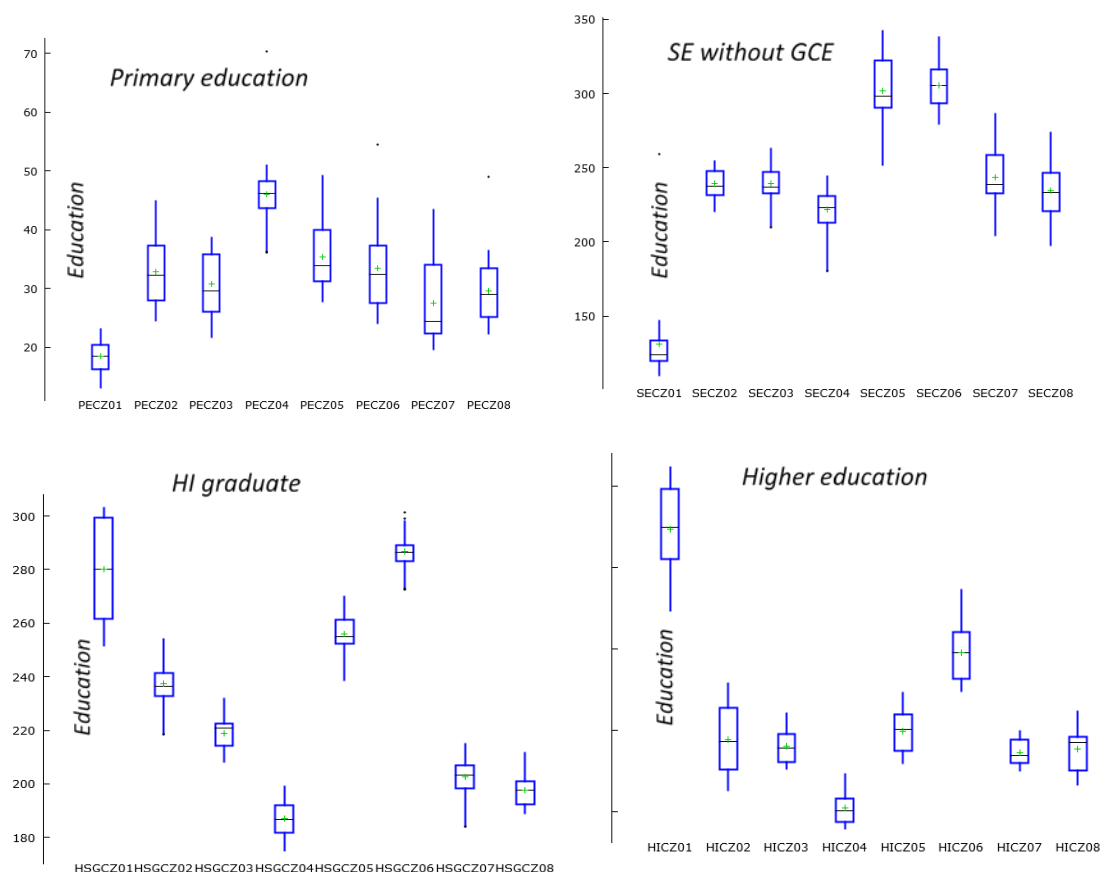


Figure 2. Statistics of education in various cohesion regions (Source: CSO, own processing, GRETl)

4 Development of the structure of education in the national economy of Moravian-Silesian Region

Moravian-Silesian region shows above-average levels (average in the segment of education for all regions of cohesion) in 2nd quarter of 2007 and in 2nd quarter of 2009 within the average values for the period 2000-2013 in the segment of primary education. Regarding secondary education, Moravian-Silesian region is below average throughout the whole monitored period. The situation is similar with population working in the national economy in the segment of university graduates, however it has improved in the last quarters and there has been an increase in their numbers above that average value (see Figure 3).

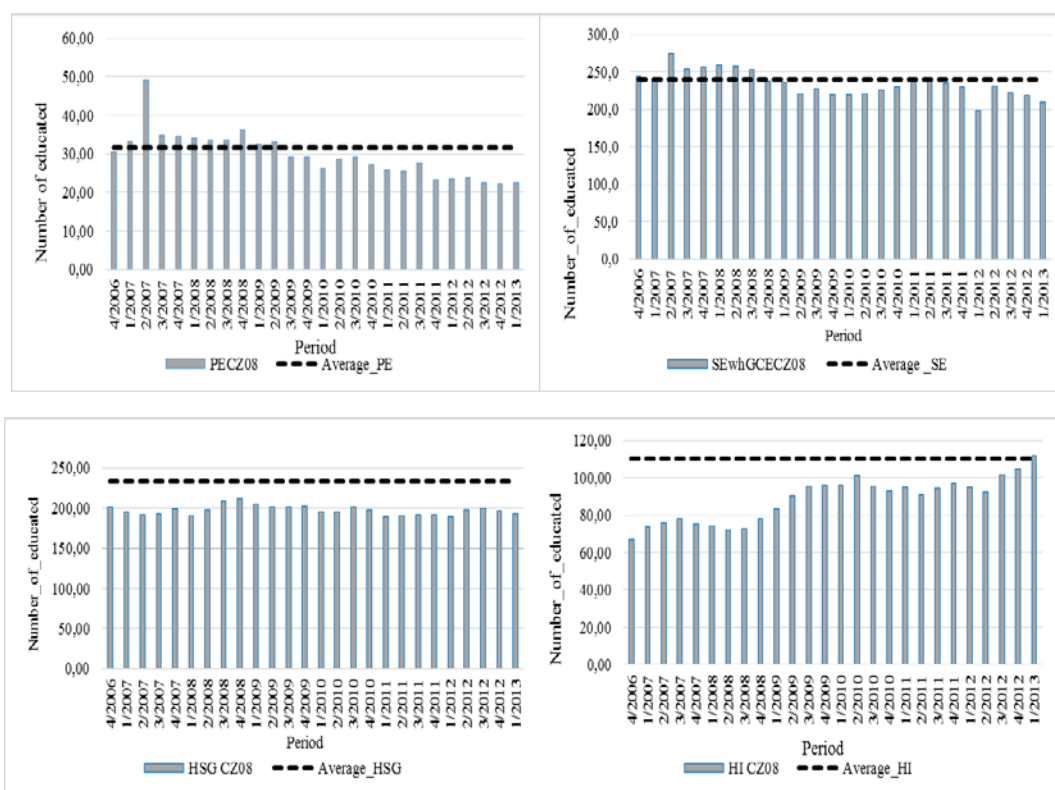


Figure 3. Development education Moravian Silesian region 2006 – 2013 in thousand (Source: CSO, own processing; average for the period of the Cohesion Region prediction of the development of education)

The prediction can be done using time series analysis. Due to missing data (e.g., ARIMA has recommended 50 values in the file is not recommended in balancing economic analysis exponential time data) is for predicting such a file recovery methods decomposition of the time series. Due to the short-term model can be expected absence of cyclical component $C_t = 0$ and the presence of a seasonal component S ; the model will have the form (1) where: S_t : seasonal component; ε_t residues; T_t trend component.

$$y_t = T_t + S_t + \varepsilon_t \quad (1)$$

Decomposition of time series for seasonal and trend components was performed using SPSS. Based on this decomposition the model was identified as additive, ie the sum of the seasonal indexes must be equal to zero). In the case of primary education and secondary education without maturity, seasonal index values reveal decline in the number of workers in Moravian-Silesian region in 1st and 4th quarter. These decreases could be probably connected with seasonality of jobs in the fields of agriculture, industry and with the nature of support staff. In case of secondary education there is a decrease of workers in the first two quarters of the year and consequently an increase in the number of such educated workers. This may suggest an increase in academia in the 3 and 4 quarters due to graduation and subsequent employability e.g. labor migration to other regions during periods 1 and 2 quarters (see Table 1).

Table 1. Seasonal procedure for variable education

Period	Seasonal index PE	Seasonal index SE	Seasonal index HCG	Seasonal index HI
1	-0,6222	-3,6133	-3,5404	-0,1800
2	0,5808	2,1649	-1,0374	-0,5988
3	0,1138	2,2582	1,7300	0,6581
4	-0,0724	-0,8097	2,8478	0,1205

Source: CSO, own processing, SPSS software.

Due to the scope of the paper we will primarily concerned with the development education MSR. Theoretical basis (Ramík, 2007) was used to obtain information about future developments. On this basis we used for the analysis of the trend component method of simple moving average. The method of moving averages is used for adjustment of series of random and seasonal component (2).

$$\bar{y}_t = \frac{y_{t-p} + y_{t-p+1} + \dots + y_{t+p-1} + y_{t+p}}{2p+1} = \frac{1}{2p+1} \sum_{i=-p}^p y_{t+i} \quad (2)$$

The length of the moving average is usually selected number generally written in the form (3), where $m < n$ and $p \geq 1$. The simple moving average (3). For the adjustment of time series of seasonal component was used software SPSS, $m = 2p + 1$, when $p = 2$.

$$m = 2p + 1 \quad (3)$$

where: m – moving part,
 p – length,
 n – number of observations.

In the case of modeling the trend component on the basis of quality assessment model using the coefficient of determination $R^{2;1}$ and the quality of the model was the adoption trend model of the form (4):

$$y_t = \beta_0 + \beta_1 t_1 + \beta_2 t_2 + \dots + \beta_n t_n + \varepsilon \quad (4)$$

$$y_t = \beta_0 + \beta_1 t_1 + \beta_2 t_2^2 + \beta_n t_3^3 + \varepsilon$$

$$y_t = \beta_0 + \beta_1 \ln t_1$$

where: t – independent variable,
 β – parameter.

On this basis, the development model was created, using SPSS software (see Table 2).

¹ Coefficient of determinate takes values in the interval (0, 1), R^2 value approaching to 1 is a sign of a well-chosen model.

Table 2. Values in the equation trend and test quality equation trend

		R^2	F	$Sig. F$		
		B	$SE B$	$Beta$	T	$Sig. T$
PRIMARY EDUCATION (PE)	Linear	0.96	554.95	0.00		
	Time	-0.63	0.33	-0.78	-23.56	0.00
	(Constant)	38.19	4.96	x	84.65	0.00
SECONDARY wh. GCE (SE)	Logar	R^2	F	$Sig. F$		
		B	$SE B$	$Beta$	T	$Sig. T$
		B	$SE B$	$Beta$	T	$Sig. T$
SECONDARY wh. GCE (SE)	Time	-15.57	1.84	-0.87	-8.32	0.000
	(Constant)	270.40	4.61	x	58.68	0.000
HIGH WITH GCE (HSG)	Cubic	R^2	F	$Sig. F$		
		B	$SE B$	$Beta$	T	$Sig. T$
		B	$SE B$	$Beta$	T	$Sig. T$
HIGH WITH GCE (HSG)	Time	4.49	0.79	7.66	5.66	0.00
	Time**2	-0.40	0.07	-18.05	-5.64	0.00
	Time**3	0.01	0.001	10.31	5.23	0.00
HIGHER EDUCATION (HI)	(Constant)	187.27	2.42	x	77.13	0.00
HIGHER EDUCATION (HI)	Linear	R^2	F	$Sig. F$		
		B	$SE B$	$Beta$	T	$Sig. T$
		B	$SE B$	$Beta$	T	$Sig. T$
HIGHER EDUCATION (HI)	Time	1.36	0.13	0.92	10.9	0.00
	(Constant)	71.76	1.86	x	38.57	0.00

Source: CSO, own processing.

Time series from the chart PACF and ACF was tested on autocorrelation (DW^2), according to the test time series are not correlated (see Figure 5).

² Durbin Watson – test autocorrelation (1.5; 2)

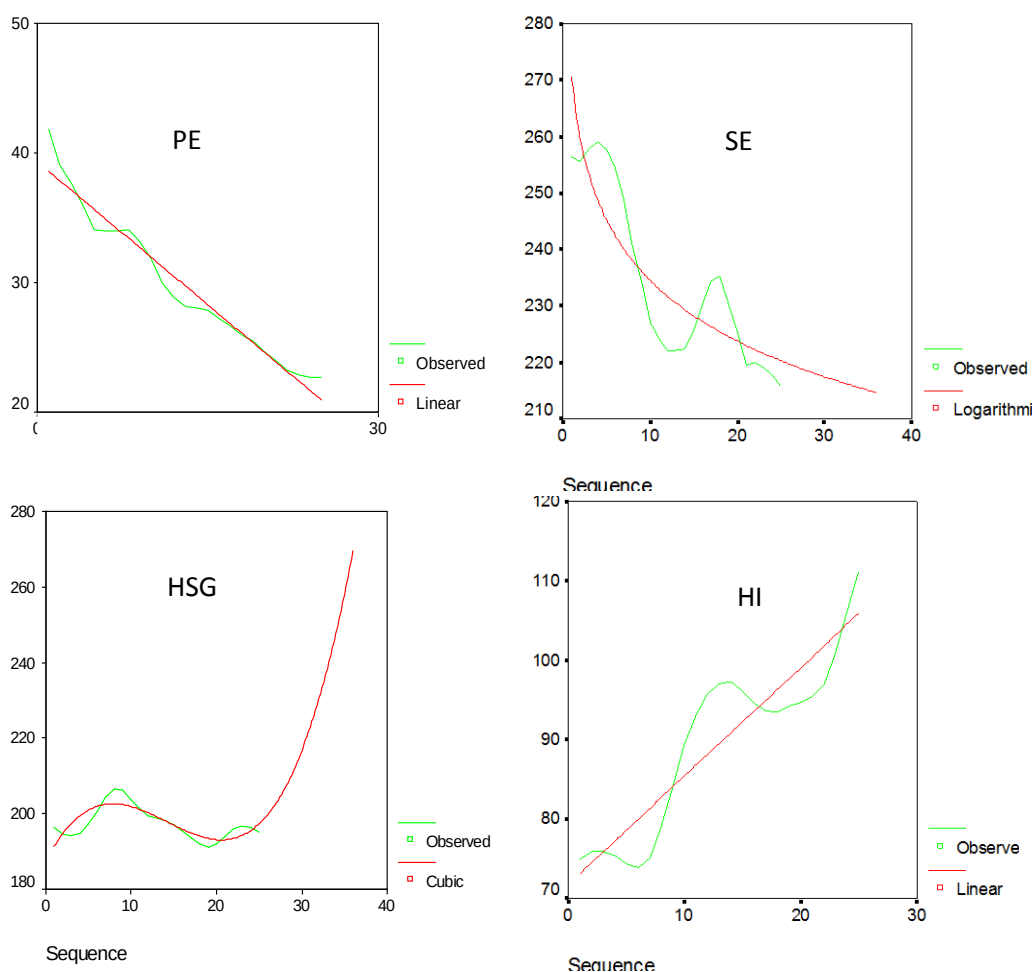


Figure 4. Forecast of education in the Moravian-Silesian region to the 2015 (Source: CSO, own processing, SPSS software)

Individual models were tested for heteroscedasticity and autocorrelation. Individual models have been correctly selected, the coefficient of determination is sufficiently high (close to 1) model estimates of coefficients are statistically significant (Sig F < 0.05, Sig T < 0.05), except model "higher education". Of the econometric analysis shows that by the year 2015 will be improved the educational structure of the labor force in the Moravian Silesian region. With each time interval will be reduced by 0,63 thousands of workforce. By 2015, will be also increased the number of labor power with higher education, which will fully conform to the requirements of the labor market. For workforce with higher education cannot determine the trend of development, the model correlated. The results of analysis of the development “higher education” are therefore biased and model is not suitable for the determination of development. It is a subject of further research (Figure 4).

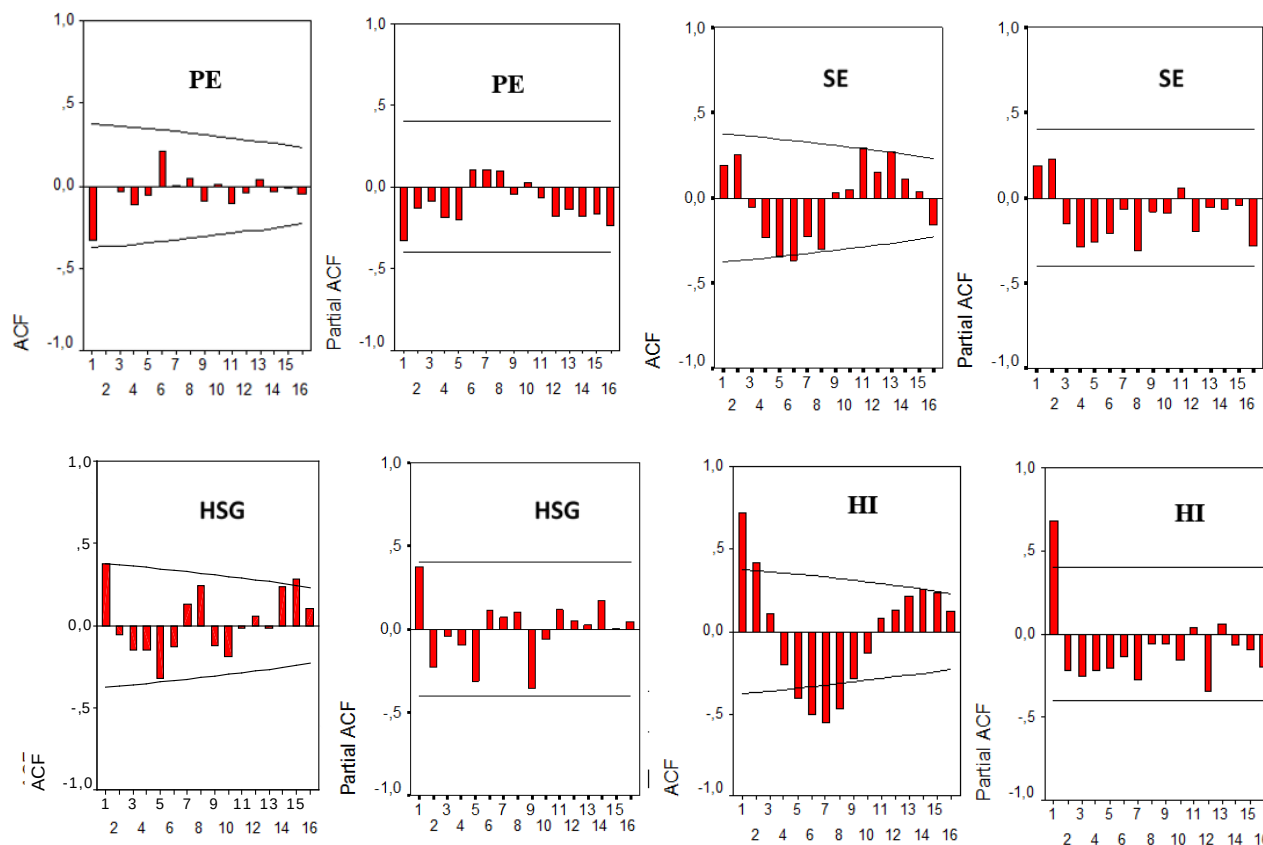


Figure 5. Durbin Watson test (Source: CSO, own processing, SPSS software)

5 Conclusion

From the output generated by SPSS software it can be stated that development of the number of persons with lower education (i.e. primary education) will decline within the Moravian-Silesian region of cohesion in the years ahead. For Moravian-Silesian region as a region with restructuralisation still in progress, it is a necessity to offer investors high quality (i.e. educated) human capital. From the analysis it is evident that the region is rather lagging behind the national average at this time.

It has been demonstrated that there will be reduction in primary education, an increase in higher level of education cannot be proven. We assume that beneficial for the national economy will be an increase in any form of the education other than primary. For example, on the basis of the research it has been found that currently, demand for labor worker professions is to a greater extent.

6 Acknowledgement

The results of this research are part of the project SGS 20/2014 "Analysis of the business environment Karvina region".

References

- [1] Bernanke, B., 2007. *Education and economic competitiveness*. U. S. Chamber Education and Workforce Summit. [online]. [2014-05-12]. Available from: <http://www.federalreserve.gov/newsevents/speech/bernanke20070924a.htm>.

- [2] CSO. *Vymezení územních jednotek NUTS v ČR pro potřeby statistické a analytické a pro potřeby EU*. 2014. [online]. [2014-04-12]. Available from: [www.http://www.czso.cz/csu/redakce.nsf/i/vymezeni_uzemnich_jednotek_nuts_v_cr_pro_potreby](http://www.czso.cz/csu/redakce.nsf/i/vymezeni_uzemnich_jednotek_nuts_v_cr_pro_potreby).
- [3] Czechinvest. *Regional Economic Competitiveness*. 2006. [online]. [2014-04-12]. Available from: <http://www.czechinvest.org/data/files/prirucka-verejna-sprava-208.pdf>.
- [4] Ramík, J., 2007. *Statistika*. Karviná: SU OPF.

THE STRUCTURE-PERFORMANCE RELATIONSHIP IN THE EUROPEAN BANKING SYSTEM

Claudia Dobre¹, Veronica Popovici², Irena Munteanu³

*¹Ovidius University in Constanta, Faculty of Economics, Aleea Universității 1, Constanța, Romania
email: dobre_claudia@yahoo.com*

*²Ovidius University in Constanta, Faculty of Economics, Aleea Universității 1, Constanța, Romania
email: verovnp@yahoo.com*

*³Ovidius University in Constanta, Faculty of Economics, Aleea Universității 1, Constanța, Romania
email: irena.munteanu@yahoo.com*

Abstract

Our empirical approach integrates a panel data analysis regarding indicators of banking sector concentration (CR3) and of banking performance (ROE) and calculation of Pearson's correlation coefficient between structure and performance indicators for the banking system in Central and Eastern Europe, between 2001 and 2010. This approach also provides a framework to examine policy related issues. According to the SCP hypothesis, there is a positive correlation between bank profits and market concentration due to the greater possibility of collusion. From a social viewpoint, bank concentration creates an environment that can reduce social welfare. This is an issue that has important public policy implications. If the market structure in a given country is found to be highly concentrated (thus increasing the likelihood of collusion), public policy should focus on measures of increasing competition, such as discouraging mergers and acquisitions. On the other hand, if bank concentration is positively correlated with the stability of the banking system, policies should be directed at facilitating mergers or consolidations.

Keywords

Concentration, Bank Competition, the SCP Paradigm, Central and Eastern Europe.

JEL Classification

G21, L11.

1 Introduction

The financial sector is special. Banks perform intermediation functions that are critical to the real economy and that facilitate and contribute to the growth of the economy (OECD, 2009). The traditional approach to assessing competition has been to associate a larger number of firms with more price competition and fewer firms with less-competitive behavior. This comes from a classic industrial organization argument, which assumes that there is a causal relationship running from the structure of the market to the firm's pricing behavior, to the firm's profits, and to its degree of market power.

The structural approach to model competition includes the Structure-Conduct-Performance (SCP) paradigm with roots in Industrial Organization theory. It was not until the 1950s when the fundamental validity of SCP model was applied in banking industry. Since then, many SCP empirical studies have been undertaken in the banking industry and have provided evidence similar to those found in the industrial organizations literature.

According to the SCP hypothesis, there is a positive correlation between bank profits and market concentration due to the greater possibility of collusion. From a social viewpoint, bank concentration creates an environment that can reduce social welfare. This is an issue that has important public policy implications. If the market structure in a given country is found to be highly concentrated (thus increasing the likelihood of collusion), public policy should focus on measures of increasing competition, such as discouraging mergers and acquisitions. On the other hand, if bank concentration is positively correlated with the stability of the banking system, policies should be directed at facilitating mergers or consolidations. Previous studies provide mixed evidence.

The present analysis is based on panel data collected from Banking Supervisors from Central and Eastern Europe (BSCEE) for the Central and Eastern European (CEE) banking system between

2001 and 2010. The novelty of this research is that we apply the Structure-Conduct-Performance hypothesis from the Industrial Organization literature to examine whether market concentration has an impact on banking performance. It should be said from the beginning that we do not take explicit account of the conduct of banks and the analysis undertaken focuses on the structure-performance (S-P) relationship. Our empirical approach integrates a panel data analysis regarding indicators of banking sector concentration (CR3) and of banking performance (ROE) from 19 countries during 2001-2010 and calculation of Pearson's correlation coefficient between structure and performance indicators for the mentioned period.

This approach also provides a framework to examine policy related issues. As a matter of public policy, the measurement of market concentration is important and lies at the heart of decisions about whether to approve mergers and acquisitions that might pose a potentially harmful impact on consumers in terms of both prices and the availability of goods and services. This study contributes to the literature both by extending the analysis of the relationship between bank competition, concentration and performance in the CEE banking sector up to 2010 and by testing the S-P paradigm application on the relationship between concentration and performance.

2 Literature review

The Structure-Conduct-Performance (SCP) can be defined as the relationship between market structure, firm conduct and firm performance. The SCP has been one of the most tested hypotheses in the industrial organizations literature. Almost all of the SCP empirical studies have supported the validity of the SCP paradigm, by providing evidence on the positive relationship between market structure and firm performance indicators. It was not until the '50 when the fundamental validity of the SCP model was applied in the banking industry (the initial study on concentration in the banking sector was done by Alhadeff in 1954).

In the context of banking, the studies generally examined concentration issues in the context of overall Structure-Conduct-Performance relationship. Only since around 1960 have we seen a growing body of empirical work dealing with market structure and its impact on bank performances. Further on, a number of studies (Berger and Hannan (1989); Hannan (1992); Neumark and Sharpe (1992); Okeahalam (1998); Prager and Hannan (1998)) support the SCP framework, that find positive relationships between market structure and bank performance measures. This foundation has been supported by over 20 empirical works. Gilbert (1984) surveyed 56 studies on market structure and competition and found that most of the studies used concentration in local market areas as a relevant measure of the banking market structure.

Recent research however has indicated that the relationship between competition and banking system performance is more complex and that the view according to which competition is unambiguously good is more naive in banking than in other industries (Deepti and Pulak, 2012).

Corvoisier and Gropp (2002) show that for demand deposits and loans, increasing bank concentration in the Euro area countries during the years 1993-1999 has resulted in less competitive pricing by banks. This finding supports the SCP hypothesis. However, for time deposits and savings, the more concentrated the market, the lower the bank margins. This result contradicts the SCP model.

A number of other empirical studies, on the other hand, like Shaffer (1989), Varma and Sainir (2010), cast doubt on the SCP findings. Nguyen (2011) suggests that concentration plays an unimportant role in bank profitability. This result does not support the SCP hypothesis, which implies a positive relationship between concentration and profit.

Many other works have found insignificant relationships between the measures of market structure and of bank performance. This achievement has been advocated by over 15 empirical works, such as Flechsig (1965), Murphy and Klein (1971), Osborne and Wendel (1983), Smirlock (1983, 1985), Bikker and Bos (2008).

The contradictions in the SCP relationships found in the literature are generally contributed to the methodology and data, as well as the assumptions relating to measures of market structure. Moreover, interpreting higher profits in concentrated markets as evidence of market power is also problematic, as market concentration may not necessarily be a reflection of collusive behavior of banks, but rather a consequence of their superior efficiency (Sahoo and Mishra, 2012). This means that, in addition to the use of appropriate methodology and consistent data, a proper understanding of the SCP relationships requires simultaneous consideration of both market power and efficiency (Dobre and Sorici, 2012). This aspect has though remained largely unexplored in the existing studies.

3 Data base and methodology

In this study, we examine bank performance through market structure. Our empirical approach integrates a panel data analysis regarding indicators of banking sector concentration (CR3) and of banking performance (ROE) from 19 countries in Central and Eastern Europe during 2001-2010. In order to capture the evolution of market concentration and performance, we used data provided by the Group of Banking Supervisors from Central and Eastern Europe (BSCEE), established in 1991. Their publication gives an overview of the macroeconomic circumstances in the twenty one member states and it describes the banking sector as well as the supervisory activities.

Using the data obtained, we plotted the evolution of CR3 and ROE, analyzing the correlation between these indicators and further calculating the Pearson correlation coefficient.

3.1 Indicator of market structure

Concentration Ratio (CR3): Three-Bank concentration ratio equals to the sum of the assets or deposits of the largest three banks in a given market, divided by the total assets of that market, as in equation:

$$CR3 = \frac{\text{The Largest Three Banks' Assets}}{\text{Market's Assets}} \quad (1)$$

We chose this indicator because the concentration in banking sector is frequently measured by the n-firm concentration ratio - the combined market share held by the largest: three largest, five largest, etc. banks in the market. In addition, the three-bank concentration ratio has been the most extensively employed in Beighley et al. (1975), Bell and Murphy (1969), Edwards (1964), Edwards and Heggstad (1973), Kunreuther (1976) and Phillips (1967). It has the advantage of focus on the importance of "fewness", which is a characteristic feature of certain market structures. In this sense, Rose (1999: 687) states: *“the degree of concentration in a market is measured by the proportion of assets or deposits controlled by the largest banks serving that market”*.

3.2 Performance indicator

Bank performance may be measured either by Returns on Assets (ROA), Return on Equity (ROE), interest rate charged on loans or interest rate paid on deposits.

As an indicator of profitability, ROE is determined by dividing net income for the past 12 months by common stockholder equity (adjusted for stock splits). The result is shown as a percentage. Investors use ROE as a measure of how a company is using its money.

ROE is an internal performance measure of shareholder value and it is by far the most popular measure of performance (European Central Bank, 2010), since:

- it proposes a direct assessment of the financial return of a shareholder's investment;
- it is easily available for analysts, only relying upon public information;
- it allows for comparison between different countries.

3.3 The correlation coefficient (Pearson's r)

It measures the linear relationship between two interval/ratio level variables. Pearson's r coefficient of correlation can have a value anywhere between -1 and 1. The larger the coefficient, ignoring its sign, the stronger the association between the two variables. At its extreme, a correlation of 1 or -1 means that the two variables are perfectly correlated, meaning that you can predict the values of one variable from the values of the other variable with perfect accuracy. At the other extreme, zero implies an absence of a correlation - there is no relationship between the two variables. This implies that knowledge of one variable gives you absolutely no information about what the value of the other variable is likely to be. The sign of the correlation implies the "direction" of the association. A positive correlation means that relatively high scores on one variable are paired with relatively high scores on the other variable, and low scores are paired with relatively low scores. On the other hand, a negative correlation means that relatively high scores on one variable are paired with relatively low scores on the other variable. The Pearson correlation cannot determine a cause-and-effect relationship. It can only establish the strength of the association between two variables.

4 Description of empirical results

In order to test Structure - Conduct - Performance hypotheses over 19 banking markets in Central and Eastern European countries we calculated the Pearson coefficient using the intensity of the relationship between the following variables: market concentration indicator - concentration ratio (CR3) and performance indicator - return on equity (ROE).

Values recorded in the 19 countries of Central and Eastern Europe on the correlation between concentration rate and return on equity rate can be synthesized into a single table:

Table 1. Intensity of the relationship between the degree of market concentration (CR3) and performance (ROE) in the countries of Central and Eastern Europe (2001-2010)

	Banking Market	Pearson Coefficient
1.	Albania	+ 0.579
2.	Belarus	+ 0.854
3.	Bosnia Herzegovina	- 0.527
4.	Bulgaria	+ 0.130
5.	Croatia	- 0.382
6.	Czech Republic	+ 0.249
7.	Estonia	+ 0.520
8.	Hungary	- 0.964
9.	Latvia	+ 0.479
10.	Lithuania	- 0.212
11.	Macedonia	- 0.188
12.	Moldova	- 0.038
13.	Montenegro	+ 0.741
14.	Poland	+ 0.217
15.	Romania	+ 0.606
16.	Russia	- 0.723
17.	Slovakia	- 0.757
18.	Slovenia	+ 0.691
19.	Ukraine	+ 0.421

Source: own calculation.

We see from the above table that the value of the Pearson correlation coefficient ranges from -1 to +1. The sign of the coefficient indicates the direction of the relationship between variables. The plus sign indicates a direct link (as values of the CR3 variable grow, the values of the ROE variable increase too) and the minus sign shows the reverse link. The absolute value of the coefficient

indicates the intensity of the relationship, namely: the closer to 1, the bond is stronger; the closer to zero, the link is weaker.

There is a strong and direct link between the indicator of the degree of banking market concentration - concentration ratio (CR3) and performance indicator - the rate of return on equity (ROE) for eight countries (Albania, Belarus, Estonia, Latvia, Montenegro, Romania, Slovenia and Ukraine). A direct but weak link between the two indicators CR3 and ROE we find in banking markets such as Bulgaria, the Czech Republic and Poland. On the other hand, the values of the Pearson correlation coefficient show there is a strong inverse relation for four countries (Bosnia and Herzegovina, Hungary, Russia and Slovakia). A reverse but weak link we have seen in banking markets such as Croatia, Lithuania, Macedonia and Moldova.

We can affirm that there is a direct and strong correlation between the degree of market concentration and bank performance in eight banking markets, namely Albania, Belarus, Estonia, Latvia, Montenegro, Romania, Slovenia and Ukraine. In these markets, SCP assumptions are verified. Increasing concentration in the banking market will determine an increase in the performance of banks. However, for 4 of the 19 analyzed countries, namely Bosnia and Herzegovina, Hungary, Russia and Slovakia, the SCP hypothesis is not verified because the link between the variables is reversed and powerful, which means that the bank's performance in these markets increases as the degree of concentration decreases and competition among banks becomes more intense. For the other seven examined countries, the link between the two variables is weak.

5 Conclusion

Since the undertaken analysis shows the existence of a direct and strong correlation between the concentration indicator (ratio of concentration) and performance indicator (the rate of return on equity) in 8 of the 19 analyzed markets, we can say that in these countries the SCP paradigm may explain the behavior of banks. If the competition authorities of the 8 countries (Albania, Belarus, Estonia, Latvia, Montenegro, Romania, Slovenia and Ukraine) aim to increase the degree of competition in their specific banking markets (by blocking mergers and acquisitions transactions), they should take into account the negative impact on the performance of the banking sector. If an improvement of banking performance is pursued in these markets, the competition authorities should approve a greater number of concentration operations among banks.

Following the obtained results, we can state that there is a reverse and strong relation between concentration of banking market and performance of banks in four of the analyzed countries, namely: Bosnia and Herzegovina, Hungary, Russia and Slovakia. Competition authorities in these countries should take into account that they can positively influence the performance of the banking sector by increasing competition in the banking market. In other words, the approval of mergers and acquisitions transactions will not only result in an increased market concentration, but also in a decrease in bank performance.

In addition to this, in countries where the structure of the banking market is highly concentrated (taking into account the rate of concentration of the first three banks in the market): Estonia, Lithuania, Belarus and Macedonia, competition authorities should focus on increasing competition, by discouraging mergers and acquisitions in the banking sector.

The conducted study concluded that the level of market concentration can influence the performance of banks, which can directly interest practitioners. If decision makers within banks are after higher performance, they should consider the fact that entering banking markets in Albania, Belarus, Estonia, Latvia, Romania, Slovenia and Ukraine through mergers and acquisitions transactions will result into an increase in both the market concentration and the performance of the banking sector (we intentionally omitted Montenegro because the ROE level in this country is lower than in other countries).

The comparative analysis has shown the existence of a high degree of concentration in the banking markets of Central and Eastern Europe countries. The implication of this result for

competition authorities is that they should intervene more on their banking markets (especially in countries such as Estonia, Lithuania, Belarus and Macedonia), by prohibiting mergers and acquisitions in the banking sector, or by removing restrictions and facilitating the entry of new private banks to increase the number of players and thus decrease the degree of concentration.

References

- [1] Beighley, P. and A. McCall, 1975. Market power and structure and commercial bank installment lending. *Journal of money, credit and banking*, vol. 7, pp. 449-467.
- [2] Bell, F. W. and N. B. Murphy, 1969. Impact of market structure on the price of a commercial banking service. *The review of Economics and Statistics*, vol. 51, pp. 210-213.
- [3] Berger, A. N. and T. H. Hannan, 1989. The Price-Concentration Relationship in Banking. *Review of Economics and Statistics*, vol. 71, pp. 291-99.
- [4] Bikker, J. A. and J. W. B. Bos, 2008. *Bank Performance: A theoretical and empirical framework for the analysis of profitability, competition and efficiency*. New York: Routledge.
- [5] BSCEE. *BSCEE Review 2001 - 2010*. [online]. [2014-06-30]. Available from: <https://www.bscee.org/publications/review.html>.
- [6] Corvoisier, S. and R. Gropp, 2002. Bank concentration and retail interest rates. *Journal of Banking & Finance*, vol. 26, issue 11, pp. 2155-2189.
- [7] Deepti, S. and M. Pulak, 2012. Structure, Conduct and Performance of Indian Banking Sector. *Review of Economic Perspectives*, vol. 12, issue 4, pp. 235-264.
- [8] Dobre, C. and C. Sorici, 2012. The concentration of banking market in Romania and Spain. In: *Proceedings of the International Conference „Developments in economic theory and policy”*. Bilbao, Spain: University of the Basque Country.
- [9] Edwards, F. R., 1964. Concentration in banking and its effect on business loan rates. *Review of Economics and Statistics*, vol. 46, pp. 294-300.
- [10] Edwards, F. R. and A. A. Heggstad, 1973. Uncertainty, market structure and performance: The Galbraith-Caves hypothesis and managerial motives in banking. *Quarterly Journal of Economics*, vol. 87, No. 3, pp. 455-473.
- [11] European Central Bank, 2010. *Beyond ROE – how to measure bank performance*. [online]. [2014-06-30]. Available from: <http://www.ecb.europa.eu/pub/pdf/other/beyondroehowtomeasurebankperformance201009en.pdf>.
- [12] Flechsig, T.G., 1965. The effect of concentration on bank loan rates. *Journal of Finance*, vol. 20, pp. 298- 311.
- [13] Gilbert, A., 1984. Bank Market Structure and Competition: A Survey. *Journal of Money, Credit and Banking*, vol. 16, issue 4, pp. 617-645.
- [14] Hannan, T. H., 1992. The Functional Relationship between Prices and Market Concentration: The Case of the Banking Industry. *Finance and Economics Discussion Series 169*. Board of Governors of the Federal Reserve System (U.S).
- [15] Kunreuther, J., 1976. Banking structure in New York State: progress and prospects. *Federal Reserve Bank of New York Monthly Review*.

- [16] Majid, M.-Z. A. and F. Sufian, 2007. Market structure and competition in emerging market: evidence from Malaysian islamic banking industry. *Journal of Economic Cooperation*, vol. 2, issue 28, pp. 99-121.
- [17] Murphy, N. B. and M. A. Klein, 1971. The Pricing of Bank Deposits: A Theoretical and Empirical Analysis. *Journal of Financial and Quantitative Analysis*, vol. 6, pp. 747-761.
- [18] Neumark, D. and S. A. Sharpe, 1992. Market Structure and the Nature of Price Rigidity: Evidence from the Market for Consumer Deposits. *The Quarterly Journal of Economics*, vol. 107, issue 2, pp. 657-680.
- [19] Nguyen, J., 2011. Market Concentration and other Determinants of Bank Profitability: Evidence from Panel Data. *International Research Journal of Finance and Economics*, issue 70.
- [20] OECD, 2009. *Competition and Financial Markets, Series Roundtables on Competition Policy*. [online]. [2014-06-30]. Available from: <http://www.oecd.org/daf/competition/sectors/43046091.pdf>.
- [21] Okeahalam, C. C., 1998. *Concentration in the Banking Sector of the Common Monetary Area of Southern Africa*. [online]. [2014-06-30]. Available from: <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.195.376>
- [22] Osborne, D. K. and J. Wendel, 1983. *Research in Structure, Conduct and Performance in Banking 1964–1979*. College of Business Administration, Oklahoma State University, Research paper 83-003.
- [23] Phillips, A., 1967. Evidence of Concentration in Banking Markets and Interest Rates. *Federal Reserve Bulletin*, vol. 53, issue 6, pp. 916-926.
- [24] Prager, R. and T. H. Hannan, 1998. Do Substantial Horizontal Mergers Generate Significant Price Effects? Evidence from the Banking Industry. *Journal of Industrial Economics*, vol. 46, issue 4, pp. 433-452.
- [25] Rose, P. S., 1999. *Commercial Bank Management*. 4th Ed. Singapore: Irwin/McGraw Hill Publication.
- [26] Sahoo, D. and P. Mishra, 2012. Structure, Conduct and Performance of Indian Banking Sector. *Review of Economic Perspectives*, vol. 12, issue 4, pp. 235-264.
- [27] Shaffer, S., 1989. Competition in the U.S. banking industry. *Economics Letters*, vol. 29, issue 4, pp. 321-323.
- [28] Smirlock, M., 1983. *An analysis of bank risk and deposit rate ceilings: evidence from the capital market*. St. Louis, Mo.: Washington University. Institute of Banking and Financial markets.
- [29] Smirlock, M., 1985. Evidence on the (non) Relationship between Concentration and Profitability in Banking. *Journal of Money, Credit and Banking*, vol. 17, issue 1, pp. 69-83.
- [30] Verma, S. and R. Sainir, 2010. Structure Conduct and Performance of commercial bank in India. *Prajnan*, vol. 39, issue 2, pp. 39-45.

Appendix

Albania

Correlations

		ROE_AL	NR_BC_AL	CR3_AL
ROE_AL	Pearson Correlation	1.000	-.180	.579
	Sig. (2-tailed)	.	.619	.229
	N	10	10	6
NR_BC_AL	Pearson Correlation	-.180	1.000	-.618
	Sig. (2-tailed)	.619	.	.191
	N	10	10	6
CR3_AL	Pearson Correlation	.579	-.618	1.000
	Sig. (2-tailed)	.229	.191	.
	N	6	6	6

Source: own calculation, upon BSCEE Review 2001 – 2010.

Belarus

Correlations

		ROE_BE	NR_BC_BE	CR3_BE
ROE_BE	Pearson Correlation	1.000	.427	.854
	Sig. (2-tailed)	.	.218	.065
	N	10	10	5
NR_BC_BE	Pearson Correlation	.427	1.000	-.547
	Sig. (2-tailed)	.218	.	.340
	N	10	10	5
CR3_BE	Pearson Correlation	.854	-.547	1.000
	Sig. (2-tailed)	.065	.340	.
	N	5	5	5

Source: own calculation, upon BSCEE Review 2001 – 2010.

Bosnia Herzegovina

Correlations

		ROE_BH	NR_BC_BH	CR3_BH
ROE_BH	Pearson Correlation	1.000	-.149	-.527
	Sig. (2-tailed)	.	.702	.283
	N	9	9	6
NR_BC_BH	Pearson Correlation	-.149	1.000	-.886
	Sig. (2-tailed)	.702	.	.019
	N	9	10	6
CR3_BH	Pearson Correlation	-.527	-.886	1.000
	Sig. (2-tailed)	.283	.019	.
	N	6	6	6

* Correlation is significant at the 0.05 level (2-tailed).

Source: own calculation, upon BSCEE Review 2001 – 2010.

Bulgaria

Correlations

		ROE_BU	NR_BC_BU	CR3_BU
ROE_BU	Pearson Correlation	1.000	.316	.130
	Sig. (2-tailed)	.	.373	.806
	N	10	10	6
NR_BC_BU	Pearson Correlation	.316	1.000	-.143
	Sig. (2-tailed)	.373	.	.787
	N	10	10	6
CR3_BU	Pearson Correlation	.130	-.143	1.000
	Sig. (2-tailed)	.806	.787	.
	N	6	6	6

Source: own calculation, upon BSCEE Review 2001 – 2010.

Croatia

Correlations

		ROE_CR	NR_BC_CR	CR3_CR
ROE_CR	Pearson Correlation	1.000	.495	-.382
	Sig. (2-tailed)	.	.176	.525
	N	9	9	5
NR_BC_CR	Pearson Correlation	.495	1.000	-.083
	Sig. (2-tailed)	.176	.	.894
	N	9	10	5
CR3_CR	Pearson Correlation	-.382	-.083	1.000
	Sig. (2-tailed)	.525	.894	.
	N	5	5	5

Source: own calculation, upon BSCEE Review 2001 – 2010.

Czech Republic

Correlations

		ROE_CE	NR_BC_CE	CR3_CE
ROE_CE	Pearson Correlation	1.000	-.156	.249
	Sig. (2-tailed)	.	.688	.635
	N	9	9	6
NR_BC_CE	Pearson Correlation	-.156	1.000	-.712
	Sig. (2-tailed)	.688	.	.113
	N	9	9	6
CR3_CE	Pearson Correlation	.249	-.712	1.000
	Sig. (2-tailed)	.635	.113	.
	N	6	6	6

Source: own calculation, upon BSCEE Review 2001 – 2010.

Estonia

Correlations

		ROE_ES	NR_BC_ES	CR3_ES
ROE_ES	Pearson Correlation	1.000	.	.520
	Sig. (2-tailed)	.	.	.290
	N	10	10	6
NR_BC_ES	Pearson Correlation	.	.	.
	Sig. (2-tailed)	.	.	.
	N	10	10	6
CR3_ES	Pearson Correlation	.520	.	1.000
	Sig. (2-tailed)	.290	.	.
	N	6	6	6

Source: own calculation, upon BSCEE Review 2001 – 2010.

Hungary

Correlations

		ROE_UN	NR_BC_UN	CR3_UN
ROE_UN	Pearson Correlation	1.000	-.149	-.964
	Sig. (2-tailed)	.	.724	.002
	N	8	8	6
NR_BC_UN	Pearson Correlation	-.149	1.000	.002
	Sig. (2-tailed)	.724	.	.997
	N	8	9	6
CR3_UN	Pearson Correlation	-.964	.002	1.000
	Sig. (2-tailed)	.002	.997	.
	N	6	6	6

** Correlation is significant at the 0.01 level (2-tailed).

Source: own calculation, upon BSCEE Review 2001 – 2010.

Latvia

Correlations

		ROE_LE	NR_BC_LE	CR3_LE
ROE_LE	Pearson Correlation	1.000	.449	.479
	Sig. (2-tailed)	.	.194	.337
	N	10	10	6
NR_BC_LE	Pearson Correlation	.449	1.000	.245
	Sig. (2-tailed)	.194	.	.639
	N	10	10	6
CR3_LE	Pearson Correlation	.479	.245	1.000
	Sig. (2-tailed)	.337	.639	.
	N	6	6	6

Source: own calculation, upon BSCEE Review 2001 – 2010.

Lithuania

Correlations

		ROE_LI	NR_BC_LI	CR3_LI
ROE_LI	Pearson Correlation	1.000	-.094	-.212
	Sig. (2-tailed)	.	.796	.686
	N	10	10	6
NR_BC_LI	Pearson Correlation	-.094	1.000	.233
	Sig. (2-tailed)	.796	.	.657
	N	10	10	6
CR3_LI	Pearson Correlation	-.212	.233	1.000
	Sig. (2-tailed)	.686	.657	.
	N	6	6	6

Source: own calculation, upon BSCEE Review 2001 – 2010.

Macedonia

Correlations

		ROE_MA	NR_BC_MA	CR3_MA
ROE_MA	Pearson Correlation	1.000	-.724	-.188
	Sig. (2-tailed)	.	.018	.721
	N	10	10	6
NR_BC_MA	Pearson Correlation	-.724	1.000	.155
	Sig. (2-tailed)	.018	.	.769
	N	10	10	6
CR3_MA	Pearson Correlation	-.188	.155	1.000
	Sig. (2-tailed)	.721	.769	.
	N	6	6	6

* Correlation is significant at the 0.05 level (2-tailed).

Source: own calculation, upon BSCEE Review 2001 – 2010.

Moldova

Correlations

		ROE_MO	NR_BC_MO	CR3_MO
ROE_MO	Pearson Correlation	1.000	.429	-.038
	Sig. (2-tailed)	.	.216	.943
	N	10	10	6
NR_BC_MO	Pearson Correlation	.429	1.000	.575
	Sig. (2-tailed)	.216	.	.232
	N	10	10	6
CR3_MO	Pearson Correlation	-.038	.575	1.000
	Sig. (2-tailed)	.943	.232	.
	N	6	6	6

Source: own calculation, upon BSCEE Review 2001 – 2010.

Montenegro

Correlations

		ROE_MU	NR_BC_MU	CR3_MU
ROE_MU	Pearson Correlation	1.000	-.592	.741
	Sig. (2-tailed)	.	.071	.092
	N	10	10	6
NR_BC_MU	Pearson Correlation	-.592	1.000	-.463
	Sig. (2-tailed)	.071	.	.355
	N	10	10	6
CR3_MU	Pearson Correlation	.741	-.463	1.000
	Sig. (2-tailed)	.092	.355	.
	N	6	6	6

Source: own calculation, upon BSCEE Review 2001 – 2010.

Poland

Correlations

		ROE_PO	NR_BC_PO	CR3_PO
ROE_PO	Pearson Correlation	1.000	-.359	.217
	Sig. (2-tailed)	.	.342	.680
	N	10	9	6
NR_BC_PO	Pearson Correlation	-.359	1.000	.815
	Sig. (2-tailed)	.342	.	.048
	N	9	9	6
CR3_PO	Pearson Correlation	.217	.815	1.000
	Sig. (2-tailed)	.680	.048	.
	N	6	6	6

* Correlation is significant at the 0.05 level (2-tailed).

Source: own calculation, upon BSCEE Review 2001 – 2010.

Romania

Correlations

		ROE_RO	NR_BC_RO	CR3_RO
ROE_RO	Pearson Correlation	1.000	.710	.606
	Sig. (2-tailed)	.	.021	.203
	N	10	10	6
NR_BC_RO	Pearson Correlation	.710	1.000	.838
	Sig. (2-tailed)	.021	.	.037
	N	10	10	6
CR3_RO	Pearson Correlation	.606	.838	1.000
	Sig. (2-tailed)	.203	.037	.
	N	6	6	6

* Correlation is significant at the 0.05 level (2-tailed).

Source: own calculation, upon BSCEE Review 2001 – 2010.

Russia

Correlations

		ROE_RU	NR_BC_RU	CR3_RU
ROE_RU	Pearson Correlation	1.000	.550	-.723
	Sig. (2-tailed)	.	.099	.018
	N	10	10	10
NR_BC_RU	Pearson Correlation	.550	1.000	-.748
	Sig. (2-tailed)	.099	.	.013
	N	10	10	10
CR3_RU	Pearson Correlation	-.723	-.748	1.000
	Sig. (2-tailed)	.018	.013	.
	N	10	10	10

* Correlation is significant at the 0.05 level (2-tailed).

Source: own calculation, upon BSCEE Review 2001 – 2010.

Slovakia

Correlations

		ROE_SK	NR_BC_SK	CR3_SK
ROE_SK	Pearson Correlation	1.000	.443	-.757
	Sig. (2-tailed)	.	.232	.081
	N	10	9	6
NR_BC_SK	Pearson Correlation	.443	1.000	-.326
	Sig. (2-tailed)	.232	.	.528
	N	9	9	6
CR3_SK	Pearson Correlation	-.757	-.326	1.000
	Sig. (2-tailed)	.081	.528	.
	N	6	6	6

Source: own calculation, upon BSCEE Review 2001 – 2010.

Slovenia

Correlations

		ROE_SL	NR_Bc_SL	CR3_SL
ROE_SL	Pearson Correlation	1.000	.466	.691
	Sig. (2-tailed)	.	.174	.128
	N	10	10	6
NR_BR_SL	Pearson Correlation	.466	1.000	-.143
	Sig. (2-tailed)	.174	.	.786
	N	10	10	6
CR3_SL	Pearson Correlation	.691	-.143	1.000
	Sig. (2-tailed)	.128	.786	.
	N	6	6	6

Source: own calculation, upon BSCEE Review 2001 – 2010.

Ukraine

Correlations

		ROE_UC	NR_BC_UC	CR3_UC
ROE_UC	Pearson Correlation	1.000	-.454	.421
	Sig. (2-tailed)	.	.188	.406
	N	10	10	6
NR_BC_UC	Pearson Correlation	-.454	1.000	.217
	Sig. (2-tailed)	.188	.	.679
	N	10	10	6
CR3_UC	Pearson Correlation	.421	.217	1.000
	Sig. (2-tailed)	.406	.679	.
	N	6	6	6

Source: own calculation, upon BSCEE Review 2001 – 2010.

PRO-GROWTH FISCAL POLICY: HOW TO ACHIEVE IT IN DEVELOPED COUNTRIES?

Agata Drobiszová

*VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: agata.drobiszova@vsb.cz*

Abstract

Fiscal policy can influence the economic growth even in the long run. It is therefore necessary to examine how to set appropriate fiscal policy which will promote economic growth in the long run and also which will be sustainable. Therefore the aim of the paper is to find out what is the effect of different types of government spending and taxes on economic growth in developed countries. From a methodological point of view, panel data estimation is used for 15 EU member countries in the period 1996-2011. Model includes particular types of government spending (according to the COFOG classification), taxes revenues (according to the standard classification) and state budget deficit. The results of the analysis show that only spending on defense, infrastructure and economic affairs and general public services has positive effect on economic growth. In addition, we show that both, direct and indirect taxes negatively affect the economic growth if we use them as the source of financing an increase of unproductive government spending.

Keywords

Fiscal Policy, Government Expenditure, Tax Revenue, Economic Growth.

JEL Classification

O40, H50, H20.

1 Introduction

In the short run, expansionary fiscal policy will spur economic growth, but it is questionable in the long run. Empirical works agree that fiscal policy can affect economic growth in the long term, even in the steady state. It appears therefore very important to investigate how to appropriately set the mix of government spending and taxes to promote economic growth. In the context of the ongoing crisis in public finances in many developed countries, this issue is highly discussed. The changes within the fiscal policy must therefore be viewed in the context of macroeconomic sustainability, efficient allocation of resources and reduction of public debt.

In the long term, increase in government spending has not always positive impact on economic growth. Only certain types of government spending have pro-growth effect. Therefore it is necessary to divide government expenditure on the particular types of government expenditure, and to examine which have positive or negative impact on economic growth in the long term. It is also important to investigate the sources of financing government spending, which may be the revenues from direct or indirect taxes, and increase of the state deficit. Selected funding source will also affect the final effect of fiscal policy on economic growth.

In view of the above, the aim of this paper is to determine the influence of different types of government spending and taxation on economic growth in developed countries. The analysis is carried out on a sample of 15 EU member countries over the period 1996-2011.

The empirical analysis in this article is based on a growth model described in the work of Mankiw et al. (1992). Here, the model is extended with government expenditure, taxes revenue and state budget balance. The structure of government spending is examined in the article according to their functional classification (COFOG - Classification of the Functions of Government), which corresponds to the methodology applied both by the OECD, and the EU (European Union, 2013).

Within COFOG, government spending is divided into 10 items.¹ To analyse the impact of taxation, standard classification is used² and then this items are divided into direct and indirect taxes.

2 Fiscal policy and economic growth

The development of endogenous growth theories, such as Lucas (1988) and Romer (1986), prompted the development of works that seeks to test the empirical relationship between public spending and economic growth. These growth models utilize the mechanisms describing how government spending can determine the level of GDP in the economy and the growth rate of output per worker in the steady state. Barro (1990), Jones et al. (1993) or Stokey and Rebelo (1995) investigated the effect of total government spending on economic growth and confirmed that government spending can affect economic growth in the steady state. This is also confirmed by numerous empirical studies, e.g. Aschauer (1989) or Kotlán (2012), which show that fiscal policy can have a significant impact on economic growth, both positive and negative, depending on the structure of the tax mix and government spending.

The existing empirical works do not provide consistent and stable results that would bring a clear understanding of the real, i.e. positive or negative, impact of government spending on economic growth. The studies only agree that government spending can affect economic growth, even in the steady state. Economists also believe that this government spending should be examined in the division to productive and unproductive spending; however, they disagree on the specific types of government spending which can be identified as such.³

Afonso et al. (2005a) emphasize that some government spending is necessary for the performance of the economy. This spending is called "productive spending", which is as important for economic growth as private capital and labour. This spending may directly increase the level of human and physical capital, promote technological progress, and thus contribute to economic growth. Government spending also indirectly supports economic growth by creating appropriate institutional conditions for private investment. Without this spending, the economy could not function well, and its absence would be significantly detrimental to economic growth.

The reason why individual studies are so inconsistent may, as suggested by e.g. Easterly and Rebelo (1993) and Afonso et al. (2005a), include the fact that the resulting effect of each type of government spending on economic growth is dependent on how effectively the spending was used. This is also confirmed by Keefer and Knack (1997) in their study, stating that the effect of government spending on economic growth is also linked to the efficiency of its use, which also depends on the quality of government, e.g. the level of corruption.⁴ Afonso and Furceri (2008) emphasize that government spending will not have a positive impact on economic growth if they are not spent on inefficient projects or if there is crowding out of private investment. This is also confirmed by Agénor (2010), who mentions that only when the degree of efficiency of government spending is high, such expenses may be considered productive. Otherwise, government spending will have a negative impact on economic growth and will therefore be considered unproductive. Dabla-Norris et al. (2012) emphasize that not all investment spending promotes economic growth. They provide an example of highways that lead nowhere or lighthouses in the desert. Grier and Tullock (1989) add that some government activities and regulation, such as mandatory spending, new regulation for businesses or environmental regulation have a negative impact on economic

¹ The functional classification of government spending includes spending on general public services; defence; public order and safety; economic affairs; environmental protection; housing and social infrastructure; health; recreation, culture and religion; education and social affairs (European Communities, 2007).

² Within the EU statistics, tax revenues are broken down to taxes on income, profits and capital gains; social security contributions; taxes on payroll and workforce; property taxes; taxes on goods and services and other taxes.

³ For more details see for example Drobiszová (2013), Machová (2013), Bleaney et al. (2001).

⁴ The issue is examined in more detail by Kotlánová and Kotlán (2013).

growth. The tendency of regulation to hamper economic growth has been empirically confirmed by the study of Denison (1985).

Especially social spending is considered to be unproductive government spending. Barro (1990) argues that the increase in the share of unproductive government spending in total government spending in the economy leads to a reduction in economic growth and the savings rate. This is because increasing this spending does not have a direct impact on the productivity of the private sector and also mainly leads to higher taxation in order to finance the increase in government spending. This gives individuals less incentive to invest, and the economy tends to grow more slowly. The work of Afonso and Furceri (2008) emphasized that it is especially social spending and subsidies that have a negative impact on economic growth. Afonso et al. (2005b) add that bigger public sector, as measured by the ratio of government spending to GDP, does not necessarily mean more effective provision of the benefits of the welfare state and higher economic growth.

Taxation affects economic growth through effects on individual growth variables – in the neoclassical model, these are the rate of savings, investment and the subsequent capital accumulation. In the case of extended growth models, economic growth is also affected by human capital, which is also affected by taxes (Kotlán and Machová, 2013). Kneller et al. (1999) point out that when examining the impact of taxation on economic growth, it is also important to distinguish between distortionary (or direct) and non-distortionary (or indirect) taxes, as they have different impact on economic growth. While distortionary taxes distort the steady state growth rate, non-distortionary taxes affect investment decisions, and therefore, as a rule, have no effect on the steady state growth rate. Economic theory as well as empirical studies show that higher taxation of labour leads to a decline in investment activity through pressure on corporate profits (Alesina et al., 1999). Direct taxes should therefore have a stronger distortionary effect, which also, compared to indirect taxes, has a significant negative impact on economic growth (Buus, 2012). In his study, Arnold (2008) examined the impact of different types of taxes on economic growth, and concludes economic growth is most negatively impacted by corporate taxation, followed by personal income tax and excise tax. Lee and Gordon (2005), Johansson et al. (2008), Matei and Pirvu (2009) also confirm that economic growth is most negatively affected by corporate taxes⁵.

Last but not least, the majority of economists dealing with the issue concerned (e.g. Kneller et al., 1999; Izák, 2011) point out that in terms of the impact on economic growth, it is necessary to consider the correlation between government spending and taxation. Government spending with growth-promoting effects is that which is financed through non-distortionary taxes. On the other hand, government spending which the most damaging to economic growth is unproductive government spending financed via distortionary taxes. Alesina and Ardagna (2010) add that fiscal expansion in the form of lowering the tax rate has a greater positive effect on growth than increasing government spending, while restrictive measures in the form of reducing government spending while maintaining the tax rate (rather than those based on tax increases) will lead to reducing the deficit and debt.

3 Fiscal policy in the model of growth

Most empirical studies only examine one side of the budget, that is, either government spending, or taxes, and completely ignore the inclusion of budgetary balances in the analyses. However, as pointed out in their work of Helms (1985), this may distort the estimated coefficients of individual fiscal variables. To get the exact impact of taxation and government spending on economic growth, it is necessary to examine these two quantities together with budgetary balance.⁶ This way it is

⁵ For more details about how corporate tax influence economic growth see Macek (2013). In the case of tax policy is also necessary to investigate the horizon (e.g. Kotlán and Machová, 2014 or Machová et al., 2013) and volatility of the taxes (e.g. Kotlán, 2013).

⁶ This principle was applied e.g. in the works of Izák (2011), Bleaney et al. (2001), Benos (2009).

possible to analyse both the structure of public expenditure, and its financing and the impacts on economic growth. As already mentioned, the empirical studies show that to achieve a positive impact on economic growth, it is necessary to finance productive government spending by non-distortionary, or indirect, taxes. Conversely, financing unproductive expenditure by distortionary (or direct) taxes has significant negative effect on economic growth.

The relationship between fiscal variables and economic growth is studied in this paper on the basis of the neoclassical growth model (see Mankiw et al., 1992), which is extended by government expenditure, taxes revenues and state budget balance. In accordance with the above studies, the model is supplemented by the whole structure of the budget. These are the above-mentioned fiscal variables, which can be generally divided into government spending, tax revenues and state budget balance.

The dependent variable G_{it} , which is represented in this paper by the growth of real GDP per capita, is a function of the control (growth) variables E_{it} and fiscal variables F_{it} , as is evident from equation (1), see Kneller et al. (1999).

$$G_{it} = \alpha + \sum_{i=1}^k \beta_i E_{it} + \sum_{j=1}^m \lambda_j F_{jt} + u_{it} \quad (1)$$

If the model includes all the items of the budget, i.e. revenues, expenditures and state budget balance, it can be assumed that their sum will be zero, see equation (2).

$$\sum_{j=1}^m F_{jt} = 0 \quad (2)$$

To prevent complete multicollinearity, one item of the set of fiscal variables must be omitted from the relationship. This variable is then seen as a source of funding for other items. Equation (1) can be modified as follows:

$$G_{it} = \alpha + \sum_{i=1}^k \beta_i E_{it} + \sum_{j=1}^{m-1} \lambda_j F_{jt} + \lambda_m F_{mt} + u_{it} \quad (3)$$

So, if we omit F_{mt} and assume the validity of equation (2), then the estimated model shall have the following form:

$$G_{it} = \alpha + \sum_{i=1}^k \beta_i E_{it} + \sum_{j=1}^{m-1} (\lambda_j - \lambda_m) F_{jt} + u_{it} \quad (4)$$

This indicates that instead of the typically tested hypothesis of zero coefficient F_{jt} , there is a verification of null hypothesis $[(\lambda_j - \lambda_m) = 0]$, rather than $(\lambda_j = 0)$. Therefore, the correct economic interpretation for each fiscal variable coefficient says that if any variable from a set of fiscal variables changes by one unit, it is compensated by a unit change in the omitted variable, which is the direct source of funding. Of course, if we change the omitted variable, i.e. the source of funding, we will achieve different coefficients for the other fiscal variables.

Based on such an extended neoclassical growth model and the relationship between government spending and taxes defined above, it can be expected that an increase in unproductive government spending financed via non-distortionary taxes will have a neutral to positive effect on economic growth. If such spending is financed through distortionary taxes, there will be a noticeable negative impact on economic growth. If there is an increase in productive government spending that will be directly financed through non-distortionary taxes, a positive impact on economic growth can be expected. In terms of distortionary taxes, the effect on economic growth is not entirely clear; it can be both positive and negative.

4 Empirical analysis: methodology, data and results

The empirical analysis is based on panel data, which include 15 EU member countries from 1996 to 2011. Dependent variable is represented by the real gross domestic product per capita (rGDP / cap.) Expressed in absolute value in purchasing power parity, EUR. The model also include control (growth) variable, namely capital accumulation approximated using the share of gross fixed capital formation by private sector to GDP in purchasing power parity. Fiscal variables then include government spending, tax revenues and state budget balance.

For the purposes of empirical analysis, government spending is broken down in accordance with the COFOG functional classification. Under COFOG, government spending is broken down into 10 items. Individual government expenditures are classified as productive or unproductive study according to Kneller et al. (1999).

In his study, Benos (2009) points to the issue of statistical significance of individual expenditures and notes that it is preferable to aggregate spending into larger groups, naturally only where the nature of the spending is similar. This approach is also applied in this paper. Fiscal variables related to government spending that enter the model are, on the side of productive spending, aggregated into the variables of spending on defence and security, infrastructure and economic affairs, education and health, environmental protection, general public services, and on the side of unproductive spending into the variables of expenditure on social affairs, recreation, culture and religion. These aggregated groups of government spending are expressed as a share of GDP in purchasing power parity.

With regard to the suitability for international comparisons and to the selected sample of countries, tax revenues are also investigated according to the standard classification. These are standard tax rates, i.e. share of tax revenues to GDP. Taxes are divided into two groups: direct / distortionary taxes and indirect / non-distortionary taxes. To maintain the assumption that $(\sum_{j=1}^m F_{jt} = 0)$ state budget deficit is also included in the model as a share of GDP.

The data for the empirical analysis were taken from the Eurostat. Methodologically, use is made of panel regression analysis which uses data for EU15 for the period 1996–2011. The model uses a number of variables; for some of them it was impossible to obtain recent, sufficiently reliable, data. As a result, the last year examined is 2011. Barro and Sala-i-Martin (2004) argue that the basic prerequisite for the use of regression analysis is the homogeneity of the sample of countries, which is the case here. The analysis included all common econometric tests, as described, for example, by Greene (2003). The software used is E-views, ver. 7.

Subsequently, a stationarity test of time series was carried out using the panel unit root test by Levin et al. (2002), Im et al. (2003), ADF and PP tests by Maddala and Wu (1999). For the rGDP per capita, human capital and unproductive spending lack of stationarity was identified, and therefore these time series were modified to first difference (d). Using a robust, the White Period, estimator ensured that the results of standard deviations were corrected for autocorrelation and heteroscedasticity. The 15 EU member countries constitute a closed homogeneous group of countries rather than a random sample; in addition, the data used is macroeconomic data, and therefore the model was estimated with fixed effects, as recommended by e.g. Wooldridge (2009).

Control growth variable has the expected sign, i.e. positively impact economic growth (see Table 1). To meet the assumptions of the equation (4), the individual models did not always include all the fiscal variables described above. Those that were not included in the models can, for interpretation purposes, be understood as an implicit source of financing. Table 1 shows non-productive spending, i.e. spending on social affairs, recreation, culture and religion.

Table 1. The impact of fiscal policy on economic growth in EU15 countries in the period 1996-2011

Dependent variable	d(ln(rGDP per capita))
Omitted variable	unproductive expenditure
C ₀	0.36 _(1.70) *
ln(Capital accumulation)	0.18 _(4.40) ***
d(ln(Unproductive expenditure))	-
ln(Prod. expenditure on defence and security)	0.05 _(1.90) *
ln(Prod. expenditure on infrastructure and economic affairs)	0.02 _(2.26) **
d(ln(Prod. expenditure on education and health))	-0.19 _(-2.94) ***
ln(Prod. expenditure on environmental protection)	-0.02 _(-2.91) ***
ln(Prod. expenditure on general public services)	0.02 _(1.27)
ln(Direct taxes and social security contribution)	-0.08 _(-2.20) **
d(ln(Indirect taxes))	-0.08 _(-2.32) **
ln(State budget balance)	-0.02 _(-5.21) ***
Adj. R ²	0.65
F-statistics	15.66***
Number of observations	213

Comment: *, **, ***; represent a significance level of 10%, 5% and 1%; t-statistics in parentheses.
 Source: authors' own calculations.

Positive effect on economic growth is shown in case of productive spending on defence and security, infrastructure and economic affairs and on general public services if the growth of this expenditure is financed by reducing unproductive government spending. It means that substitution of a part of unproductive government spending by spending on this productive expenditure will affect economic growth positively.

Conversely, productive government spending on education and health and environmental protection shows a negative impact on economic growth if the growth of this spending would be financed by reducing unproductive government spending. The reason why these costs have a negative impact on economic growth may include their ineffective use. This is also consistent with more recent empirical works which point to the fact that if government spending is used on inefficient projects or if you they crowd out private investment, there will be no positive impact on economic growth (Afonso and Furceri, 2008; Agénor, 2010). In the case of environmental protection, empirical work also confirms the negative impact of environmental regulation on economic growth, see, e.g. Grier and Tullock (1989).

If revenues from distortionary taxes increase in order to pay for an increase in unproductive government spending, the results in Table 1 clearly show that there will be a reduction in economic growth. Indirect taxes have the same effect on economic growth. The results of the estimated model therefore lead to a conclusion that financing unproductive government spending through increase of direct or indirect taxes will hamper economic growth.

5 Conclusion

Fiscal policy can influence economic growth even in the long term. Therefore it is very important to investigate how to set the optimal mix of taxes and government expenditure to promote economic growth.

The aim of the article was to investigate the influence of different types of government spending and taxation on economic growth in developed countries, using the data for 15 EU member countries in the period 1996-2011. The empirical analysis was based on a panel model describing the impact of each fiscal variable on economic growth. These variables were productive and unproductive government spending, taxes broken down to distortionary and non-distortionary taxes and state budget balance.

The main conclusions of this article indicate that government spending on education and health and environmental protection have not positive effect on economic grow. This may be due to

inefficient use of spending in the given area. Spending on environmental protection include the development of standards and carrying out inspections relating to pollution. Empirical studies suggest that environmental regulation often hinders economic growth.

Therefore the substitution of a part of unproductive government spending for spending on education and health and environmental protection will impact economic growth negatively.

Conversely, a positive effect on economic growth is caused by government spending on defence and security, infrastructure and economic affairs, and on general public services in the case that their source of funding is the reduction of unproductive government spending. It is important recommendation for policy-makers that substitution of part for non-productive government spending by spending on this expenditure will encourage economic growth.

In the case of tax revenues the results of this article show that if we increase taxation for financing unproductive government expenditure it will influence economic growth negatively and it does not matter whether it is the case of direct or indirect taxes.

6 Acknowledgement

This paper was financially supported within the VŠB - Technical University SGS grant project No. SP2014/145 “The Influence of Structure of Government Spending and Taxes on Selected Sectors and Economic Growth in the Czech Republic“.

References

- [1] Afonso, A. and D. Furceri, 2008. *Government size, composition, volatility and economic growth*. European Central Bank Working Paper No.849.
- [2] Afonso, A. et al., 2005a. *Quality of public finances and growth*. European Central Bank Working Paper No. 438.
- [3] Afonso, A., L. Schuknecht and V. Tazzi, 2005b. Public Sector Efficiency: An International Comparison. *Public Choice*, vol. 123, issue 3, pp. 321-347.
- [4] Agénor, P., 2010. A Theory of Infrastructure-led Development. *Journal of Economic Dynamics & Control*, vol. 34, pp. 932-950.
- [5] Alesina, A. and S. Ardagna, 2010. Large Changes in Fiscal Policy: Taxes versus Spending. *Tax policy and the Economy*, vol. 24, pp. 35-68.
- [6] Alesina, A. et al., 1999. *Fiscal Policy, Profits, and Investment*, National Bureau of Economic Research Working Paper No. 7207.
- [7] Arnold, J., 2008. *Do Tax Structures Affect Aggregate Economic Growth? Empirical Evidence From a Panel of OECD Countries*. OECD Economics Department Working Paper No. 643.
- [8] Aschauer, D., 1989. Is Public Expenditure Productive? *Journal of Monetary Economics*, vol. 23, pp. 177-200.
- [9] Barro, R., 1990. Government Spending in a Simple Model of Endogenous Growth. *Journal of Political Economy*, vol. 98, issue 5, pp. 103-125.
- [10] Barro, R. and X. Sala-i-Martin, 2004. *Economic Growth*. Cambridge and London: MIT Press.
- [11] Benos, N., 2009. *Fiscal Policy and Economic Growth: Empirical Evidence from EU Countries*. University Library of Munich Working Paper No. 19174.

- [12] Bleaney, M., N. Gemmell and R. Kneller, 2001. Testing the Endogenous Growth Model: Public Expenditure, Taxation and Growth over the Long Run. *Canadian Journal of Economics*, vol. 1, pp. 36-57.
- [13] Buus, T., 2012. Daně z příjmů versus daň z přidané hodnoty v malé otevřené ekonomice. *Politická ekonomie*, vol. 60, issue 1, pp. 58-80.
- [14] Dabla-Norris, E., J. Rumbery, A. Kyobe, Z. Mills and C. Papageorgiou, 2012. Investing in Public Investment: An Index of Public Investment Efficiency. *Journal of Economic Growth*, vol. 17, issue 3, pp. 235-266.
- [15] Denison, E., 1985. *Trends in American economic growth: 1929–1982*. Washington, DC: The Brookings Institution.
- [16] Drobiszová, A., 2013. The Impact of Productive and Unproductive Government Expenditure on Economic Growth in OECD Countries. In: Z. Machová, ed. *Proceedings from the 3rd International Scientific Conference: TAXES IN THE WORLD*. Ostravice: VŠB-TUO, pp. 37-47.
- [17] Easterly, W. and S. Rebelo, 1993. Fiscal Policy and Economic Growth. An Empirical Investigation. *Journal of Monetary Economics*, vol. 32, issue 3, pp. 417-458.
- [18] European Communities, 2007. Manual on Sources and Methods for the Compilation of COFOG Statistics Classification of the Functions of Government (COFOG). Luxembourg: Office for Official Publications of the European Communities.
- [19] European Union, 2013. *Public Finances in EMU*. European Economy 4|2013.
- [20] Greene, W., 2003. *Econometrics Analysis*. New Jersey: Prentice-Hall.
- [21] Grier, K. and G. Tullock, 1989. An Empirical Analysis of Cross-National Economic Growth: 1951-1980. *Journal of Monetary Economics*, vol. 24, pp. 259-276.
- [22] Helms, L. J., 1985. The Effect of State and Local Taxes on Economic Growth: A Time Series-Cross Section Approach. *The Review of Economics and Statistics*, vol. 67, issue 4, pp. 574-582.
- [23] Im, K. S., M. Pesaran and Y. Shin, 2003. Testing for Unit Roots in Heterogeneous Panels. *Journal of Econometrics*, vol. 115, pp. 53-74.
- [24] Izák, V., 2011. Vliv vládních výdajů a daní na ekonomický růst. *Politická ekonomie*, vol. 59, issue 2, pp. 147-163.
- [25] Johansson, A. et al., 2008. *Tax and Economic Growth*. OECD Economics Department Working Papers No. 621.
- [26] Jones, L., R. Manuelli and P. Rossi, 1993. Optimal Taxation in Models of Endogenous Growth. *Journal of Political Economy*, vol. 101, issue 3, pp. 485-517.
- [27] Keefer, P. and S. Knack, 1997. Why Don't Poor Countries Catch Up? A Cross-National Test of Institutional Explanation. *Economic Inquiry*, vol. 35, issue 3, pp. 590-602.
- [28] Kneller, R., M. Bleaney and N. Gemmell, 1999. Fiscal Policy and Growth: Evidence from OECD Countries. *Journal of Public Economics*, vol. 74, issue 2, pp. 171-190.
- [29] Kotlán, I., 2013. Level and Volatility of Taxes: The Impact on Economic Growth. In: Z. Machová, ed. *Proceedings of the 3rd International Scientific Conference: TAXES IN THE WORLD*. Ostrava: VŠB, pp. 69-82.

- [30] Kotlán, I., 2012. The Influence of Taxation and Government Expenditure on the Economic Growth in the OECD Countries. In: Z. Machová, ed. *Proceedings from the 2nd International Scientific Conference: TAXES IN THE WORLD*. Trojanovice: VŠB-TUO, pp. 51-65.
- [31] Kotlán, I. and Z. Machová, 2014. Tax Policy Horizon in the OECD Countries. *Politická ekonomie*, vol. 62, issue 2, pp. 161-173.
- [32] Kotlán, I. and Z. Machová, 2013. The Issue of Using Tax Quota in the Growth Empiricism. In: M. Tvrdoň and I. Majerová, eds. *Proceedings of the 10th International Scientific Conference: Economic Policy in the European Union Member Countries Selected Papers*. Karvina: Silesian University, pp. 145-160.
- [33] Kotlánová, E. and I. Kotlán, 2013. Influence of Corruption on Economic Growth: A Dynamic Panel Analysis for OECD Countries. In: A. Kocourek, ed. *Proceedings from the 11th International Conference on Liberec Economic Forum*. Sychrov: Technical University of Liberec, pp. 307-315.
- [34] Lee, Y. and R. Gordon, 2005. Tax Structure and Economic Growth. *Journal of Public Economics*, vol. 89, pp. 1027-1043.
- [35] Levin, A., C. F. Lin and C. Chu, 2002. Unit Root Tests in Panel Data: Asymptotic and Finite-Sample Properties. *Journal of Econometrics*, vol. 108, issue 1, pp. 1-24.
- [36] Lucas, R. E., 1988. On the Mechanics of Economic Development. *Journal of Monetary Economics*, vol. 22, pp. 3-39.
- [37] Macek, R., 2013. Is Level of Corporate Taxation Equally Important in all Countries? In: Z. Machová, ed. *Proceedings of the 3rd International Scientific Conference: TAXES IN THE WORLD*. Ostrava: VŠB-TUO, pp. 95-102.
- [38] Machová, Z., 2013. Pro-growth Effects of (Un)productive Government Spending in the OECD. In: Z. Machová, ed. *Proceedings of the 3rd International Scientific Conference: TAXES IN THE WORLD*. Ostrava: VŠB-TUO, pp. 103-112.
- [39] Machová, Z., Ch. Kliková and I. Kotlán, 2013. Corporate Tax Changes: When is Fiscal Policy Effective? In: Z. Machová, ed. *Proceedings of the 3rd International Scientific Conference: TAXES IN THE WORLD*. Ostrava: VŠB-TOU, pp. 1-12.
- [40] Maddala, G. S. and S. Wu, 1999. A Comparative Study of Unit Root Tests with Panel Data and a New Simple Test. *Oxford Bulletin of Economics and Statistics*, vol. 61, pp. 631-652.
- [41] Mankiw, N. G., D. Romer and D. N. Weil, 1992. A Contribution to the Empirics of Economic Growth. *The Quarterly Journal of Economics*, vol. 107, issue 2, pp. 407-437.
- [42] Matei, G. and D. Pirvu, 2009. Aspects Concerning Corporate Taxation in the European Union. *Finante - provocarileviitorului (Finance - Challenges of the Future)*, vol. 1, issue 9, pp. 127-133.
- [43] Romer, P. M., 1986. Increasing Returns and Long-Run Growth. *Journal of Political Economy*, vol. 94, issue 5, pp. 1002-1037.
- [44] Stokey, N. L. and S. Rebelo, 1995. Growth Effects of Flat-Rate Taxes. *Journal of Political Economy*, vol. 103, issue 3, pp. 519-550.
- [45] Wooldridge, M. J., 2009. *Introductory Econometrics: A Modern Approach*. Mason: South – Western CENGAGE Learning.

REVIEW PROCEDURE CONCERNING THE AWARD OF PUBLIC CONTRACTS IN CZECH REPUBLIC CONCERNING WITH LEGISLATION IN THE EU

Danuta Duda

*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: duda@opf.slu.cz*

Abstract

The article deals with the review procedure concerning the award of public contracts, legislation in this area, which represents directive 2007/66/EC of the European Parliament and of the Council of 11 December 2007 amending Council Directives 89/665/EEC and 92/13/EEC with regard to improving the effectiveness of review procedures concerning the award of public contracts and in Act on Public Contracts no. 137/2006 Coll. of the Czech Republic. The aim of this article is to explore the legal regulation of the review procedure. Member States of the EU (also Czech Republic) have to abide by the minimum standards in the review procedures, in particular guarantees of transparency, equal treatment, and non-discrimination. Directive 2007/66/EC also includes a special system of rectification in the event of a serious breach of EU law in the area of public procurement. It is a procedure against a Member State, it is initiated by the European Commission.

Keywords

Czech republic, European union, public contracts, review procedure, The Office for the Protection of Competition.

JEL classification

K42

1 Introduction

The article deals with the review procedure concerning the award of public contracts, legislation in this area, which represents directive 2007/66/EC of the European Parliament and of the Council of 11 December 2007 amending Council Directives 89/665/EEC and 92/13/EEC with regard to improving the effectiveness of review procedures concerning the award of public contracts, in the Czech Republic the review procedure is regulated by Act No. 137/2006 Sb. on Public Contracts, as amended. The aim of this article is to explore the legal regulation of the review procedure as a control mechanism the award of the public contracts. Member States of the EU (also Czech Republic) have to abide by the minimum standards in the review procedures, in particular guarantees of transparency, equal treatment, and non-discrimination. The review procedure must be fast, efficient and performed by an independent authority. The Czech Republic as a member state of the EU must obey also the minimum standards for national review procedures. Directive 2007/66/EC also includes a special system of rectification in the event of a serious breach of EU law in the area of public procurement. It is a procedure against a Member State, it is initiated by the European Commission.

2 Review procedure concerning the award of public contracts in the European Union

The review procedure is part of the award procedure and is intended to improve transparency, equal treatment of competitors and to avoid any discrimination between individual tenderers. In various EU Member States, there are different types of review procedures that could be variously divided. In general we can say that there are three basic models of review procedures: administrative proceedings (before an independent body), which can be subsequently reviewed before administrative justice (eg. Czech Republic, Hungary, Slovenia), judiciary proceedings - commercial judiciary or administrative judiciary (eg. the United Kingdom and Sweden) or it may be a special type of procedure so-called quasi-judicial type (eg. Poland).

For interest, is introduced the review procedure of quasi-judicial type in Poland. In Poland is the President of the Public Procurement Office, who carries out controls of the contract award procedure. The President of the Public Procurement Office shall be subordinate to the Prime Minister. The President of the Public Procurement Office shall be appointed by the Prime Minister from among persons belonging to the state personnel reserve. The Prime Minister shall recall the President of the Public Procurement. The President of the Public Procurement Office is a central government body competent for matters concerning public contracts. The objective of controls is to prove the conformity of contract award procedures with the Public Procurement Law. The control shall take place in the seat of the Public Procurement Office.

The appeal shall be submitted to the Chairman of the National Appeal Chamber, the composition of the Chamber has higher law education, a special exam in the area of public procurement and are completely independent. Members of the National Appeal Chamber are appointed and dismissed by the Prime Minister from among persons satisfying the requirements (see below), who obtained the best results in qualifying procedure. A person eligible to become member of the Chamber: is a Polish citizen; has higher law education; has full legal capacity to enter into legal transactions; enjoys all public rights; has an unblemished reputation; has not been validly convicted of offences committed intentionally; has minimum 5 year work experience in public administration or at the positions connected with giving legal advice, preparing legal opinions, preparing drafts of legal acts as well as acting before courts and offices. Since the amendment in 2009, the appeal is submitted directly to the Chairman of the National Appeal Chamber, and not as it was before the amendment to the President of the Public Procurement Office, which accelerated the process. The appeal must be lodged within 10 days of the receipt of the information about the activities of the contracting entity, which led to lodged an appeal, provided that the information sent by fax or electronically or within 15 days of the receipt of the information about the activities of the contracting entity, which led to lodged an appeal, provided that the information sent otherwise than by fax or electronically. Against the decision of Chamber, the parties and participants of the appeal procedure may lodge a complaint to district court. Complaints shall be lodged to the district court competent for the seat or place of residence of the awarding entity. Complaints are lodged through the Chairman of the National Appeal Chamber within 7 days of submission of the Chamber's decision, sending at the same time its copy to the opposing party of the petition. For this review procedure is typical efficiency due to short deadlines for the review of the National Appeal Chamber also the subsequent review procedure by the court and the impossibility to file objections directly the contracting entity. Another advantage is the National Appeal Chamber as already mentioned quasi-judicial authority. According Article 267 it is a judicial body and can submit a preliminary ruling.

Negative aspect of the review procedure is that after the amendment of the Public Procurement Law in Poland, in 2009, was canceled to lodge the objections. According Jurčík (2007) lodging an objections are considered the most effective control mechanism in the area of the award of public procurement.

2.1 Review procedure under the Directive 2007/66 /EC

As mentioned above, the EU legislation in this area is the directive 2007/66/EC of the European Parliament and of the Council of 11 December 2007 amending Council Directives 89/665/EEC and 92/13/EEC with regard to improving the effectiveness of review procedures concerning the award of public contracts. Pursuant to this directive Member States shall ensure that the review procedures are available, under detailed rules which the Member States may establish, at least to any person having or having had an interest in obtaining a particular contract and who has been or risks being harmed by an alleged infringement. Member States may require that the person wishing to use a review procedure has notified the contracting authority of the alleged infringement and of his intention to seek review. Member States may require that the person concerned first seek review with the

contracting authority. In that case, Member States shall ensure that the submission of such an application for review results in immediate suspension of the possibility to conclude the contract.

Member States shall ensure that the measures taken concerning the review procedures include provision for powers to:

a) take, at the earliest opportunity and by way of interlocutory procedures, interim measures with the aim of correcting the alleged infringement or preventing further damage to the interests concerned, including measures to suspend or to ensure the suspension of the procedure for the award of a public contract or the implementation of any decision taken by the contracting authority;

b) either set aside or ensure the setting aside of decisions taken unlawfully, including the removal of discriminatory technical, economic or financial specifications in the invitation to tender, the contract documents or in any other document relating to the contract award procedure;

c) award damages to persons harmed by an infringement.

When a body of first instance, which is independent of the contracting authority, reviews a contract award decision, Member States shall ensure that the contracting authority cannot conclude the contract before the review body has made a decision on the application either for interim measures or for review.

Changes in the Directive 2007/66/EC: Directive 2007/66 / EC has introduced many changes in the review procedure, these changes were implemented into national legislation in EU Member States by 20 December 2009. The most important changes are:

1) **The introduction of mandatory the standstill period between the notice of the award procedure and the actual conclusion of the contract.** Directive only provides for minimum standstill periods. Member States are free to introduce or to maintain longer periods which exceed those minimum periods. The standstill period should give the tenderers concerned sufficient time to examine the contract award decision and to assess whether it is appropriate to initiate a review procedure. When the award decision is notified to them, the tenderers concerned should be given the relevant information which is essential for them to seek effective review. The same applies accordingly to candidates to the extent that the contracting authority or contracting entity has not made available in due time information about the rejection of their application. In order to prevent serious infringements of the standstill obligation and automatic suspension, which are prerequisites for effective review, effective sanctions should apply. Contracts that are concluded in breach of the standstill period or automatic suspension should therefore be considered ineffective in principle. A contract may not be concluded following the decision to award a contract falling before the expiry of a period of at least 10 calendar days with effect from the day following the date on which the contract award decision is sent to the tenderers and candidates concerned if fax or electronic means are used or, if other means of communication are used, before the expiry of a period of either at least 15 calendar days with effect from the day following the date on which the contract award decision is sent to the tenderers and candidates concerned or at least 10 calendar days with effect from the day following the date of the receipt of the contract award decision.

2) **Remedies in cases of illegal direct awards:** Direct awards should include all contract awards made, without prior publication of a contract notice in the Official Journal of the European Union and tenderer gets the contract without having to compete with others. Contract resulting from an illegal direct award should be considered void. The proposal to impose a ban on the performance of the contract shall be delivered within 30 calendar days from the date when the contracting entity made known the contract award notice in the Official Journal of the EU including the statement of the reasons for the award of a public contract without publication of the contract notice, however, not later than within 6 months following the conclusion of such a contract (Wagner, 2007).

2.2 A special corrective mechanism based of the review directive

Directive 2007/66/EC also includes a special system of rectification in the event of a serious breach of EU law in the area of public procurement. It is a procedure initiated by the European Commission, which may be initiated only until the conclusion of a public contract.

The European Commission shall notify the Member State concerned of the reasons which have led it to conclude that a serious infringement has been committed and request its correction by appropriate means.

Within 21 calendar days of receipt of the notification, the Member State concerned shall communicate to the European Commission:

- a) its confirmation that the infringement has been corrected;
- b) a reasoned submission as to why no correction has been made; or
- c) a notice to the effect that the contract award procedure has been suspended either by the contracting authority on its own initiative or on the basis of the other powers (interim measures and the suspension of the procedure for the award of a public contract or the implementation of any decision taken by the contracting authority);).

Reasoned submission communicated pursuant to point b) may rely among other matters on the fact that the alleged infringement is already the subject of judicial or other review proceedings. In such a case, the Member State shall inform the Commission of the result of those proceedings as soon as it becomes known.

Where notice has been given that a contract award procedure has been suspended in accordance with point c), the Member State shall notify the European Commission when the suspension is lifted or another contract procedure relating in whole or in part to the same subject matter is begun. That notification shall confirm that the alleged infringement has been corrected or include a reasoned submission as to why correction has not been made.

2.3 Public Procurement Network

In the review procedure also has an important function Public Procurement Network (PPN). Public Procurement Network can help a company facing problems with a procurement procedure abroad.

When a supplier submits a complaint with the required information, the PPN contact in his home country reviews the case as soon as possible. In some cases, the PPN contact may realise that the procurement rules have in fact been followed and be in a position to explain why it would be inappropriate to take the case further. On the contrary, if there is reason to suspect that the public procurement rules have been breached, the PPN contact will approach the relevant counterpart abroad and send his assessment of the case requesting that it be examined. If it becomes clear that the complaint is justified, the PPN counterpart will endeavour to ensure that the procurement procedure is corrected to allow all companies to compete on an equal footing. Where the PPN does not deliver a satisfactory outcome, suppliers may choose to bring their complaints before the courts in the country concerned, or take cases directly to the European Commission. PPN contacts will advise about these procedures, but they are not in a position to provide legal support in such cases (Office for the Protection of Competition, Public Procurement Network, 2012).

3 Review procedure concerning the award of public contracts in the Czech Republic

The review procedure is carried out in the Czech Republic in the administrative procedure, which is then reviewed by the administrative judiciary. The advantage of review procedures conducted in the administrative procedure is established procedural steps with some modifications to take account of the particularities in the review procedure concerning the award of public contracts (Jurčík, 2004).

3.1 Objections

In awarding above-the-threshold and below-the-threshold public contracts or in a design contest, any economic operator having or having had an interest in obtaining a particular public contract and its rights have been harmed or risk being harmed as a consequence of an alleged infringement of the law by an action of the contracting entity is entitled to lodge reasoned objections with the contracting entity. According to the Act on the Public Contracts objections may be lodged by any entity that could provide the performance of the public contract and will not have to submit a tender or request to participate in the award procedure. According Jurčík (2011), a supplier who did not participate in the award procedure, may submit objections only provided, that rights have been harmed or risk being harmed. And then he adds: "supplier, who did not participate in the award procedure as a candidate or the tenderer, will be difficult to prove, that his rights have been harmed or risk being harmed as a consequence of an alleged infringement of the law". Objections may be lodged against all actions of a contracting entity and the complainant shall deliver them to the contracting entity within 15 days and in the case of simplified below-the-threshold procedure within 10 days from the date when the complainant learned of the alleged infringement of this act by an action of the contracting entity, however, not later than by the date of the conclusion of the contract.

The complainant shall deliver the objections against tender conditions not later than within 5 days following the expiry of the limit for the submission of tenders. Objections against the decision on the selection of the most suitable tender or against the decision of the contracting entity on the exclusion from the participation in the award procedure shall be delivered by the complainant to the contracting entity within 15 days and in the case of simplified below-thethreshold procedure within 10 days from the date of delivery of the notice of the selection of the most suitable tender for the public contract. Objections shall be lodged in writing. Objections are not enough to submit to the postal services in the last day of the time limit, but must deliver directly to the contracting entity (Podešva et al., 2011). The complainant shall state in the objections who lodges them, against which action of the contracting entity they are intended and what action is considered to be an infringement of the law. Lodging the objections in due course and in good time shall be conditional for filing a proposal to review practices of the contracting entity in the same matter. The complainant is entitled to file a proposal to ban the performance of the contract without prior lodging objections. The complainant that has failed to avail itself of the possibility to lodge objections is not entitled to initiate an action with the Office for the Protection of Competition in the same matter.

The contracting entity shall review the lodged objections in their entirety and send to the complainant a written decision on whether or not it complies with the objections, the statement of reasons included, not later than within 10 days following the receipt of the objections. Decision on objections is a special kind of decision *sui generis*, whose terms are defined by law. Decision on the objections consists of three parts, namely the statement (the way decisions on objections), justification (reason of the decision on the objections) and instructions on how to submit a proposal to the Office for the Protection of Competition (Decision of the Office for the Protection of Competition, reference number: ÚOHS-S278/2011/VZ-7448/2012/540/ZČa). If the contracting entity complies with the objections, it shall indicate the manner of corrections to be made in the decision. Unless the contracting entity complies with the objections, it shall notify the complainant by a written decision of the possibility to file a proposal with the Office for the Protection of Competition.

Objections proceedings are informal, faster than the subsequent proceedings before the Office for the Protection of Competition and also not so expensive. The complainant need not pay any deposit or costs.

3.2 Supervision over compliance with the Act on Public Contracts

Although public procurement legislation is as a whole the mixed nature and therefore contains the legal rules public and private character, the review procedure has a purely public character (Jurčík, 2007). The Office for the Protection of Competition shall exercise supervision over the procedure of a contracting

entity in awarding public contracts and a design contest, in which it shall: grant interim measures, take decision on whether the contracting entity has proceeded in compliance with this Acts in awarding a public contract and a design contest, order corrective measures, conduct a check on practices of the contracting entity in awarding public contracts under separate legal regulation. It shall be without prejudice to competence of other bodies conducting such checks under separate legal regulation.

Proceedings on the review of practices of the contracting entity shall be initiated upon a written proposal by the complainant or *ex officio*. The proposal may be filed against all practices of the contracting entity that preclude or could preclude the principles of transparency, equality of parties and non-discrimination and as a consequence of which the rights of the petitioner risk being harmed or have been harmed, and in particular, against: tender conditions, content of the contract notice or call for competition, exclusion of a tenderer from the award procedure, decision on the selection of the most suitable tender, use of a certain type of the award procedure.

Following the conclusion of a contract, the proposal may be only filed against the conclusion of a contract without prior publication of a contract notice or against the breach of a ban to conclude such a contract set forth by Act on public procurement. The petitioner is entitled to seek solely the imposition of a ban on the performance of the contract.

The deadline for receipt of proposals Office for the Protection of Competition: The proposal shall be delivered to the Office for the Protection of Competition and in duplicate to the contracting entity within 10 calendar days from the date of delivery to the petitioner of the decision under which the contracting entity has not complied with the objections. The proposal to impose a ban on the performance of the contract shall be delivered solely to the Office for the Protection of Competition within 30 calendar days from the date when the contracting entity made known the contract award notice in the Official Journal of the EU including the statement of the reasons for the award of a public contract without publication of the contract notice, however, not later than within 6 months following the conclusion of such a contract. Where the contracting entity has failed to settle the objections, the proposal to order corrective measures may be delivered to the Office for the Protection of Competition and the contracting entity not later than within 25 calendar days from the date of dispatch of the objections by the petitioner.

Particulars of the proposal: Each proposal must clearly indicate what it is concerned with, who makes it, whom it is directed against, what it proposes; and it must be signed and dated. A natural person specified in the proposal name, surname, date of birth and place of residence, or a different delivery address. The legal person gives the name or business name, identification number or similar information and the registered office or any other address for delivery. The proposal must include the designation of the administrative authority to which it is addressed. The proposal shall, besides general essentials applicable to the submission, contain identification of the contracting entity, what action is considered to be an alleged infringement of the law as a consequence of which the rights of the petitioner have been harmed or risk to be harmed, production of evidence, and what the petitioner claims. In addition to the evidence of payment of the deposit, and in the case of a proposal sent out to the Office for the Protection of Competition prior to the conclusion of a contract, the evidence of the delivery of objections to the contracting entity and the evidence of the re-deposit of a pecuniary tender security (except in cases where the economic operator is not obliged to lodge) shall be supplemented to the proposal. If the proposal is delivered by another party (by a lawyer), it shall be supplemented with a power of attorney.

Deposit: On filing the proposal, the petitioner shall pay to the bank account of the Office for the Protection of Competition a deposit amounting to 1 % of the petitioner's tender price throughout the entire duration of the public contract, however, not less than CZK 50,000 and not more than CZK 2,000,000. Where it is impossible to fix the petitioner's tender price or the tender price, which is the subject of evaluation, is fixed only as a price for the unit of performance while concluding a framework agreement or in the case of the proposal to impose a ban on the performance of a contract,

the petitioner shall be obligated to deposit CZK 100,000. The deposit shall be credited to the account of the Office for the Protection of Competition no later than the last day of the deadline for submission of the proposal (Jurčík, 2007). The deposit shall be the revenue of the State budget, if the Office for the Protection of Competition: rejects the proposal by its final ruling, or takes a decision to terminate the proceedings, where the petitioner has withdrawn its proposal after having been decided in the same administrative proceedings on the rejection of the proposal.

Office for the Protection of Competition issues a decision in the matter. The decision announces to that such person has the right or duty or does not. The decision has a power-regulatory character, which the essence lies in the power superiority of public administration entities towards entities, whom it is addressed (Průcha, 1996). Office for the Protection of Competition issued the following decisions: interim measures, decision of the corrective measures, decision to terminate the proceedings, decision of the rejection the proposal, decision to ban the performance of the contract.

Costs of Proceedings: Unless stipulated otherwise by this Act, the Office for the Protection of Competition and the parties to the proceedings shall bear their own costs of the proceedings. The ruling of the Office for the Protection of Competition shall, in addition, contain a decision concerning the obligation of the contracting entity to pay the costs of administrative proceedings. The costs of proceedings shall be paid out by a lump sum set out by implementing legal regulation.

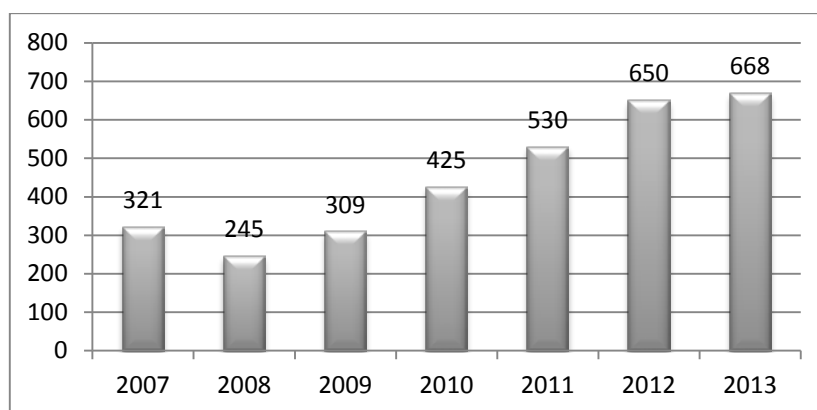


Figure 1. The number of initiated the first-instance procedure in area of public contracts (Source: Annual Report the Office for the Protection of Competition 2013)

In 2013, it was initiated 668 administrative procedure in the area of public contracts, 495 of them were initiated on the proposal and 173 ex officio. Uncompleted administrative procedures were 142. Based on Picture 1, we can say, that the number of initiated the first-instance procedure in the area of public contracts before the Office for the Protection of Competition since 2008 is rising.

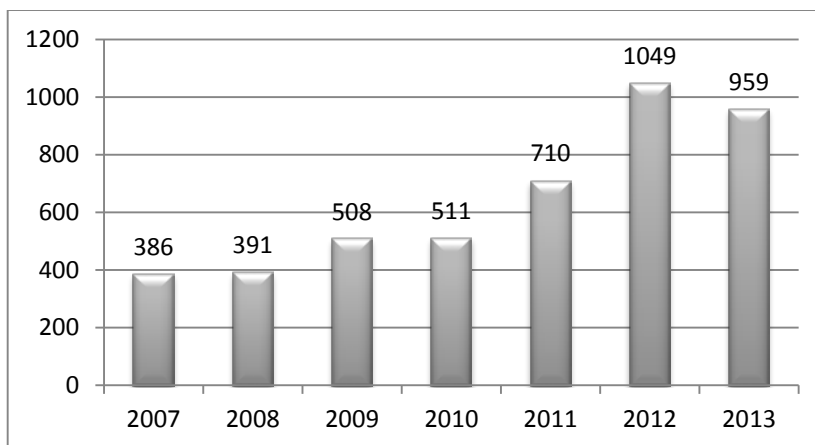


Figure 2. The number of issued first-instance decisions in the area of public contracts (Source: Annual Report the Office for the Protection of Competition 2013)

In 2013 were issued 959 decisions, of which 665 decisions were issued on the merits (decision on redress and sanctions - 235, decisions to terminate the proceedings - not founded misconduct - 113, stopping of administrative procedure on procedural reasons - 317). Interim measures were 179, rejected interim measures - 109, canceling a decision imposing interim measures - 6. Based on Picture 2 we can say, that the number of issued first-instance decisions in the area of public contracts before the Office for the Protection of Competition since 2007 is rising (exception is the year 2012, when the number of issued first instance decisions were greater than in year 2013).

Office for the Protection of Competition in the year 2013 imposed 119 fines in the amount of 58 761 000 CZK. Office for the Protection of Competition in year 2013 imposed 109 costs of proceedings, total amount imposed of the costs of proceedings were 3 519 672 CZK. The total amount of paid deposits in 2013 was 90 415 420 CZK. Forfeited deposits to the state budget amounted 16 349 779 CZK.

The highest fine imposed in the year 2013 amounted to 25 mln. CZK, contracting entity was České dráhy, a.s. (Czech Railways, Inc.) and the public contract concerned the purchase of trains Railjet (seven vehicle units with a control vehicle and a capacity of about 400 seats) without open procedure. The fine is not yet a final, Czech Railways submitted the remonstrance against the decision. But it is the highest fines as the Office for the Protection of Competition imposed for violation of the public contracts. Czech Railways planned to buy 16 sets of trains Railjet. Later, they chose to buy only 15 units with different configurations. Finally Czech carrier bought them from Siemens only seven roughly on 2,5 billion CZK. Czech Railways in the procedure before the Office for the Protection of Competition claimed, that only widened the scope of the original public contract for the purchase of 16 sets Railjet, and therefore the public contract was awarded in negotiated procedure without publication. According the Office for the Protection of Competition the two contacts differ. It was a completely new public contract and for its award in negotiated procedure without publication were not fulfilled legal conditions. The second highest fine in the year 2013 was imposed on the Armádní Servisní (Army Service), contributory organization, and was 4 mln. CZK. The tender for the cleaning and receptionist services concluded without open procedure. The fine is final. Armádní Servisní hired to cleaning and receptionist work a company Bartoň and partner from Olomouc. Previously, three times unsuccessfully tried to select a supplier in the tender and the award procedure is canceled. The argument, that was an urgent case, and therefore the used of the negotiated procedure without publication, but Office for the Protection of Competition did not acknowledge.

Remonstrance: According to § 152 Act No. 500/2004 Coll., Administrative Procedure Code, as amended: It is possible to lodge a remonstrance against a decision rendered in the first instance by: a central administrative authority, a minister, a state secretary of a ministry or a head of a central

administrative authority other than a ministry. About remonstrance in the Office for the Protection of Competition decides of the Chairman. The time limit for a remonstrance is 15 days from the day when the decision was notified except when otherwise provided by statute. About remonstrance in the Office for the Protection of Competition decides of the Chairman. An admissible remonstrance which was lodged in time has a suspensive effect except when otherwise provided by statute. The remonstrance committee consists of at least 5 members.

Except when otherwise provided by special statute in a remonstrance proceeding, it is possible:

- a) to discharge or alter the decision, if the remonstrance will be fully allowed this way and if no harm is caused to any of the participants unless all who are concerned, expressed their consent with the discharge or
- b) dismiss the remonstrance.

Use the autoremedial action (the capacity of the authority as a first-level administrative authority to make an independent decision on a lodged appeal, known as autoremedial action) in the remonstrance proceeding is possible only in the case, if in doing so this fully satisfies the proposal and if no harm can be caused thereby to any of the parties, unless all those affected have expressed their consent. Decision issued within autoremedial action is the first instance and can therefore remonstrance against it.

It is also possible to use extraordinary remedies (retrial or review procedure).

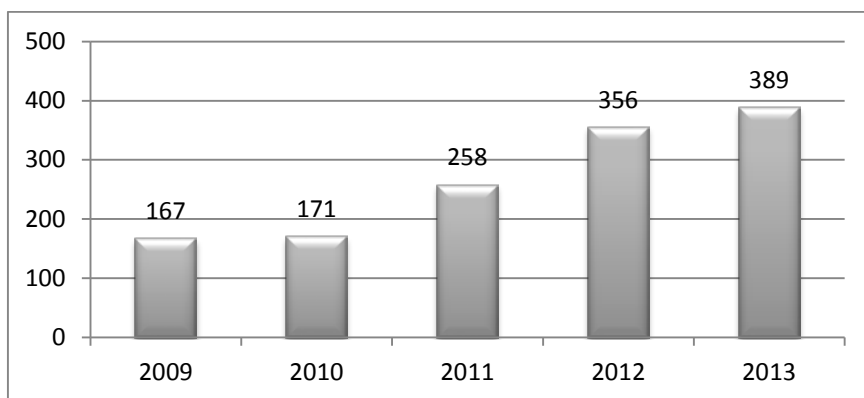


Figure 3. Number of the submitted remonstrances in the area of public contracts (Source: Annual Report the Office for the Protection of Competition 2013)

Number of remonstrances lodged against first instance decisions in the year 2013 was the 389. From Picture 3 it can see, that the number of submitted remonstrances since 2009 is rising.

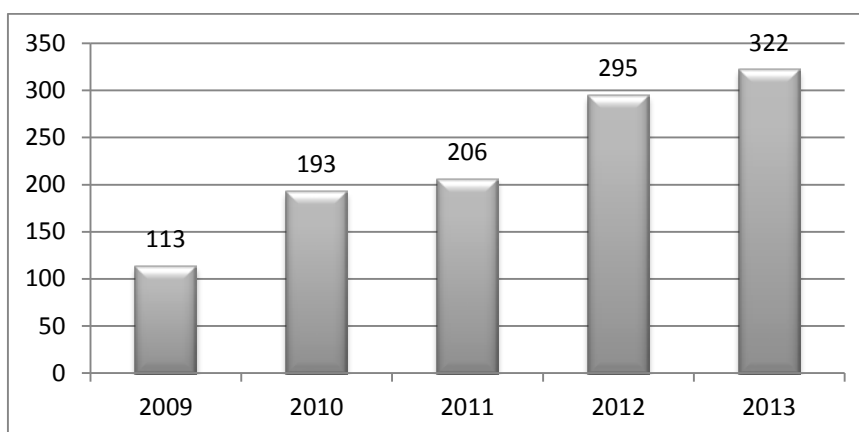


Figure 4. The number of the processed remonstrances in the area of public contracts (Source: Annual Report the Office for the Protection of Competition 2013)

In 2013, it issued 282 decisions on the remonstrances (out of which 189 were confirmed the first instance decision and remonstrance dismiss, 44 - were annulled in the first instance and returned the Office for the Protection of Competition, 25 - were annulled in the first instance and administrative procedure of the remonstrance was terminated, 3 - remonstrance was rejected for lateness, 21 - it was a procedural resolution of the Chairman), in the other 40 cases the decision of the first instance of the remonstrance proceeding terminated due to withdrawal, devoid of purpose or autoremedial action. Also the number of processed remonstrances as well as the number of submitted remonstrances is increasing. In 2013, 63 fines were imposed in the remonstrance proceeding. The amount of these fines was CZK 28 555 000.

Judicial review: The Administrative Court decides in administrative proceedings as a "court of public law" provides protection of public subjective rights of natural and legal persons, as guaranteed by the standards belonging to the area of public law (Hendrych, D. a kol., 2006). In the context of judicial review of the decision of the Office for the Protection of Competition are reviewed the administrative court according to Law No. 150/2002, Code of Administrative Justice, as amended. Unless otherwise provided for by this Act or by a special law, the protection of rights can be claimed in administrative justice provides only on the submission of a complaint and after the exhaustion of all appropriate remedial actions. The complaint can be filed within two months after the complainant was notified of the decision by being delivered its written copy or by another manner prescribed by law, unless a special law prescribes another time limit. Regarding the number of complaints filed in 2013 the Regional Court in Brno, so those were 56, the number of cassation complaints filed to the Supreme Administrative Court was 20 and the number of final terminated proceedings in both instances was the 34.

4 Evaluation a review procedure and changes de lege ferenda

In the Czech Republic are long deadlines for decisions in each instance, a large number of individual instances, which is in conflict with the need for as soon as possible to conclude an agreement of the public procurement.

Review procedure in the Czech Republic performs administrative authority, which is entrusted with the protection of competition and the area of state aid also. Some members of the Office for the Protection of Competition have not experience with area of public procurement.

It has not yet been solved problem of the review procedure in the small-scale public contacts.

According the directive 2007/66/EC, Member States shall ensure that the measures taken concerning the review procedures include provision for powers to award damages to persons harmed

by an infringement. Act No. 137/2006 on Public Contracts, as amended does not mention about damages. Economic operator claims for damages before a civil court. Problem is to prove, that is causality between unlawful behaviour of the contracting entity and cause damage.

As far as the some changes de lege ferenda in this area, so perhaps a more appropriate is a quasi-judicial model, which is the National Appeal Chamber in Poland. This quasi-judicial model will be characterized: increased request for vocational education of the members, award damages to persons harmed by an infringement and independent of the members. Of course quasi-model it would be necessary to supplement of the objections, which in Poland are not.

Other changes de lege ferenda could be: review procedure before an administrative authority - the Office for the Protection of Competition, but it would be necessary to shorten the deadlines, the administrative authority could be decided only in one-instance.

5 Conclusion

The aim of this article was to explore the legal regulation of the review procedure as a control mechanism the award of public contracts. We can say that the review procedure in the Czech Republic is unnecessarily lengthy and formal, long deadlines for decisions in each instance, a large number of individual instances. And as you can see from Picture 1-4, the number of initiated the first-instance procedure in area of public contracts, the number of issued first-instance decisions in the area of public contracts, number of submitted remonstrances in the area of public contracts, the number of processed remonstrances in the area of public contracts has continued to increase, which also causes delay in the procedure. As far as a some changes de lege ferenda in this area, so perhaps a more appropriate is a quasi-judicial model or preservation of the review procedure before an administrative authority - the Office for the Protection of Competition, but it would be necessary to shorten the deadlines, the administrative authority could be decided only in one-instance.

Due to frequent changes in the Act No. 137/2006 Sb. on Public Contracts, there are also the frequent changes in the review procedures concerning the award of public contracts, but this situation is necessary, because of changes in EU legislation (frequent changes of the EU directives on public procurement). Although are fulfilled all the control mechanisms, which in the review procedures exist, the area of public procurement creates strong corruption opportunities, mainly due to the large number of public finances, which are at the award procedure in the game.

Reference

- [1] Act No. 137/2006 Coll. on Public Contracts, as amended.
- [2] Act. No. 500/2004 Coll. Administrative Procedure Code, as amended.
- [3] Act of 29th January 2004 Public Procurement Law. Warsaw: Public Procurement Office.
- [4] Council Directive of 21 December 1989 on the coordination of the laws, regulations and administrative provisions relating to the application of review procedures to the award of public supply and public works contract (89/665/EEC).
- [5] Council Directive 92/13/EEC of 25 February 1992 coordinating the laws, regulations and administrative provisions relating to the application of Community rules on the procurement procedures of entities operating in the water, energy, transport and telecommunications sectors.
- [6] Decision of the Office for the Protection of Competition, reference number: ÚOHS-S278/2011/VZ-7448/2012/540/ZČa, nabytí právní moci 26. 11. 2012 [online]. [2014-28-06]. Available from: <http://www.uohs.cz/cs/verejne-zakazky/sbirky-rozhodnuti/detail-10031.html>.

- [7] Directive 2007/66/EC of the European Parliament and of the Council of 11 December 2007 amending Council Directives 89/665/EEC and 92/13/EEC with regard to improving the effectiveness of review procedures concerning the award of public contracts.
- [8] Hendrych, D. a kol., 2006. *Správní právo. Obecná část*, 6. vydání. Praha: C.H. Beck.
- [9] Jurčík, R., 2007. *Zadávání veřejných zakázek a udělování koncesí v ČR a v EU*, Praha: C. H. Beck.
- [10] Jurčík, R., 2004. *Zákon o veřejných zakázkách. Komentář*, Praha: C.H. Beck.
- [11] Jurčík, R., 2011. *Zákon o veřejných zakázkách: komentář*, 2. vyd. Praha: C.H. Beck.
- [12] Law No. 150/2002 Coll. Code of Administrative Justice, as amended.
- [13] Podešva, V. et al., 2011. *Zákon o veřejných zakázkách: komentář*, 2. vyd. Praha: Wolters Kluwer Česká republika.
- [14] Office for the Protection of Competition, 2013. *Annual Report the Office for the Protection of Competition 2013*. [online]. [2014-28-06]. Available from: file:///C:/Users/uzivatel/Downloads/UOHS_VZ_2013_final2%20(1).pdf.
- [15] Office for the Protection of Competition, 2012. *Public Procurement Network*. [online]. [2014-28-06]. Available from: <https://www.uohs.cz/en/public-procurement/public-procurement-network.html>.
- [16] Průcha, P., 1996. *Správní právo: obecná část*. Brno : Masarykova univerzita.
- [17] Wagner, P. (Evropská komise, DG MARKT), 2007. *Změna směrnice o přezkumném řízení. Konference: Zkušenosti s dohledem nad zadáváním veřejných zakázek*, Brno, 27.-28. listopadu 2007. [online]. [2014-28-06]. Available from: <http://www.uohs.cz/download/Konference.../Wagner.doc>.

THE PRICE TRANSMISSION IN WHEAT AND BEEF MEAT AGRI-FOOD CHAIN IN THE CZECH REPUBLIC

Barbora Dudová

*Mendel University in Brno, Faculty of Regional Development and International Studies, trida Generala Píky 2005/7,
613 00 Brno, Czech Republic
email: barbora.dudova@mendelu.cz*

Abstract

In the past was possible to characterized agriculture like a model close to perfect competition. Current model of agriculture is formed by many specific factors. There is very important companies' scope of activity and changes of current world tendencies. Nowadays is agriculture typical by higher specialization. That is probably because of the globalization process and connected process in forming of agri-food commodity chains. Finalizing elements of commodity chains have is this time very important role and now is not possible to investigated agriculture alone. For evaluation of relations in the context of price policy in commodity chain is used price transmission analysis. This article is focused on description and application of price transmission analysis. Results of price transmission indicated in animal production asymmetric transfer of price in commodity chains. Plant production has closer to symmetric price transfer of commodity chains.

Keywords

Price Transmission, Elasticity, Agribusiness, Commodities.

JEL Classification

Q13, Q11.

1 Introduction

Agriculture is in this time influenced by previous and continuing levels of process and distribution. Current state of agribusiness exceeds the narrow definition of agriculture and therefore in the new globalizing economy requires an understanding of the broader (not only) economic aspects of food production. It is related to organization of economic context of food production, defining the position of individual production parts, processing of agricultural raw materials and trade of these commodities, which is connected in the one system and that, is agribusiness. The term comprises a companies, relations and activities directly or indirectly related with agriculture. This approach allows investigating also market relations in production of agricultural products, process and trading together (Bečvářová, 2005).

Situation on agriculture market is determined by many factors. One of them is market structure. That is decisive not only for the agricultural market, but also for the organization of whole vertical structure. Producers of agricultural products are represented by many small farmers, as well as businesses and by big companies. Market structure in the agri-food vertical is often characterized like an oligopoly or oligopsony structure. The issue is, if the market power is abuses in the supply or demand direction (Čechura and Šrobová, 2008).

The development of prices on partial markets of commodity chain is important for all price development on the previous and continuing parts of commodity chain. Decreases (or increases) on partial market of commodity chain is affect prices on the other partial markets on the commodity chain. But on the other way, there is no rule that increase or decrease of prices in the final market of commodity chain directly and fully affects the price of a product at the previous level of the commodity chain. This approach explains for example Revoredo, Nadolnyal and Fletcher (2004), and that is related with market power and inventory management. For evaluation of type of price transmission between sub-markets of commodity chain is primary the analysis of a price transmission. In the agricultural sector is the price transmission characterized by asymmetric price transfer between partial markets of commodity chain.

For selected commodity chains from animal and plant production in the Czech Republic, is typical decrease, especially of animal production. The highest state decrease was observed in the cattle. State

of cows with milk production is lower than 50% since 1996. There is reflected low purchase price of milk and increasing costs. Decrease is also on the other side of commodity chain, in the consumption of beef meat. There is reflected high price (consumption price) of this commodity. Nowadays is consumption of beef meat substitutes by chicken meat.

Grain market (typical commodity for plant production) is more stable than animal production. Wheat, corn and rice are the most important grains for food in the world. In the Czech Republic has wheat very important position in the grains, almost 52% of sown area. Price of wheat is determining by wheat supply and demand on the domestic market. But here is very important influence of international market with this commodity (Bečvářová, 2011).

2 Aim and methods

Aim of this article is evaluation of prices trends of agriculture producers (CZV) and transfers these prices into the following levels of commodity chain in plant and animal production. Also evaluate disparity of the price trends on these productions. Determine where are the prices trends same or where differences in a price development are and also determine on which levels of commodity chains disparity are.

For purposes of this analysis, was chosen in plant production vertical continuing on *food wheat production* and in animal production was selected vertical continuing on *slaughter cattle – beef meat*. These commodities are investigated on two different lines of production for ending consumer (Table 1 and 2). Price transfer was investigated by analysis of the price transmission, calculated in supply and demand direction. Explicatory of price transmission in demand direction is lower, there is commented only price transfer in supply direction (price transfer from input price to output price).

Time series of price agriculture producers, industrial producers and retail prices on each level of commodity chain was taken from ČSÚ (Czech Statistical office) databases and Ministry of agriculture (MZe).

Beef meat was investigated from January 1999 to December 2011, for analysis was used monthly prices.

Table 1. The structure of price transmission in the commodity chain beef meat

Price transmission on a beef meat commodity chain	Price transmission on a beef meat commodity chain
monthly prices / difference (1/1999 - 12/2011)	monthly prices / difference (1/1999 - 12/2011)
price of agricultural producers (CZV) slaughter bulls (Kč.kg ⁻¹ . Ž. hm)	price of agricultural producers (CZV) slaughter bulls (Kč.kg ⁻¹ . Ž. hm)
price of industrial producers (CPV) beef meat chuck (Kč.kg ⁻¹)	price of industrial producers (CPV) beef meat round (Kč.kg ⁻¹)
consumer prices (SC) beef meat chuck (Kč.kg ⁻¹)	consumer prices (SC) beef meat round (Kč.kg ⁻¹)

Source: own proposal.

Research of commodity chain of plant production - food wheat, was used monthly prices of chosen commodities on different levels of commodity chains from January 1999 to October 2011. For research was chosen these products.

Table 2. The structure of price transmission in the commodity chain food wheat

Price transmission on a food wheat commodity chain	Price transmission on a food wheat commodity chain
monthly prices / difference (1/1999 - 10/2011)	monthly prices / difference (1/1999 - 10/2011)
price of agricultural producers (CZV) food wheat (Kč.kg ⁻¹)	price of agricultural producers (CZV) food wheat (Kč.kg ⁻¹)
price of industrial producers (CPV) wheat flour (Kč.kg ⁻¹)	price of industrial producers (CPV) bakery wheat flour (Kč.kg ⁻¹)
consumer prices (SC) wheat flour (Kč.kg ⁻¹)	consumer prices (SC) wheat pastry(Kč.kg ⁻¹)

Source: own proposal.

Analysis of price transmission in the commodity chains is organized to three parts. *First part* investigated price transmission at all levels of commodity chains beef meat and food wheat. For determine character and intensity of price transmission was used coefficient of elasticity of price transmission (*EPT - Elasticity of Price Transmission*). *EPT* explains how the input price will be changed at the following level, if will be changed the price on the previous level on the unit. If will be distinguishing two different markets in the same commodity vertical and these markets will be mark as *i* and *j* is possible formulate coefficient of price transmission elasticity (*EPT_{ij}*) by this formula (McCorriston, 2002):

$$EPT_{ij} = \frac{\frac{\delta p_j}{p_j}}{\frac{\delta p_i}{p_i}} = \frac{\delta p_j}{\delta p_i} * \frac{p_i}{p_j} \quad (1)$$

This coefficient *EPT_{ij}* explains how will be changed price on *j* – market when price was changed on *i* – market on the unit. For each level of commodity vertical is calculated average of coefficient *EPT_{ij}*, demonstrated in matrices (Table 3 and 4).

Table 3. Matrices of coefficients *EPT_{ij}* - price transmission in the vertical beef meat

EPT Beef meat	CZV Slaughter bulls Δp ₁	CPV Beef meat chuck Δp ₂	SC Beef meat chuck Δp ₃	EPT Beef meat	CZV Slaughter bulls Δp ₁	CPV Beef meat round Δp ₂	SC Beef meat round Δp ₃
CZV Slaughter bulls Δp ₁	x	EPT ₁₂	EPT ₁₃	CZV Slaughter bulls Δp ₁	x	EPT ₁₂	EPT ₁₃
CPV Beef meat chuck Δp ₂	EPT ₂₁	x	EPT ₂₃	CPV Beef meat round Δp ₂	EPT ₂₁	x	EPT ₂₃
SC Beef meat chuck Δp ₃	EPT ₃₁	EPT ₃₂	x	SC Beef meat round Δp ₃	EPT ₃₁	EPT ₃₂	x

Source: own proposal.

Table 4. Matrices of coefficients EPT_{ij} - price transmission in the vertical food wheat

EPT Food wheat Δp_1	CZV Food wheat Δp_1	CPV Wheat flour Δp_2	SC Wheat flour Δp_3	EPT Food wheat Δp_1	CZV Food wheat Δp_1	CPV Bakery wheat flour Δp_2	SC Wheat pastry Δp_3
CZV Food wheat Δp_1	x	EPT ₁₂	EPT ₁₃	CZV Food wheat Δp_1	x	EPT ₁₂	EPT ₁₃
CPV Wheat flour Δp_2	EPT ₂₁	x	EPT ₂₃	CPV Bakery wheat flour Δp_2	EPT ₂₁	x	EPT ₂₃
SC Wheat flour Δp_3	EPT ₃₁	EPT ₃₂	x	SC Wheat pastry Δp_3	EPT ₃₁	EPT ₃₂	x

Source: own proposal.

Average of coefficients EPT_{ij} above diagonal demonstrated price transmission in supply direction and in opposite average of coefficients EPT_{ij} below diagonal demonstrated price transmission in demand direction. Market power on each levels of production could influence degree of price transmission. Price transfer could be interrupted because of market power. Transfer of price could be partially or none in direction from primary producers to consumers. With help of coefficient of price transmission elasticity is possible evaluate the market power in each level of production on the commodity vertical (McCorriston, Morgan and Rayner, 2001).

The *second part* of research is focused on the connected market to each other in selected commodity verticals. In this part of research was used analysis of price differences. There were evaluated differences between results of positive and negative price changes. For analysis positive resp. negative price changes were used these regression models (Revoredo, Nadolnyak, Fletcher, 2004):

$$\Delta P_{jt} = A^+ + \sum_{l=1}^k B_l^+ * \Delta P_{it}^+, \text{ resp. } \Delta P_{jt} = A^- + \sum_{l=1}^k B_l^- * \Delta P_{it}^- \quad (2)$$

The degree of dependence of the time series, shown differences in monthly price, distinguishing between positive and negative price changes was evaluated by a determination coefficient.

The *third part* is focused on influence of time delay in price transfer of differences between each levels of production in selected commodity verticals. Intensity of dependence of time delay series was evaluated by determination coefficient. Delay period in animal production was chosen one and two months and in plant production was evaluated time delay to fourth months.

3 Results and discussion

On a Figure 1 is demonstrated development of monthly prices from January 1999 to December 2011 (in a vertical of slaughter cattle – beef meat) and price indexes and price time series of vertical food wheat from January 1999 to October 2011 and also price indexes of food wheat. The visual evaluation of price developments told, that the first level of commodity chain (between primary producers and processors) for plant and animal production is not copying the agricultural producer prices a lot. On the second level of investigated commodity chain (between processors and distributors), there were prices reflected more on a next level of commodity chain.

Before coming to the EU were prices at all levels of production (especially prices of processors and consumer prices) more fluctuating. Price fluctuating was the most significant on animal production. After EU accession were prices at all levels more stable. For commodity chain of wheat were fluctuations typical before and also after entrance into EU. Price volatility in plant production

is connected especially with different factors affecting on this production. There is very important supply and demand of food wheat in the Czech Republic, but also international trade and situation of this commodity on markets of ours principal importers (Ukraine and Russia). Above that the world price and regional prices determines also weather.

The role played level of process and the character of the final product. Consumer prices are higher in vertical chain food wheat - bread than the commodity chain food wheat - flour. This could be primarily by the fact that bread is a product with higher added value than flour and final price must be higher. On a commodity chain of beef are prices of the various levels of commodity verticals similar. On the case of *beef meat round* at the end of period was a rapid increase on consumer prices than on the *beef meat chuck*, and this increase could be explained by differences in quality of these meat.

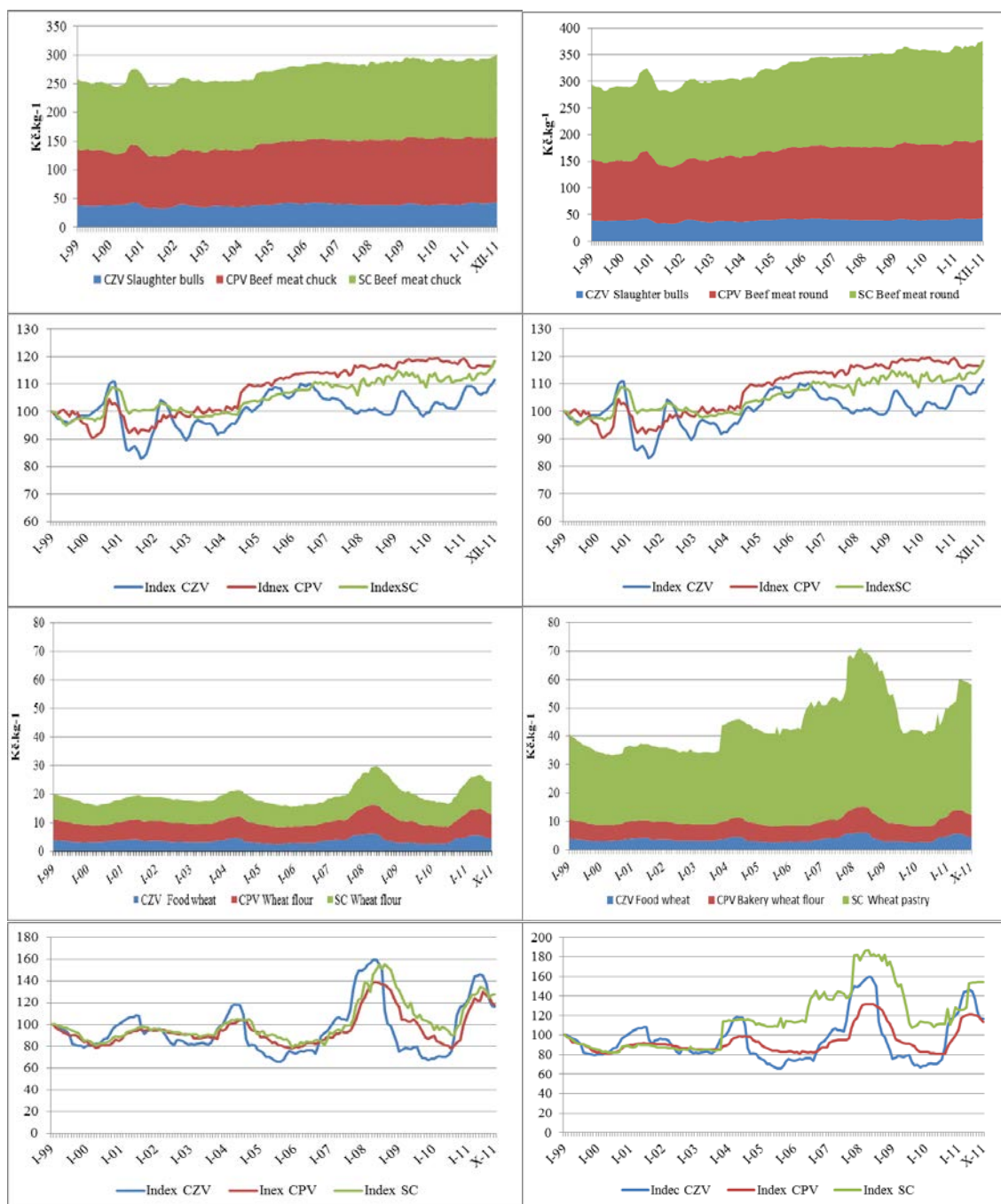


Figure 1. Development of prices on each level of commodity chains beef meat and food wheat and price indexes for the period 1999 – 2011 (Source: MZe, own research)

Results of the *first part of price transmission analysis* on the supply direction¹ were intensity of price transmission coefficients expressed by elasticity of price transmission:

On the *first level of commodity chain* - beef chuck (Table 5) the primary producer (CZV) - the processor (CPV) can be identified as inelastic price transfer, it means, that the change in input prices is not fully reflected in the output prices (in industrial producer prices), while the results of coefficient of elasticity of price transmission for beef round indicate elastic transmission (EPT = 1.06), it means that the price change on the input is transmitted more than the once into the price on the next level of production.

On the *second level of commodity chain* - beef meat between processor (CPV) and distributor (SC) was found in both cases (chuck and round meat) inelastic price transmission (EPT coefficients are between 0.5 - 0.9).

Table 5. Average values of the coefficient EPT in commodity verticals in animal production

EPT Beef meat	CZV Slaughter bulls Δp_1	CPV Beef meat chuck Δp_2	SC Beef meat chuck Δp_3	EPT Beef meat	CZV Slaughter bulls Δp_1	CPV Beef meat round Δp_2	SC Beef meat round Δp_3
CZV Slaughter bulls Δp_1	x	0,88	0,56	CZV Slaughter bulls Δp_1	x	1,06	0,89
CPV Beef meat chuck Δp_2	0,47	x	0,59	CPV Beef meat round Δp_2	0,44	x	0,93
SC Beef meat chuck Δp_3	0,70	1,37	x	SC Beef meat round Δp_3	0,40	0,99	x

Source: MZe and own research.

First level of commodity chain (CZV-CPV) food wheat (Table 6) is characterized by a non-elastic price transfer for both commodity chains (bread, flour), it means that the change of input price is not fully reflected in the output price (in industrial producer prices).

Second level of commodity chain (CPV-SC) food wheat (the processor - distributor) is characterized on both selected cases by elastic price transmission (EPT coefficients are 1.07 and 1.38). Change of price on input is fully transmitted to the output prices. Products with higher added value (bread) have the coefficient elasticity of price transmission higher. This elastic transfer could be as a consequence of time delay – reaction of output price on the input price. There is very important inventory management.

¹ Coefficients above the diagonal

Table 6. Average values of the coefficient EPT in commodity verticals in plant production

EPT Food wheat	CZV Food wheat Δp_1	CPV Wheat flour Δp_2	SC Wheat flour Δp_3	EPT Food wheat	CZV Food wheat Δp_1	CPV Bakery wheat flour Δp_2	SC Wheat pastry Δp_3
CZV Food wheat Δp_1	x	0,49	0,48	CZV Food wheat Δp_1	x	0,48	0,58
CPV Wheat flour Δp_2	1,17	x	1,07	CPV Bakery wheat flour Δp_2	1,44	x	1,38
SC Wheat flour Δp_3	0,93	0,86	x	SC Wheat pastry Δp_3	0,50	0,40	x

Source: MZe and own research.

In the *second part* of the price transmission analysis is evaluated dependence of positive and negative price differences; it was evaluated by the determination coefficient (Table 7 and 8).

On the *first level* of commodity vertical – beef chuck was assumption confirmed. Positive changes in input prices (prices of primary producers) are transferred to outputs (prices processing) better than the price decreases. This assumption was not confirmed in commodity vertical beef round where were the price decreases of inputs (prices of primary producers) transmitted better than price increases to output prices (prices of processing).

On the *second level* was the assumption in both cases confirmed - the results of the determination coefficient (45.11% and 50.80%). Positive changes in input prices are transferred to outputs better than price decreases.

Table 7. Evaluation of price (positive and negative) differences at each level of vertical beef meat

		First level CZV - CPV	Second level CPV - SC
Beef meat chuck	Price increases	46,28%	45,11%
	Price decreases	35,05%	13,18%
Beef meat round	Price increases	36,18%	50,80%
	Price decreases	51,56%	39,53%

Source: MZe and own research.

On a *first level* of vertical on commodity food wheat was the assumption confirmed in both of selected verticals (bread and flour). Positive changes in input prices (prices of primary producers) are transferred to outputs (prices processing) better than price decreases.

On the *second level* of vertical on commodity food wheat was the assumption confirmed on the commodity chain flour on a base of the results of the determination coefficient (42.89%). For the commodity with higher added value, (wheat bread) was not coefficients very significant. The price change (positive resp. negative) did not play a high role in the price for final product; in this case, there is probably significant influence of inventory.

Table 8. Evaluation of price (positive and negative) differences at each level of vertical food wheat

		First level CZV - CPV	Second level CPV - SC
Wheat flour	Price increases	33,72%	42,89%
	Price decreases	9,13%	26,31%
Wheat pastry	Price increases	49,29%	6,54%
	Price decreases	14,12%	5,23%

Source: MZe and own research.

In the *third part* of the price transmission analysis was focused on time delay of the price transmission and reaction of output prices on the change of input price into the following level of commodity chain.

In the animal production was evaluated delay two months that is because of the character of meat (is not possible to storage meat for a long time, because of the hygiene and food standards). In plant production was evaluated delay four months (effects of storage). The intensity of the time delay was evaluated on the determination coefficient; it was tested on all levels of selected commodity chains.

On the commodity chain of beef, was coefficient important especially without the time delay. In the next levels was delay less and less significance. This part showed that in animal production are price changes transmitted immediately and maximum one month after the price changes.

Table 9. The values of determination coefficient of varying time delays at different levels of vertical beef meat

Beef meat chuck	Without delay	1 month	2 months
First level CZV - CPV	41,58%	29,83%	19,40%
Second level CPV - SC	41,76%	16,92%	12,46%
Beef meat round	Without delay	1 month	2 months
First level CZV - CPV	50,14%	41,08%	35,86%
Second level CPV - SC	44,64%	37,10%	19,69%

Source: MZe and own research.

On the *first level* (table 10) of commodity chain food wheat – flour, there was the highest coefficient 3rd month and from 3rd month was coefficient lower. The commodity chain food wheat - bread was the highest coefficient in 2nd month. It means that the reaction on the price is transmitted after two and three months. Again, there is possible significant effect of inventory management. Especially, it is actually for commodities with higher added value (second level of commodity chain).

On the *second level* of vertical is not time delay (between input price and output price) so important like on the first level.

Table 10. The values of determination coefficient of varying time delays at different levels of vertical food wheat

Wheat flour	Without delay	1 month	2 months	3 months	4 months
First level CZV - CPV	35,60%	51,11%	53,43%	54,67%	43,16%
Second level CPV - SC	47,13%	43,79%	42,66%	28,32%	30,86
Wheat pastry	Without delay	1 month	2 months	3 months	4 months
First level CZV - CPV	45,84%	57,72%	58,86%	50,41%	44,62%
Second level CPV - SC	18,20%	18,35%	12,97%	16,08%	5,48%

Source: MZe and own research.

For example Goodwin (2006) in his study of meat production, also confirms inelastic price transmission between connected levels of commodity chain. Rumánková (2012), in her research of validity of the law of one price (with help of price transmission analysis) for beef production found that this law is not valid. Is not possible to confirm this law, nor between regions in the Czech Republic. It could be caused by the asymmetric price transmission between levels of production in the commodity chain of beef meat. Lechanová (2006) found that price transfer between different levels of commodity verticals beef is inelastic. But comparison of the results shown, that in current time coefficient EPT (on the first level of vertical) starts to be higher from 0,5 to 0,88. In this context it means that the price transfer to next level of vertical is higher. The same trend is possible to found on the others levels of commodity vertical. From the second part of price transmission was detected the price increases was transferred better then price decreases. It could be because of the lower price influence in the input to the price of the final product. The study of Vavra and Goodwin (2005) told that the animal production (research focused on beef meat, chicken meat and eggs) is significant by the high price transmission asymmetry. They explained this opinion by slowly reaction on the actual changes and market conditions. On the price transmission they found that the price transfer from the primary producers is more symmetric, but on the next levels of production is not this trend evident, and there is non-elastic price transfer. Research of Balcome, Bailey and Brooks (2007) is focused on price transmission of wheat commodity chain in Brasil and USA. Results of this study told that on the second level of vertical there is symmetric transfer. They explain this by a very good timing sale of inventory and effective reduction of transaction costs. Price transmission of wheat commodity chain was made also by Conforti (2004). He found asymmetric price transfer on this commodity chain also. Study of Blažková and Chmelíková (2010) was interested by the food wheat and wheat pastry. The results of them was almost the same like in this research, but on the second level of commodity chain was detected higher coefficient EPT (EPT 1,57). This different was probably influent by duration of time series.

4 Conclusion

Animal and plant commodity chains were investigated by analysis of price transmission (in three connected parts). In both productions were commodity chains divided to two lines. Beef meat was divided to beef meat round and beef meat chuck. Food wheat was divided to line wheat pastry and line of wheat flour.

Before the entrance to the EU were prices on the each level of production more fluctuating and after entrance into the EU were volatility of prices lower. But on wheat commodity chains were volatility still significant, it was because of the different factors influenced on a plant production.

From the price transmission analysis in supply direction is possible form these conclusions:

Coefficients of price transmission elasticity EPT was fluctuated between 0 – 1. It is typically for oligopoly market structure. Exception was commodity chain of beef round, here was on the first level of price transmission identified elastic transfer. It could mean lower type of imperfectly competition of market structure for example monopolistic competition.

On the *second level* of the commodity chain for beef was identified asymmetric price transmission, where is important role of bargaining power of retailers, which is in this time still increasing. For the second level of commodity chains in the plant production were the coefficients of elasticity of price transmission EPT higher than 1. It expresses the elastic price transfer and the price change on the input is more than once reflected in the output price, in this case in consumer prices. And therefore we can talk about a lower level of imperfectly competition of market structure.

Following the first part of the research was *intensity of transmission*, positive and negative changes from input prices to output prices in the connected markets in commodity chains. In all selected chains was confirmed assumption that the increases of input prices are transmitted to the output prices better than the price decreases. There was an exception on commodity round beef, where were better transferred price decreases at first level of commodity chain.

The *third part* of price transmission analysis referred on a high effect of inventory management. This was significant on commodity chains of wheat, especially in the first level of commodity vertical, where were the change of input price transferred second and third month to the output price.

In general, entrance to the larger market (the European agricultural market) meant limiting price volatility at different levels of sub-market commodity chain (CPV, CPV and SC), on productions plant and animal. Of course, factors affecting plant and animal production are different, so it is necessary to researched it separately. Analysis of price transmission is useful for evaluation of forming process of commodity chains, also for alerts related with price forming process and formation of the business area and also it is connected with economic policy.

5 Acknowledgment

This research was financially supported by the Czech Scientific Foundation (Grant NO. MSM 6215648904 Česká ekonomika v procesech integrace a globalizace a vývoj agrárního sektoru a sektoru služeb v nových podmínkách integrovaného agrárního trhu jako součást řešení TS 04 Vývojové tendence agrobyznysu, formování segmentovaných trhů v rámci komoditních řetězců a potravinových sítí v procesech integrace a globalizace a změny agrární politiky.).

References

- [1] Balcombe, K., A. Bailey and J. Brooks, 2007. Threshold effects in price transmission: the case of Brazilian wheat, maize and soya prices. *American Journal of Agricultural Economics*, vol. 89, issue 2, pp. 308-323.
- [2] Blažková, I. and G. Chmelíková, 2010. Analýza cenových relací v komoditní vertikále. In: *Sborník příspěvků z mezinárodní vědecké konference Region v rozvoji společnosti*, pp. 13-17.
- [3] Bečvářová, V., 2005. *Podstata a ekonomické souvislosti formování agrobyznysu*. Brno: MZLU.
- [4] Bečvářová, V., 2011. The European Model of Agricultural Policy in the Global Context. In: P. Pachura, ed. *New Knowledge in a New Era of Globalization*. Rijeka, Croatia: InTech Open, pp. 285-310.
- [5] Conforti, P., 2004. *Price Transmission In Selected Agricultural Markets*. Fao commodity and trade policy research working paper 7.
- [6] Čechura, L. and L. Šrobová, 2008. The price transmission in Pork meat agri-food chain. *Agric. Econ. – Czech*, vol. 54.

- [7] Goodwin, B. K., 2006. Spatial and vertical price transmission in meat markets. Market Integration and Vertical and Spatial Price Transmission in Agricultural Markets Workshop. Univ Kentucky, Lexington, April. Vol. 21.
- [8] Lechanová, I., 2005. *Formování cen v komoditní vertikále krmného obilí*. Disertační práce. Brno: MZLU v Brně.
- [9] Lechanova, I., 2006. The transmission process of supply and demand shocks in Czech meat commodity chain. *Zemědělská ekonomika-Praha*, 52.9 427.
- [10] Mc.Corrision, S., 2002. Why should imperfect competition matter to agricultural economists. *European Review of Agricultural Economics*, vol. 29, No. 3, pp. 349-371.
- [11] Mc.Corrison, S., C. W. Morgan and A. J. Rayner, 2001. Price transmission: the interaction between market power and returns to scale. *European Review of Agricultural Economics*, vol. 28, No. 2, pp. 143-159.
- [12] Ministerstvo Zemědělství ČR 2003. *Situační a výhledové zprávy skot – hovězí maso*. [online]. [2012-05-12]. Available from: <http://eagri.cz/public/web/mze/zemedelstvi/zivocisne-komodity/skot/situacni-a-vyhledove-zpravy/>.
- [13] Ministerstvo Zemědělství ČR 2003. *Situační a výhledové zprávy obiloviny*. [online]. [2012-05-12]. Available from: <http://eagri.cz/public/web/mze/zemedelstvi/rostlinne-komodity/obiloviny/situacni-a-vyhledove-zpravy/>.
- [14] Revoredo, C., D. Nadolnyak and S. A. Fletcher, 2004. Explaining price transmission asymmetry in the US Peanut marketing chain. In: *Selected papers prepared at the annual meetings of American agriculture economics association*. Colorado, Denver, 17 p.
- [15] Rumankova, L., 2012. *Examination of existence of the law of one price at Czech meat markets*. AGRIS on-line Papers in Economics and Informatics 4.1.
- [16] Vavra, P. and B. Goodwin, 2005. *Analysis of price transmission along the food chain*. Geneva: OECD Publishing.

THE EFFECT OF EDUCATION OF THE POPULATION ON UNEMPLOYMENT IN THE EU COUNTRIES

Jaroslav Dufek¹, Kristina Somerlíková², Milan Palát³

¹Mendel University in Brno, Faculty of Regional Development and International Studies, Zemedelska 1, 613 00 Brno, Czech Republic
email: dufek@mendelu.cz

²Mendel University in Brno, Faculty of Regional Development and International Studies, Zemedelska 1, 613 00 Brno, Czech Republic
email: somerlik@mendelu.cz

³Mendel University in Brno, Faculty of Regional Development and International Studies, Zemedelska 1, 613 00 Brno, Czech Republic
email: mpalat@mendelu.cz

Abstract

The aim of this paper is to analyse the relationship of indicators of population education and unemployment within the entire EU in the period 2000–2011 and in a set of individual member states in 2011. Following indicators were used: the percentage of the working age population 25–64 years, who have attained at least complete secondary education, the percentage of 25–64 years, who have undergone lifelong training and the unemployment rate in the population 25–64 years. Residuals were determined based on calculated trends in the indicators and through residuals of time series the correlation between the level of education of the population and unemployment came out as indirect and low to moderate. The same result was obtained from correlations between indicators for the set of data from particular EU countries in 2011. According to the standard classification of education levels 0–2, 3–4, 5–6 (ISCED, 1997) and based on analysis of variance, the influence of increasing levels of education of the population on reducing unemployment was confirmed with high significance.

Keywords

European Union, Education of the Population, Unemployment, Correlation, Analysis of Variance.

JEL Classification

I25.

1 Introduction

The increase in the population's education is a prerequisite for the development of society, because only then it can lead to the growth of human capital. The term of human capital comes from T. W. Schultz, who first used it in 1961 (Schultz, 1961). The more you increase the knowledge, skills and experience of the people, the more grows their readiness to succeed in the labour market, which contributes to the growth of employment levels and thus low unemployment.

Education of the population comes through two stages. It is a formal education that takes place in schooling institutions in successive stages, and lifelong learning that follows and is usually focused on expanding knowledge for succeeding in labour market and in various activities in their personal lives. Formal education starts compulsory basic education (primary), followed by education, which can be completed as a secondary level of education (secondary) and then study university or higher professional education (tertiary). Lifelong learning is a continuous process of acquiring and developing knowledge and practical skills affecting the attitudes and characteristics of participants which is often beyond formal education. Lifelong learning programs are an important part of personal development. It allows achieving a higher qualification level for employed persons and helps with requalification for unemployed persons. Recent economic and financial crisis is a situation where continuing education becomes a challenge and helps to solve problems in companies and in the whole society (Mužík, 2010). Lifelong learning is thus a tool for increasing economic activity and reducing unemployment.

The aim of the paper is to investigate the influence of formal education level and lifelong learning on unemployment in the productive population 25–64 years old in the EU as a whole and in particular member countries.

2 Material and methods

The source data is related to the productive part of the population 25–64 years old in 2000–2011 and was obtained from EUROSTAT. It contains these indicators:

- percentage of population who have reached at least completed secondary education by gender,
- percentage of graduates for lifelong learning by gender,
- rate of unemployment total and unemployment rates by highest level of education.

Table 1. Indicators of education and unemployment rate of the productive part of the EU population

Year	Percentage of 25–64 years old persons with full secondary and higher education			Percentage of 25–64 years old persons with lifelong learning			Unemployment rate
	total	males	females	total	males	females	
2000	64.4	67.6	61.3	7.1	6.7	7.6	8.7
2001	64.9	67.8	62.0	7.1	6.6	7.6	8.5
2002	65.8	68.5	63.2	7.2	6.6	7.8	8.9
2003	67.2	69.7	64.7	8.5	7.9	9.0	9.0
2004	68.4	70.5	66.2	9.2	8.5	9.9	9.1
2005	69.4	71.3	67.5	9.6	8.8	10.4	8.9
2006	69.9	71.6	68.3	9.5	8.6	10.4	8.2
2007	70.7	72.1	69.2	9.3	8.4	10.2	7.2
2008	71.3	72.6	70.1	9.4	8.5	10.2	7.1
2009	72.0	73.1	70.9	9.3	8.4	10.2	9.0
2010	72.7	73.7	71.7	9.1	8.3	10.0	9.7
2011	73.4	74.3	72.7	8.9	8.2	9.6	9.7

Source: Eurostat.

Table 2. Unemployment rate of the productive part of the EU population

Level of education	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
0 – 2	10.8	9.6	10.1	10.2	10.6	10.4	10.0	9.2	9.8	12.8	14.2	14.7
3 – 4	8.2	7.9	8.2	8.2	8.4	8.1	7.2	6.1	5.6	7.2	7.8	8.6
5 – 6	4.5	4.0	4.3	4.6	4.7	4.5	4.1	3.6	3.5	4.5	4.9	5.0

Source: Eurostat.

Similarly to the population of the entire EU, data was also obtained for individual countries. In the data processing, tabular and graphical means of expression and statistical methods according to the purpose and goals of research were applied. In examining the relation between level of education and unemployment of the population of the EU in the period 2000–2011 the dependency of time series is dealt. First, trends of indicators are set, then residuals are calculated and based on them correlations are calculated. For a set of particular EU countries common methodology of regression and correlation is applied. By means of the test procedure of analysis of variance, the influence of different level of education of the population on unemployment has been investigated.

3 Impact of education on unemployment

The dependence between the level of education of the population and unemployment is examined in two variants namely in the time sequence of several years within the EU as a whole and in a set of individual countries in one year.

3.1 The relationship between education and unemployment in EU population in 2000–2011

The starting material for the exploration of relationships between indicators of education and unemployment rates are time series of indicators related to the productive part of the population of 25-64 year old in the European Union as a whole (Table 1). The productive part of population has a dominant position in the labour market (Svatošová, 2006; Dufek et al., 2008).

Given that this is the examination of the correlation dependence on the basis of time series, it is necessary to exclude the influence of the trend and to determine the correlation using residuals. Excluding the impact of the trend is accentuated by Dufek et al. (2011). The calculations should therefore start with trend determination for each time series, and then calculate the deviation of empirical values from the theoretical values (residuals) and this can serve as a basis for the calculation of correlation dependence. With regard to the development of indicators, a linear trend function has been used in all analyses $y_i' = a + b t_i$, where $t_i = 1, \dots, 12$.

Trend for the percentage of productive population with secondary and higher education:

- total $y_i' = 63.7091 + 0.8409 t_i$ $r^2 = 0.9852$ $r = 0.9925$
- males $y_i' = 67.0076 + 0.6245 t_i$ $r^2 = 0.9827$ $r = 0.9913$
- females $y_i' = 60.4212 + 1.0608 t_i$ $r^2 = 0.9883$ $r = 0.9941$

Trend for the percentage of productive population with lifelong learning:

- total $y_i' = 7.3833 + 0.2000 t_i$ $r^2 = 0.5439$ $r = 0.7375$
- males $y_i' = 6.8924 + 0.1640 t_i$ $r^2 = 0.5094$ $r = 0.7137$
- females $y_i' = 7.8788 + 0.2353 t_i$ $r^2 = 0.5751$ $r = 0.7583$

Trend for unemployment rate:

- total $y_i' = 8.5167 + 0.0231 t_i$ $r^2 = 0.0101$ $r = 0.1007$

Based on the trend functions, theoretical values are calculated and based on them residuals are calculated. The procedure is demonstrated on formal education indicator of the percentage of the productive population with secondary and higher education.

Year	Time variable	Empirical values	Theoretical values	Residuals
2000	1	64.4	64.5500	-0.1500
2001	2	64.9	65.3909	-0.4909
2002	3	65.8	66.2318	-0.4318
2003	4	67.2	67.0727	0.1273
2004	5	68.4	67.9136	0.4864
2005	6	69.4	68.7545	0.6455
2006	7	69.9	69.5955	0.3045
2007	8	70.7	70.4364	0.2636
2008	9	71.3	71.2773	0.0227
2009	10	72.0	72.1182	-0.1182
2010	11	72.7	72.9591	-0.2591
2011	12	73.4	73.8000	-0.4000

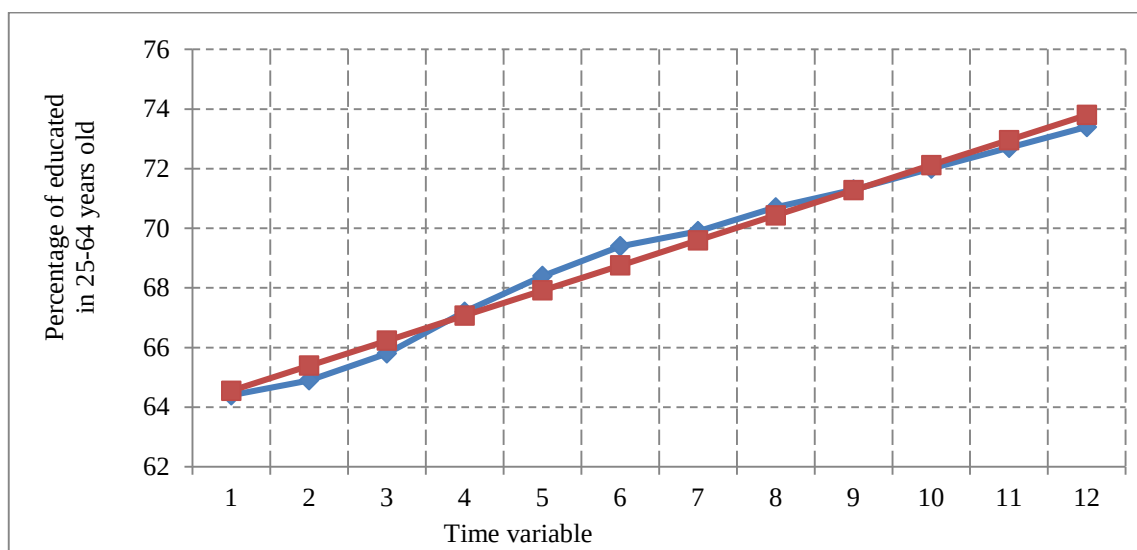


Figure 1. Comparison of empirical and theoretical values (Source: own calculations)

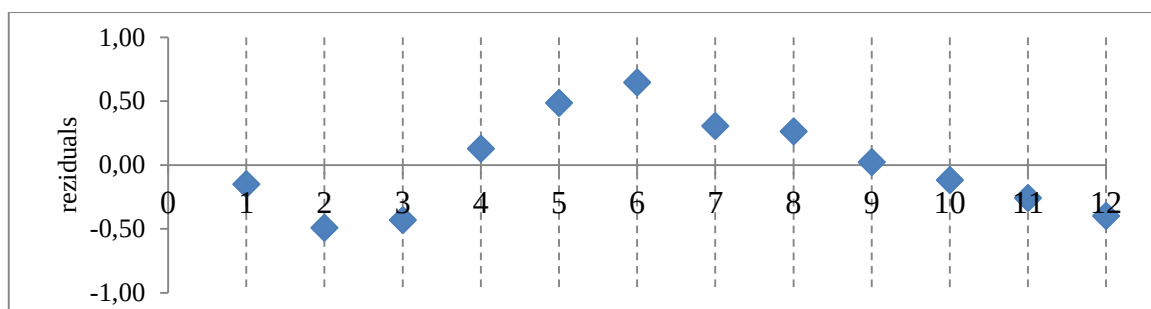


Figure 2. Chart of residuals (Source: own calculations)

Table 3. Residuals of indicators of education and unemployment rate

Percentage of productive population with full secondary and higher education			Percentage of productive population with lifelong learning			Unemployment rate
total	males	females	total	males	females	
-0.03205	-0.18205	-0.48333	-0.35641	-0.51410	0.16026	-0.03205
-0.45653	-0.54289	-0.68333	-0.62040	-0.74942	-0.06282	-0.45653
-0.38100	-0.40373	-0.78333	-0.78438	-0.78473	0.31410	-0.38100
0.19452	0.03543	0.31667	0.35163	0.17995	0.39103	0.19452
0.37005	0.47459	0.81667	0.78765	0.84464	0.46795	0.37005
0.54557	0.71375	1.01667	0.92366	1.10932	0.24487	0.54557
0.22110	0.45291	0.71667	0.55967	0.87401	-0.47821	0.22110
0.09662	0.29207	0.31667	0.19569	0.43869	-1.50128	0.09662
-0.02786	0.13124	0.21667	0.13170	0.20338	-1.62436	-0.02786
-0.15233	-0.12960	-0.08333	-0.13228	-0.03193	0.25256	-0.15233
-0.17681	-0.39044	-0.48333	-0.39627	-0.46725	0.92949	-0.17681
-0.20128	-0.45128	-0.88333	-0.66026	-1.10256	0.90641	-0.20128

Source: own calculations.

The degree of dependence between the time series of formal and lifelong education on the one hand and education and unemployment on the other hand, is expressed by correlation coefficients in the correlation matrix.

Table 4. Matrix of correlation coefficients

Indicator			1	2	3	4	5	6
Percentage of productive population with full secondary and higher education	total	1	–					
	males	2	0.97	–				
	females	3	0.99	0.94	–			
Percentage of productive population with lifelong learning	total	4	0.97	0.92	0.97	–		
	males	5	0.98	0.95	0.96	0.99	–	
	females	6	0.97	0.90	0.97	0.99	0.97	–
Unemployment rate		7	-0.27	-0.11	-0.37	-0.33	-0.25	-0.36

Source: own calculations.

It is obvious that the highest values are achieved by correlation coefficients quantifying the relationships between particular education indicators. In all cases, its values are 0.90 or higher, making it very high positive correlation dependence. These relationships are just of an additional importance as the main research is focused on examining the impact of education on unemployment.

One of the basic factors of economic development are human resources. Its higher quality, that is also characterized by educational levels, positively affects economic growth and contributes to the reduction of unemployment (Mokrý, 1999; Svatošová, 2006; Dufek and Minařík, 2011).

Tab. 4 shows that correlation coefficients quantifying the relationships between indicators of education and unemployment rate indicate slightly negative correlation dependence. In the population without distinction of sex, its value is: $r = -0.27$, while for males it is: $r = -0.11$ and for females: $r = -0.37$. A higher degree of dependence is therefore in the category of females than in the category of males.

Somewhat higher degree of dependence compared to formal education occurs in the effect of lifelong learning which can contribute immediately to preparation for employment. Regardless of the sex that is: $r = -0.33$, males $r = -0.25$ and females: $r = -0.36$. Also in this form of education a higher attained education plays a more important role for the category of females.

3.2 The influence of education of the population on unemployment in EU countries in 2011

The research includes also evaluation and quantification of the expected impact of education on unemployment not only for population in the entire EU in years 2000–2011, but also for populations of particular EU member states in 2011. A point chart presents a graphical presentation of the level of formal education and unemployment (Figure 3), from which the dependence should be obvious. The distribution of points, however, does not indicate a greater dependence, which is also confirmed by the regression straight line and the coefficient of determination.

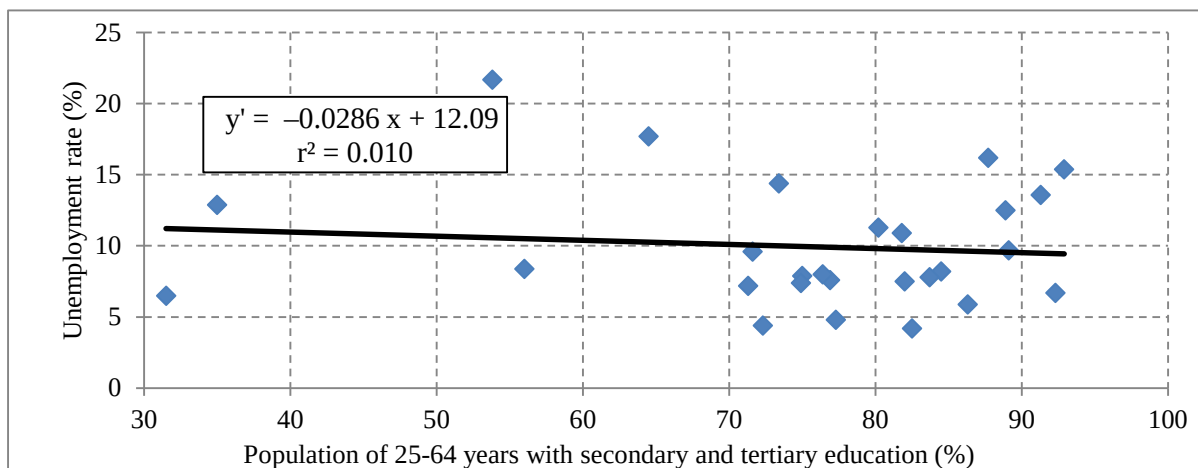


Figure 3. Dependence between the population of 25–64 years old with higher secondary and tertiary education and unemployment rate in EU countries in 2011 (Source: own calculations)

The results of the correlation dependence of the percentage of the productive population 25–64 years old with secondary and tertiary education on unemployment rate are as follows: the coefficient of determination $r^2 = 0.010521$, correlation coefficient $r = -0.104$. The results show that this is a low statistically insignificant correlation dependence with more interacting effects. According to the regression line $y' = -0.0286x + 12.09$, we can expect that an increase of the percentage of the productive population 25–64 years old by 10 percent will result in a reduction of unemployment rate by 0.29 percent in average.

Similarly to examining the effect of secondary and higher levels of formal education on the level of unemployment based on the point chart, also the effect of lifelong learning on unemployment has been assessed (Figure 4).

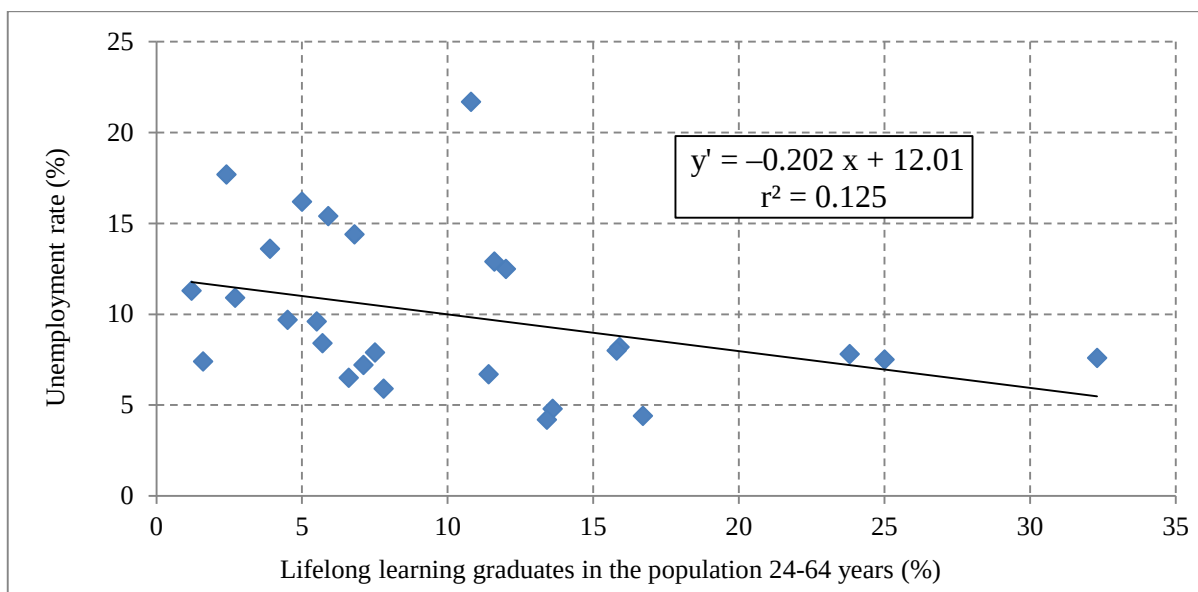


Figure 4. Dependence of the percentage of lifelong learning graduates in the population 25–64 years old with unemployment rate in EU countries in 2011 (Source: own calculations)

The results of the correlation dependence of the influence of the percentage of graduates of lifelong learning in the population 25–64 years old on unemployment rate are as follows: coefficient of determination: $r^2 = 0.125$, correlation coefficient $r = -0.35355$. In this case, it is a slight correlation

dependence almost on the edge of statistical significance. The regression line $y' = -0.201x + 12.0075$ implies that an increase in the percentage of lifelong learning graduates 25–64 years old by 10% can reduce unemployment rate by about 2.02%.

A higher degree of dependence of lifelong learning compared to formal education level on unemployment expressed by a correlation coefficient, as well as a higher change in the unemployment rate due to a unit change in the level of education may be explained, among other things, by the fact that lifelong learning is more targeted on job vacancies, the work process and the needs of the labour market.

3.3 The evidence of the impact of education on unemployment

In the previous correlation and regression analysis, the values of indicators of formal and lifelong learning of the productive population 24–64 years old in a set of all 27 EU countries were used as independent variables, the dependent variable was the adequate unemployment rate. A more appropriate way of demonstrating the impact of education on unemployment is to create three groups from the population 25–64 years old according to the standard classification of education levels 0-2, 3-4, 5-6 (ISCED, 1997) and the analysis of variance testing differences between the means of the unemployment rate in so created groups.

Already the graphical representation of average unemployment rates due to differences in education levels in Fig. 5 shows that for higher education level there is a lower level of unemployment rate. This was also confirmed by analysing the variance. In this case a highly significant difference and thus highly significant effect has been proven.

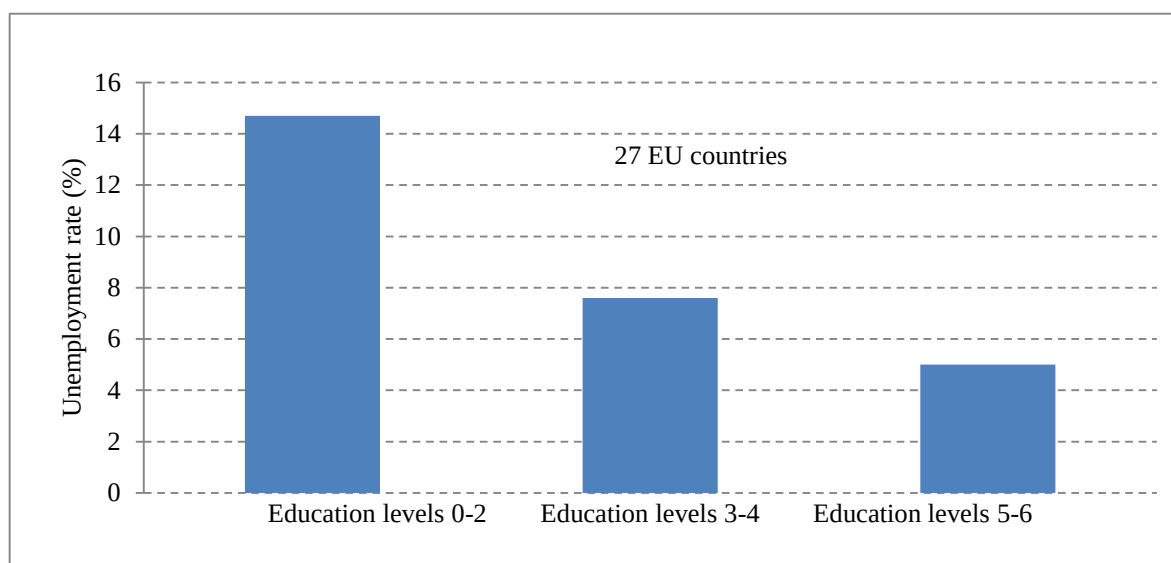


Figure 5. Unemployment rate of the population 25–64 years old in EU countries in 2011 according to the level of education (Source: own calculations)

ANOVA (analysis of variance) – unemployment rate:

$\alpha = 0.01$

Source of variability	Sum of squares	DoF	MS	F	P-value	F crit.
Groups (educational levels)	1735.63	2	867.81	22.19	2.68E-08	4.90
Residual (country)	2932.55	75	39.10			
Total	4668.18	77				

The calculated value of the test criterion $F = 22.19$ is higher than the critical $F_{crit} = 4.90$ at $\alpha = 0.01$, so the null hypothesis on the non-significant difference is rejected and the difference is

highly significant. This means that the educational level of the population has a very significant effect on the level of unemployment, thus increasing education affects with high significance reducing unemployment.

4 Conclusion

Education in the population is the most important prerequisite and determining factor of qualification of human capital. Educated population, especially its productive part, presents a driving force for social development of the country.

During the last twenty years, i.e. after 1989, the views of the society on the importance of attained education and above all the worth of education in the labour market have changed. Together with the development of new industries and changes in the structure of the labour market, new jobs requiring more skilled labour were emerging. At least secondary education becomes a basic requirement in the labour market and more and more positions require tertiary education (Kleňhová, 2010).

When examining the influence of education of the productive part of the population across the EU in the period 2000–2011 on unemployment rate a slightly negative level of dependence was set. The calculation was performed via residuals of time series. In the case of formal education, the correlation coefficient regardless of the gender achieved the value of $r = -0.27$, for lifelong learning $r = -0.33$. For females, the level of dependency is somewhat higher than for males.

Similar results were achieved in the set of populations of each country in 2011. Influence of formal education on unemployment showed only a weak negative correlation with the value of correlation coefficient $r = -0.104$, while an increase of the share of education by 1% results in the reduction of unemployment by about 0.03%.

A higher degree of dependence in the case of lifelong learning, when $r = -0.354$ and a 1% increase in the share of education leads to a reduction in unemployment of 0.2%.

We further divided the productive population using standard classification into three educational levels and in each group averages of unemployment rate were calculated. An analysis of variance proved a highly significant difference between means, which confirmed a negative correlation of unemployment on levels of education.

5 Acknowledgement

The paper was prepared thanks to the support from MSM 6215648904 “Česká ekonomika v procesech integrace a globalizace a vývoj agrárního sektoru a sektoru služeb v nových podmínkách evropského integrovaného trhu”.

References

- [1] Dufek, J. et al., 2008. Age structure and the productive population workload in EU countries. In: *ICABR 2008, Accra, Ghana*. Brno: Mendel University in Brno, pp. 247-258.
- [2] Dufek, J. and B. Minařík, 2011. Statistická analýza reprodukce lidských zdrojů v zemích Evropské unie. [CD-ROM]. In: *Reprodukce lidského kapitálu (vzájemné vazby a souvislosti)*. Praha: VŠE v Praze, pp. 1-10.
- [3] Dufek, J. et al., 2011. Statistical analysis of the demographic development in the countries of the European Union. [CD-ROM]. In: *ICABR 2011*. Johor Bahru, Malajsie.
- [4] ISCED, 1997. *Mezinárodní standardní klasifikace vzdělávání – ISCED*. [online]. [2014-06-15]. Available from: http://www.czso.cz/csu/klasifik.nsf/i/mezinarodni_standardni_klasifikace_vzdelavani_iscd_.

- [5] Kleňhová, M., 2010. Terciální vzdělávání ve 20leté retrospektivě. In: *XL. Konference ČDS „Dvacet let sociodemografické transformace“*. Brno, 27. – 28. května 2010.
- [6] Mokřý, V., 1999. Význam súvislostí ekonomického rastu v sociálno trhovej ekonomike. *Slovenská štatistika a demografia*, vol. 4, pp. 4-14.
- [7] Mužík, J., 2010. *Profesní vzdělávání dospělých*. [online]. [2014-06-15]. Available from: <http://www.jaroslavmuzik.cz/files/materialy-pro-vyuku/Profesni-vzdelavani-dospelych.pdf>.
- [8] Schultz, T. W., 1961. Investment in human capital. *American Economic Review*, vol. 51, March, pp. 1-17.
- [9] Svatošová, L., 2006. Analýza potenciálu lidských zdrojů v regionech. *Acta Universitatis Meridionales, The Scientific Journal for Economics, Management and Trade*, vol. 9, pp. 71-74.

THE IMPACT OF GOVERNMENT POLICIES ON PUBLIC PROCUREMENT: THE CZECH EXPERIENCE

Luboš Dufek

University of Economics in Prague, Faculty of Finance and Accounting, nam. W. Churchilla 4, 130 67 Prague 3, Czech Republic
email: xdufl02@vse.cz

Abstract

Public procurement plays a huge part in the Czech economy. CZK 493 bil. was spent on the public procurement contracts in 2013. This paper presents summary statistics of the Czech public procurement market between years 2006 and 2013 and development of the quarterly time series of selected indicators based on the data provided by the Information System of the public procurement. Some of the positive trends are identified, like increasing number of bids or usage of more transparent tendering methods, but some of the trends are at least controversial, like the ratio of contracts evaluated only by price or the ratio of contracts with 100% equivalence between final and expected price. The state does not only spend vast sums of money on the public procurement, but also influence the market with legislation changes and policy making. Impact of the legislation changes on the economic indicators is shown, mainly of the most dramatic change in the procurement law in 2012. The following changes in the legislation are also discussed in this paper, as well as the policies of the new government and the completely new procurement law, which is currently being prepared and is expected to be in effect in 2016.

Keywords

Public Procurement, Czech Republic, Government Policies.

JEL Classification

H57.

1 Introduction

It is obvious, that public procurement plays a huge part in the Czech economy. Almost 13% of the GDP (CZK 493 bil.) was spent in 2013 using the public procurement contracts. It is important to realize, that government is not only a buyer (or contracting authority in terms of public procurement), but also a governor and the policymaker, who can influence public procurement market by formal rules (laws and notices) or simply by political decisions. Well known statement of North (1991), *institutions provide incentive structure of an economy; as that structure evolves, it shapes the direction of economic change towards growth, stagnation or decline*, is therefore applicable on the public procurement too.

The main goal of this paper is to show the impact of government policies on public procurement. To do so, summary statistics of the Czech public procurement market between years 2006 and 2013 is provided, including development of the quarterly time series of selected indicators. The most important legislation and policy changes are discussed, activity of the current and two preceding governments in the area of public procurement is evaluated and a brand new public procurement law and its main changes, which should be in effect in 2016, is reviewed.

Paper is organized as follows. In the first part is information about datasets used for the analysis, including remarks about the main weaknesses of each data source. This part also contains description of methods used for the analysis. Second part focuses on the hard data analysis – selected indexes of the public procurement and theirs development over time. Last part is dedicated to the analysis of government activities in area of public procurement.

2 Data and methods

Time frame for the analysis in the following part is the third quarter of 2006 to the end of 2013. Main data source for the analysis is the Information system of the public procurement (Czech version of Tender Electronics Daily). This information system consists of several subsystems, most important

for this work is the one called “Věstník veřejných zakázek” (The Bulletin of public procurement contracts), which is used by the contracting authorities to publish information about their public procurement contracts. The administrator of this system is the Ministry of regional development, but the management of the subsystem has been outsourced to the firm NESS Czech s.r.o. If we use the Brown-Potoski model (Brown and Potoski, 2002), it is at least arguable, whether the outsourcing was the optimal choice.

The aforementioned dataset has inherent limitations for any analysis caused by the architecture of the system. We have to expect certain error rate, because our dataset is created as an aggregation of individual forms sent by contracting authorities and those forms are filled by people and people tend to make mistakes. The forms, even when most of them are sent electronically, have no connection to existing databases whatsoever, build-in controls or at least warnings. Some type of “are you really sure” warning could eliminate the obvious existing typos, like 94 bids received in the construction contract tender in town with circa 1000 people, or 845 times higher final contract price than was the expected price. For the purposes of our analysis, the elimination of outliers was possible, but there is no effective way, how to systematically filter out the less obvious errors in the middle of the dataset. We expect at least 5% error rate – while comparing two values in the dataset, which should have been identical, sum of absolute differences (CZK 75 bil.) was found, which is 4.87% of total value of analysed contracts (CZK 1,539 bil.).

Table 1 shows some basic information about the dataset we used for the analysis. To show the relevance of the sample size, official information about the summary of public procurement contracts published in the information system is provided. Our sample was created by filtering out database entries, which did not included final contract price and also by getting rid of the forms, which were labelled “revisory”. There is probably some deeper flaw in the data for 2009, because it is not very probable, that 41 “missing” contracts were totally worth CZK 55 bil. Just by looking at the table, the positive trend of increasing number of bids can be identified, which should lead to decrease of the final contract price to expected contract price ratio. This economic phenomenon is known as the competitive effect and has been tested by many authors, for example Bajari (2001) or Pavel (2010).

Table 1. Dataset

Year	2006	2007	2008	2009	2010	2011	2012	2013
Number of all contracts	8,993	7,280	8,155	9,748	8,922	8,627	10,662	16,330
Sample size (forms)	4,225	6,194	7,932	9,707	8,248	7,507	8,961	13,685
Ratio	47.0%	85.1%	97.3%	99.6%	92.4%	87%	84%	83.8%
Value of all contracts (CZK mil.)	303,28	218,60	307,26	297,77	268,63	229,00	264,94	250,52
Value of analysed contracts (CZK mil.)	111,94	169,50	284,13	242,44	226,79	159,96	174,63	169,60
Ratio	37%	78%	92%	81%	84%	70%	66%	68%
Average contract final price (CZK mil.)	26.50	27.37	35.82	24.98	27.50	21.31	19.49	12.39
Average number of bids	3.71	3.62	3.78	4.13	4.35	4.80	4.39	4.53

Source: Information system (Věstník veřejných zakázek), Public procurement statistics for each year, own calculations.

We have surveyed all the documents related to the public procurement, which have been sent to the Cabinet Council by the Ministry of regional development as a basis for the analysis of the government activities in the area of public procurement. We try to offer as positive economy approach

as possible, but only few of the documents offers hard evidence and when they do, most of the information is already covered in the third part of this paper.

Methodology-wise, we choose to count all relevant materials prepared by each government, pick the most important and analyse its impact. For the government of the Prime Minister Nečas, the impact of the regulation is already measurable, for following governments of PMs Rusnok and Sobotka is measurement more complicated, so we tend to discuss the results of the RIA (Regulatory Impact Assessment) mentioned in those materials.

3 Development of the Czech public procurement market

As it would be impossible to cover the whole development of the Czech public procurement market in the limited extend of this contribution, we have decided to demonstrate it on the selected indexes in following subchapters.

3.1 Number of contracts and average number of bids

Figure 1 shows the time series of number of contracts and average bid number. Those time series exhibit seasonal variations - for example contracting authorities have always received the fewest bids in the last quarter of every year. Concerning seasonality in the number of contracts, we can try to explain it with the basic knowledge of budgeting process. Unused funds may be taken as sign by the Treasury department, that the contracting authority can function without them and money could be used elsewhere.

One may expect the indirect dependence between these two time series (less contracts should cause bigger competition), but this cannot be confirmed by the value of correlation coefficient (0.15). With the similar research already done solely on the construction contracts (Dufek, 2014) we can state, that there was weak indirect dependence between same indexes on the public procurement construction market.

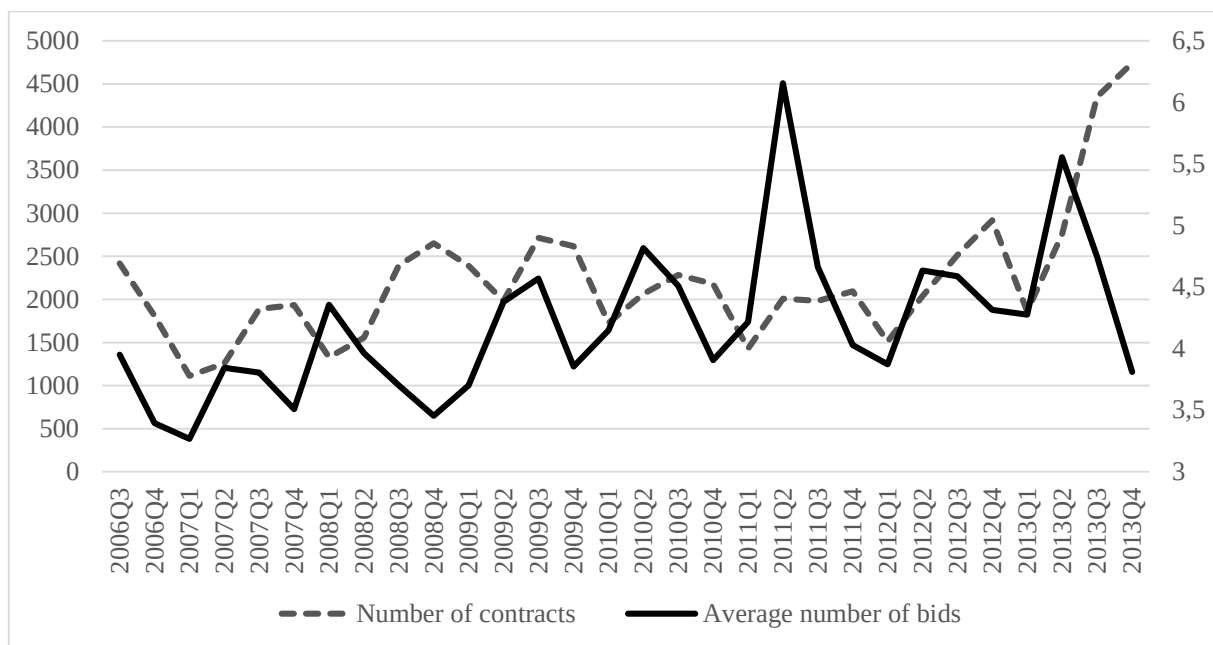


Figure 1. Selected indexes of the public procurement I (Source: Data from Information system, own research)

3.2 Ratio of the open procedures and the contract evaluation method

Indexes shown in the figure 2 describe choices of contracting authorities about tendering methods and have transparency as a common denominator. Transparency as it is one of three key principles of

the public procurement law may be used to explain strong direct dependence between selected time series – correlation coefficient in this case is 0,80.

The increase in usage of the open procedures is definitely the good thing with higher transaction cost being the only downside, we should be bit alarmed when we see, that 80% of procurement contracts are nowadays evaluated only by price – the number have doubled compared to third quarter of 2006. There are different factors which can explain this situation. First as the usage of the economic effectiveness as tender criterion should lead to better price value ratio, it is more complicated and the contracting authorities usually lack employees which could use the criterion correctly and the methodical support from the Ministry of regional development was rather weak during most of the analysed time period. Hand to hand with aforementioned factor is the increased activity of the police in the public procurement area – tender evaluation based solely on contract price can hardly backfire and be criminalized, which could happen using the economic effectiveness method. Last but not least is the pressure on contracting authorities to use price-only criterion created by the austerity policy. If we believe statements of the new government, we should expect change of course in this area, but only time will tell. Fiscal policy in the Czech Republic, which is reflected in this index, have been criticised, some even call it *stunning failure* (Adomanis, 2013).

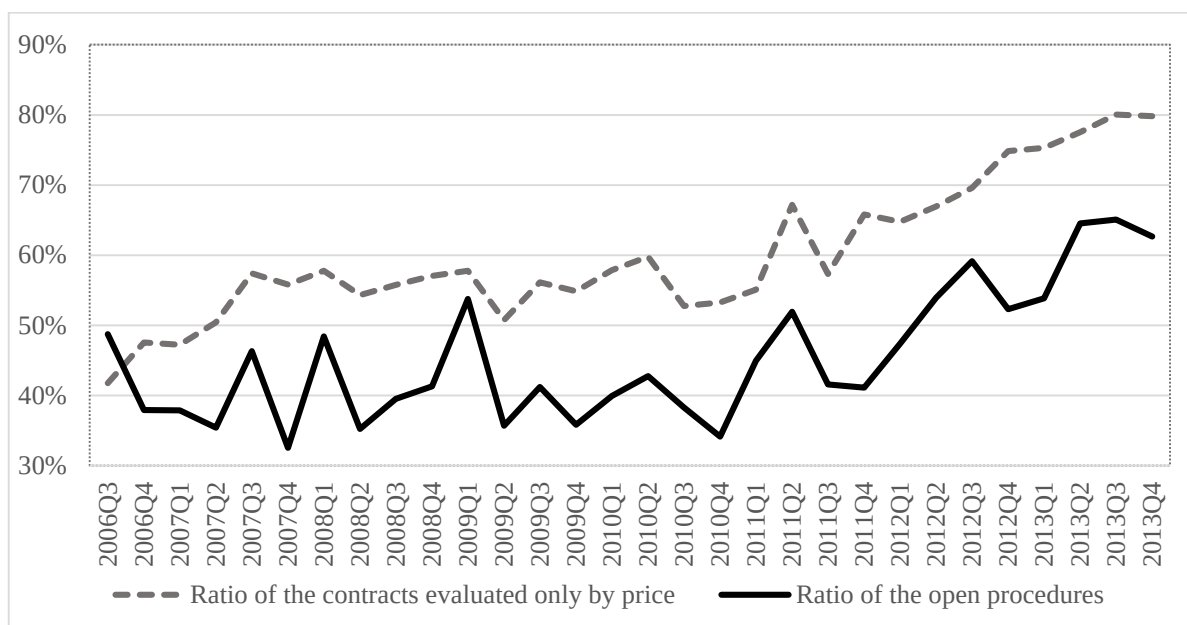


Figure 2. Selected indexes of the public procurement II (Source: Information system, own research)

3.3 Indexes connected to the ratio between final and expected contract price

In the context of information provided before, index of final to expected contract price in the following figure should not surprise. The second index is more interesting. It could either point to the fact, that the contracting authorities are getting more experienced in price estimation over time, which would be good thing because it would allow them to optimize their spending process. Or more pessimistic view on the same thing would be seeing it as a failure of the public procurement institute – contracting authorities are only trying to fulfil the law requirements but the economic context is missing. If we are going to call contracts with 100% equivalence between final and expected price suspicious, we also have to realize, there are lot more contracts oscillating around this level, so if we have broaden the search to contracts between 99% and 101%, the number of suspicious contracts would significantly increase.

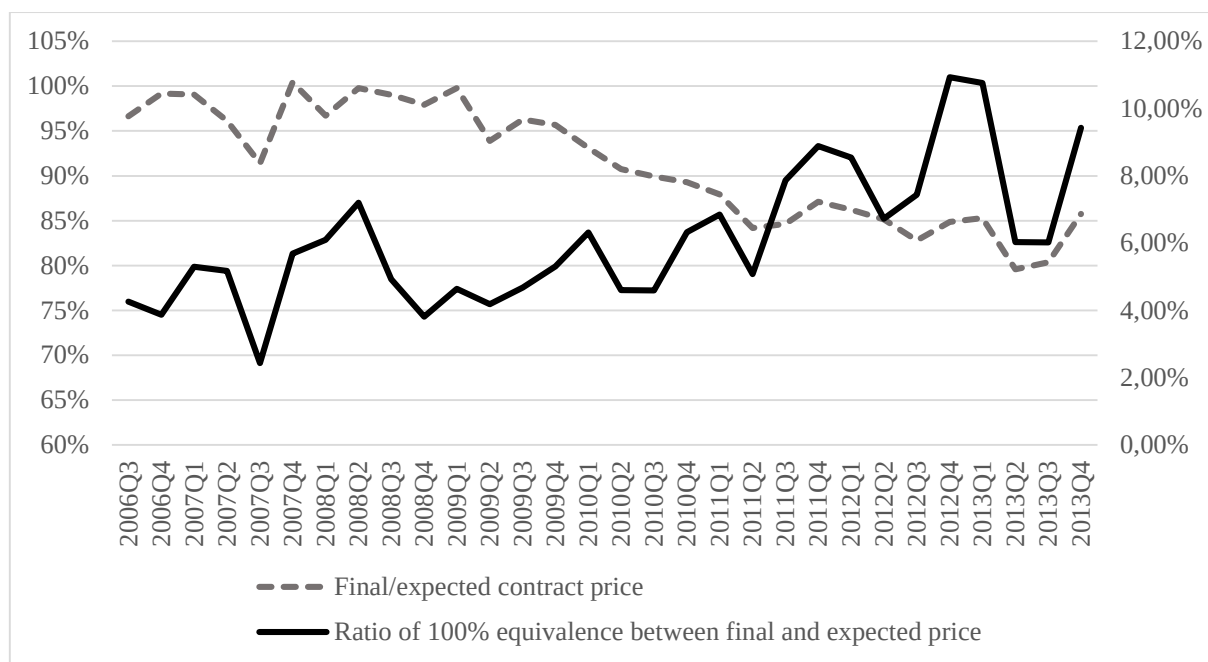


Figure 3. Selected indexes of the public procurement III (Source: Information system, own research)

There is one more interesting fact worth mentioning, while talking about final to expected price ratio. Figure 4 shows the distribution of the public contracts according to this index between 2006 and 2009. There is no significant difference between these years, around 30% of contracts was signed for the final price between 95% and 100% of the expected price. Around 12% of contracts was finally worth less than 75% of expected price, but for like 5% of contracts was finally paid more than 125% of expected price.

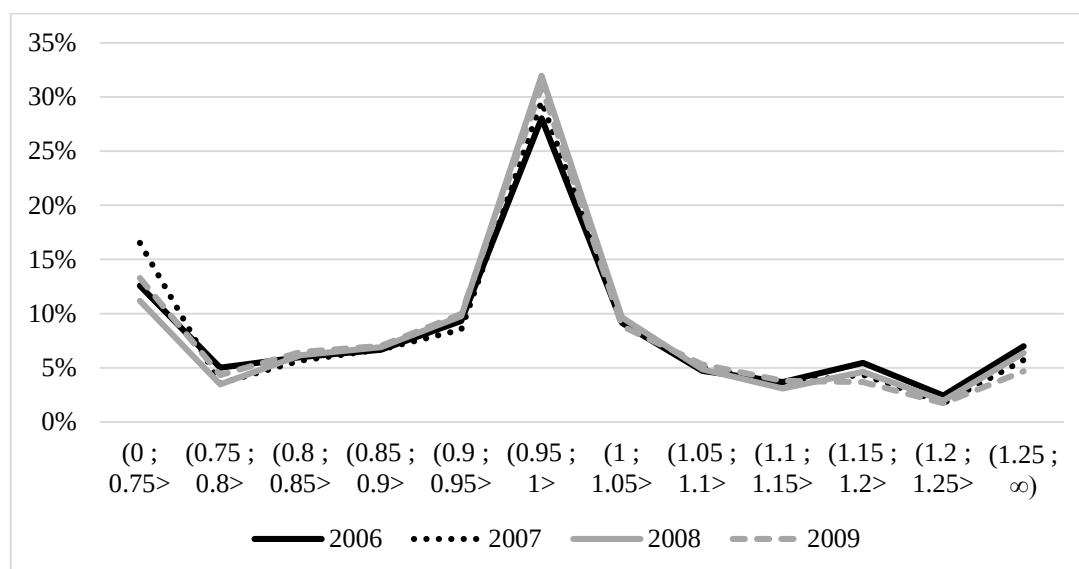


Figure 4. Distribution of public procurement contracts I (Source: Information system, own research)

In Figure 5 we can see significant shift in the contract distribution in the following period, which is result of the factors mentioned in chapter 3.2. When compared to the previous figure, right side of the histogram is flatter, which means there were only few contracts, which were more expensive than expected. Peak in the centre of distribution remains and the new peak in the left side has emerged. In 2013, there were even more contracts with less than 75% of expected price than contracts between 95% and 100% of expected price. While it could be considered as a good sign, the real question is,

whether this can't cause some problems in the future, mainly with quality and durability of the acquired goods and construction works.

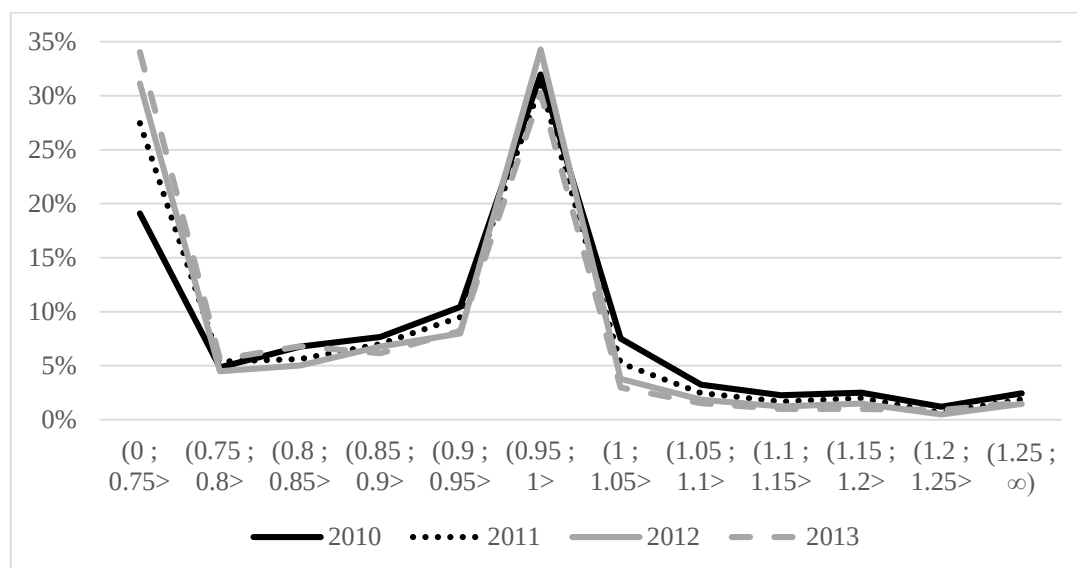


Figure 5. Distribution of public procurement contracts II (Source: Information system, own research)

4 Government activities in public procurement

As it was mentioned in the second part of this paper, any analysis of the government activities is complicated. Table 2 provides summary of the numbers – documents submitted by the Ministry of regional development to the Cabinet Council. We can see that the activity of governments greatly differs, but it is not fair to compare them only by number of bills, notices and public procurement strategies, because the government of Prime Minister Nečas had more time for work and number of the recent government will increase over time.

Following table also provides information about the most important document. As it may seem normative and very controversial to choose one, it was not actually hard to pick the most important and we believe that there will not be great disputes over our choices.

Table 2. Government activity summary

Government of PM	Nečas	Rusnok	Sobotka
Number of public procurement documents	36	6	6
The most important document	Public procurement law novelization known as "Transparent novel"	Public procurement law novelization passed by the Senate	Brand new procurement law draft

Source: Ministry of regional development documents, own research

4.1 Government of PM Nečas

Public procurement was one of the priorities of this government. It can be seen from the Declaration of government priorities, where the public procurement had individual subchapter. Main goal in the area of public procurement was to increase transparency, therefore the main public procurement law novelization prepared by this government is often called The Transparent novel. Main tool to increase transparency was decreasing financial limits, which when reached make the contract subject to

procedures described in detail in public procurement law. New limits were set to CZK 1 mil. for goods and services contracts and CZK 3 mil¹. for construction contracts.

Needless to say that contracting authorities were not really happy about this novel, because increased transparency goes hand to hand with increased administrative cost. We consider this as a fair trade-off with the corruption in the Czech Republic (ranked #57 in Corruption Perception Index created by Transparency International in 2013). Impact of this novel was not only significant increase in the number of contracts published in the Information system, which is shown in chapter 3.1, but also big rush of contracting authorities to start new tenders before the transparent novel was in effect, which can be seen in the following figure. We can see that public procurement reacts to legislation changes similarly like people react for example to increase of taxation of cigarettes.

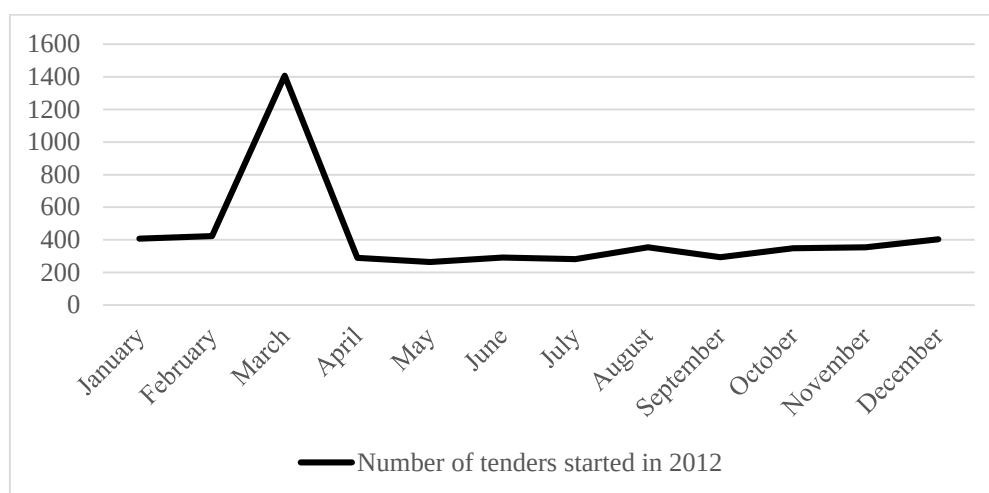


Figure 6. Impact of the transparent novel on the number of tenders (Source: Public procurement statistics 2012)

4.2 Government of PM Rusnok

Only way we could connect public procurement with the Declaration of government priorities of this government would be through priority of development of transportation infrastructure, which could not be done without usage of public procurement institute. Otherwise there is no mention of public procurement there whatsoever.

One big step back in public procurement was set in motion by this government. Ministry of regional development prepared so called technical novel of public procurement law, which was sent to the Senate to pass the legal arrangement. One of the main reasons was to stop further decrease in financial limit for the construction contracts to CZK 1 mil. and was proposed to stay at CZK 3 mil. But in the Senate the amendment to this law was approved, which set the financial limits back to levels before the transparent novel – CZK 2 mil. and CZK 6 mil. One can see irony in the fact that the amendment was proposed by the Senator from the same political party which had transparency as the government priority and made the original limit decrease possible. To back up our criticism of this action by relevant numbers, following table offers a comparison of financial limits in some EU states. Even with the decreased limits the Czech Republic was amongst the countries with the highest limits when the purchase power parity was taken into account (Pavel, 2009).

¹ Starting from 2014, the construction contracts limit should also be CZK 1 mil.

Table 3. Financial limits in selected EU countries²

State	Goods and services		Construction contracts	
	EUR	CZK	EUR	CZK
Denmark	66,792	1,830,101	-	-
France	4,000	109,600	4,000	109,600
Poland	14,000	383,600	14,000	383,600
Slovakia	30,000	822,000	120,000	3,288,000
Slovenia	10,000	274,000	20,000	548,000
Czech Republic	72,993	2,000,000	218,978	6,000,000

Source: Pavel (2009), own calculations

4.3 Government of PM Sobotka

There are some priorities stated in the Declaration of the present-day government, which are connected to public procurement. One is transparent purchasing, other is maximal usage of centralized purchasing of goods and services. More like proclamation than priority seems the point stating simplification of the procurement law, which should respect modern procurement trends in EU and allow optimal supplier selection.

Ministry of regional development made decision, that the implementation of three new EU directives connected to public procurement will not be done by novelization of current procurement law. The brand new procurement law will be prepared instead. Since the transposition of EU directives in the member states law system must be done in 2 years, new law is expected to be in effect in 2016. Some of the proposed changes are against the trends set in the transparent novel, for example there is possibility that use of ballot to reduce number of bids to be evaluated will return, which should lead to cut in transaction cost, but misuse of this in past caused very bad publicity for public procurement. Most significant change proposed is increase in the limits for usage of simplified tendering procedures, from CZK 10 mil. to CZK 50 mil. Most of proposed changes seems like big *leap of faith*, especially with the corruption environment in the Czech Republic.

Last thing worth mentioning is the National Electronic Device. This is not speciality of current government, it was inherited from the past. It should be platform for universal electronic tendering, which could be used for every procurement process. At the moment, the closed trial run for three ministries should be in progress, from September the trial run should be open for all contracting authorities and the mandatory usage of this system should come with new public procurement law in 2016. The ministry of regional development is expecting huge transaction cost savings (billions of CZK). While the development of the Device cost is only in hundreds of millions, this would mean that the project will be very effective, but with all the delays that already occurred (first term for the system to be fully functional was in 2013) it may also end as a total failure.

5 Conclusion

This paper focuses on the impact of government policies on public procurement. The first part is about data used for our analysis and its weaknesses. The following part is dedicated to the analysis of dataset and the development of the selected indexes was presented, in which the impact of government actions was clearly visible. The last part of this contribution is providing information about government actions in public procurement with focus on the most important changes prepared by each of last three governments and impacts of those changes.

² Exchange rate 27,4 CZK/EUR was used for the calculations.

The austerity policy in the Czech Republic have clearly altered the economic behaviour of contracting authorities, which is obvious for example from changes in procurement contract distribution or by the significantly increase in usage of price as only tendering criterion.

The so called transparent novel of public procurement have increased the transparency of public procurement, which can be seen by the growing number of contracts published in the information system, but further changes in the public procurement law are disrupting those effects, while using the finalness of administrative cost as a convenient excuse.

6 Acknowledgement

The contribution is processed as an output of a research project “Veřejné finance ve vyspělých zemích” registered by the IGA VŠE under number F1/2/2013.

References

- [1] Adomanis, M., 2013. *The Stunning Failure Of The Czech Republic's Austerity Experiment*. [online]. [2014-06-30]. Available from: www.forbes.com/sites/markadomanis/2013/05/30/the-stunning-failure-of-the-czech-republics-austerity-experiment/.
- [2] Bajari, P., 2001. Comparing Competition and Collusion in Procurement Auctions: A Numerical Approach. *Economic Theory*, vol. 18, issue 1, pp. 187-205.
- [3] Brown, T. L. and M. Potoski, 2002. *The Influence of Transaction Costs on Municipal and County Government Choices about Alternative Modes of Service Provision*. Indiana University Paper for presentation at the 6th National Public Management Research Conference.
- [4] Dufek, L., 2014. Veřejné zakázky na stavební práce v období 2006 – 2013. In: *XIX. ročník mezinárodní odborné konference Teoretické a praktické aspekty veřejných financí*. Praha: VŠE, pp. 49.
- [5] Information system. *Věstník veřejných zakázek*, [online]. [2014-06-30]. Available from: <http://www.vestnikverejnychzakazek.cz>.
- [6] North, D., 1991. Institutions. *Journal of Economic Perspectives*, vol. 5, issue 1, pp. 97-112.
- [7] Pavel, J., 2009. Komparace zákonů o veřejných zakázkách ve vybraných zemích EU –základní principy a zakázky malého rozsahu. In: *Konference Veřejné zakázky a PPP*. Brno.
- [8] Pavel, J., 2010. Analýza vlivu míry konkurence na cenu rozsáhlých staveb dopravní infrastruktury. *Politická ekonomie*, vol. 14, issue 3, pp. 343-356.
- [9] Public procurement statistics. *Statistiky k veřejným zakázkám za rok 2006-2013*. [online]. [2014-06-30]. Available from: <http://www.portal-vz.cz/cs/Spoluprace-a-vymena-informaci/Vyrocnizpravy-a-souhrnne-udaje-o-verejnych-zakazkach/Statisticke-udaje-o-verejnych-zakazkach>.

A GRAVITY APPROACH TO MODELLING CZECH TRADE FLOWS: DOES TRADE LIBERALISATION INFLUENCE CZECH FOREIGN TRADE?

Lenka Fojtíková

*VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: lenka.fojtikova@vsb.cz*

Abstract

The paper deals with the foreign trade of the Czech Republic that is a small open economy that has always promoted a liberal trade policy and created integration groups with other European countries with the object of obtaining better market access. Although the Czech Republic was one of the founding countries of GATT/WTO, the results of the regression analysis show that for the development of Czech foreign trade in 1995–2012 its integration with other EU Member States was significant, but the significance of its membership in the WTO was not confirmed. Using an augmented gravity model of international trade, it was found that other variables also had some significance in modelling the Czech trade flows with its main trade partners.

Keywords

International Trade, WTO, Preferential Trade Agreement, Economic Integration, Gravity Model.

JEL Classification

F13, F15, P33.

1 Introduction

The situation in the world economy started to change due to the influence of globalisation and internationalisation of production and sales, especially from the end of the 20th century. Trade liberalisation, economic integration, the spread of new technologies and free movement of capital are usually considered as the main factors of these changes in the world economy. Especially the gradual removing of obstacles to trade, which started after World War II following the General Agreement on Tariffs and Trade (GATT), firstly among two tens of countries, and has continued until now through the World Trade Organisation (WTO) that already includes 160 countries from the whole world, caused changes in international trade.

The Czech Republic is a small open economy with only twenty years of history. However, at the time when Czechia and Slovakia were a united subject on the political map of the world, Czechoslovakia was one of the founding countries of GATT, in 1995 transformed into the WTO, and always supported trade liberalisation. After the Czech entrance into the European Union (EU) in 2004, a new situation started in many areas, including trade policy. The Czech Republic is committed to carry out the Common Commercial Policy and the enforcement of national positions and interests is done in the presence of the other 27 Member States. On the one hand, the industrial tradition of the Czech Republic and the limited possibilities of the internal market, on the export as well as import side, are the main arguments for the advocacy of the liberal trade policy. On the other hand, carrying out the Common Commercial Policy is connected with many compromising solutions (in the frame of intra-EU as well as extra-EU trade) that do not have to be advantageous for all EU Member States in the same way.

The main object of the paper is to evaluate if trade liberalisation as well as economic integration with the EU Member States had some influence on the Czech trade flows in the period of 1995-2012 using the gravity model of international trade. The structure of the paper is as follows: firstly, a theoretical view of trade liberalisation will be performed. Secondly, the methodology of the trade analysis will be introduced. Thirdly, my own augmented gravity model will be constructed and the results of the empirical analysis will be presented. Finally, a conclusion and political recommendations will be done.

2 Trade liberalisation from different theoretical aspects: the current state of knowledge

Trade liberalisation became important especially after World War II, where the need to cooperate rather than war was motivated by the ambition to politically and economically stabilise the world (Hoekman and Kostecki, 1995). The main initiators of this process were the United States and United Kingdom. Though their attitudes to the institutional form of trade liberalisation became different later, the General Agreement on Tariffs and Trade (GATT) was signed by 23 contracting parties and the world trade system started to operate on multilateral trade rules.

Trade liberalisation through the multilateral trading system from GATT to the World Trade Organization (WTO) has been analysed from different aspects until now. The first group of authors analysed the impact of trade liberalisation on the growth and effective use of sources, investment, increasing welfare, etc. (see for example Armstrong and Read, 1998; Winters, 2004; Wacziarg and Welch, 2008). The main idea of multilateral trade liberalisation is that free trade should bring gains both to developed and developing countries (Greenway et al., 2002). Although Subramanian and Wei (2007) confirm the positive impact of the GATT/WTO on trade, they determine three types of asymmetries: between developed and developing countries, between developing countries that joined the WTO before and after the Uruguay Round, and between sectors where the WTO has been effective in bringing down trade barriers and those where it has been less effective (agriculture, textiles and clothing).

The second area of research studies is focused on finding out if the WTO really promotes trade and if the trade policy of its members is more liberal than of those countries that are not included in this system. Though the number of the WTO members is growing all the time (Yemen is the 160th member of the WTO), it was not unambiguously confirmed that the membership in the WTO brings more trade to its members than to those countries that are not included in this system. The GATT/WTO has supported trade liberalisation for almost 70 years, but trade barriers such as tariffs and non-tariff barriers exist in the world economy all the time. A hidden form of trade protection is represented for example by “tariff water”. This is one of the tolerated ways that enables members to increase tariffs when they need to protect their domestic market, without the violation of multilateral trade rules (Diakantoni, Escaith, 2009).

In compliance with this fact, Rose (2004), for example, found that almost no measures of trade policy are significantly correlated with the GATT/WTO membership and claims that the GATT/WTO often admits countries that are closed and allows them to remain closed for long periods of time. In another study Rose (2004a) finds that countries belonging to GATT and its successor, the WTO, did not trade more than countries that abstained from membership. However, Tomz et al. (2007) show that Rose overlooked a large proportion of countries to which the agreement applied and mistakenly classified them as nonparticipants although they had rights and obligations under the WTO agreement. This caused a downward bias in his estimates of GATT’s effect on trade. A new analysis carried out by Tomz et al. (2007) shows that participation in GATT substantially increased the trade of formal members as well as non-member participants. In another study the same authors demonstrate that GATT and the WTO substantially increased trade for countries with institutional standing (Goldstein et al., 2007). Lissovolik and Lissovolik (2006) also brought positive conclusions when they analysed Russia’s access to the WTO at a time when Russia was not yet a WTO member. Their results suggest tangible long-term trade gains for Russia since its WTO accession, especially with respect to the Russian specific factors (historical, cultural, or other idiosyncratic factors).

Although world merchandise trade grew on average by 5.3 % annually during the last 20 years (1992–2012) and contributed to the growth of world production (WTO, 2013), it is obvious that multilateral trade negotiations stagnated during the last two decades. This fact opened a new area of research that is focused on regional trade agreements that represent a more flexible instrument of trade liberalisation than the WTO agreements. Discussion is mainly led about the topic if regionalism is a substitute or complement of multilateralism and if these regional blocks lead to trade creation or

trade diversion (see for example Fukao et al., 2003; Zidi and Dhifallah, 2013). Some authors write about the so-called “multilateralising regionalism” (Baldwin, 2006). Other studies are focused on WTO-Plus provisions in preferential trade agreements (for example Stoler, 2010). All these studies confirmed a big interest of the scientific community in the area of trade liberalisation and its impact on economic growth and trade flows.

3 Methodology of the trade analysis

One of the most often used instruments for analysing bilateral trade flows is the gravity model of international trade. The concept of the gravity model is based on Newton physics in which the force between two objects i and j is given by

$$F_{ij} = G \frac{M_i M_j}{D_{ij}^2} \quad (1)$$

where the notation is defined as follows: F_{ij} is the attractive force, M_i and M_j are masses, D_{ij} is the distance between the two objects and G is a gravitational constant depending on the units of measurement for mass and force (Head, 2003).

The beginnings of the gravity model are especially connected with two authors, Tinbergen (1962) and Linneman (1966), who started to use the gravity model for explaining the flows of international trade. Initially, gravity models lacked a strong theoretical foundation, but were widely used for the empirical analyses of bilateral trade flows. Anderson (1979) was the first who derived the theoretical ground of the gravity model based on economic theory (the so-called Armington assumption). Later, a number of theoretical gravity models were developed, which use various micro-founded theories of international trade. For example Bergstrand (1985 and 1989) shows that a gravity model is a direct implication of a model of trade based on monopolistic competition. Deardorff (1995) shows that a gravity model can arise from the traditional factor-proportions explanation of trade. Eaton and Kortum (2002) derive a gravity-type equation from a Ricardian type of model, and Helpman et al. (2008) and Chaney (2008) obtained their equation from a theoretical model of international trade in differentiated goods with a firm heterogeneity.

In the most basic form, the gravity model can be written as follows (Shepherd, 2013):

$$\log X_{ij} = c + \beta_1 \log GDP_i + \beta_2 \log GDP_j + \beta_3 \log \tau_{ij} + \varepsilon_{ij} \quad (2)$$

$$\log \tau_{ij} = \log(\text{distance}_{ij}) \quad (3)$$

where X_{ij} indicates exports from country i to country j . GDP is each country's economic size, usually measured as the gross domestic product (GDP), or per capita GDP. τ_{ij} is the geographical distance between countries, ε_{ij} is a random error term and c is a gravitational constant. The β terms are coefficients to be estimated.

Some authors use in their models export, import or bilateral trade flows (Kepaptsoglou et al., 2010) as the dependent variable, but others averaging the reciprocal trade flows consider this as a mistake (see WTO, 2012). The basic gravity equation used is also augmented by other explanatory variables such as the population in both countries, adjacency, the real exchange rate, foreign currency reserves, border effects, common language and colonial links, the formation of regional trade agreements, access to the sea, etc. (Head, 2003).

4 Empirical analysis

The empirical analysis is focused on the estimation of the effect of trade liberalisation and integration on bilateral trade flows between the Czech Republic and its major trading partners. For this purpose, the augmented gravity model of international trade was created. The gravity equation specification is motivated by the theoretical framework proposed by Frankel (1997) which also took into account, besides the main explanatory variables of the gravity model such as the economic size of the countries

and the geographical distance between them, other geopolitical factors, i.e. border-sharing and adjacency, common language, historical ties and regional trading blocs.

4.1 Specification of the gravity model and testing the hypothesis

We accommodate the theoretical model to the Czech case and use three basic variables such as GDP and distance. This basic form of the gravity equation will be augmented by four new variables, i.e. the variables of population, trade structure, the EU membership and the WTO membership. Then the gravity model of international trade created in this paper takes the form

$$\ln TR_{ij} = \alpha + \beta_1 \ln(GDP_i * GDP_j) + \beta_2 \ln(P_i * P_j) + \beta_3 \ln D_{ij} + \beta_4 TCI_{ij} + \beta_5 EU_{ij} + \beta_7 WTO_{ij} + \varepsilon_{ij} \quad (4)$$

The logarithmic transformation helps to reduce skewness and heteroscedasticity and to stabilise variability. The variable TR means bilateral trade volume, i.e. exports and imports between country i and country j . GDP_i by GDP_j are products of countries i and j and D_{ij} is the distance between them and expresses transaction costs. The variable P_i by P_j expresses the population of countries i and j . The dummy variable EU expresses the membership of both or at least one country in the EU (=1, if not = 0). Similarly, the variable WTO means that countries i and j are in the WTO, or at least one of them is (=1, if not = 0). The variable of trade structure, called the trade conformity index (TCI) measures the degree of trade complementarities between two countries i and j and is calculated as follows:

$$TCI_{ij} = \sum_{k=1}^K (X_{ki} * M_{kj}) / \sqrt{(\sum_{k=1}^K X_{ki}^2 * \sum_{k=1}^K M_{kj}^2)} \quad (5)$$

where i and j refer to a country and its trade partner, i and $j = 1, 2, \dots N$; k is a commodity group, $k = 1, 2, \dots K$; X_{ij} represents the share of commodity group k in the exports of country i ; and M_{kj} is the share of commodity group k in the imports of country j . The value ranges from 0 to 1. The value of $TCI = 0$ expresses a perfectly competitive trade structure between countries i and j ; the value of $TCI = 1$ means a perfectly complementary trade structure. When two countries have the same export shares, i.e. $X_{ki} = X_{kj}$, $TCI = 0$. When a country's export shares are identical to its partner's import shares, i.e. $X_{ki} = M_{kj}$, $TCI = 1$. The results of TCI for the main trade partners of the Czech Republic are included in the appendix of this paper.

This gravity equation is based on the following hypothesis: H1: There is a positive relationship between differences in income and bilateral trade. H2: A larger economic dimension increases bilateral trade. H3: Population has a positive influence on bilateral trade; the domestic level helps to define production possibility limits and the foreign level expresses potential overseas markets, i.e. demand. H4: Bilateral trade increases with rising trade complementarity. H5: The membership of trade partners in the EU contributed to the increase of bilateral trade. H6: Membership in the WTO has a positive influence on bilateral trade flows, because multilateral commitments contributed to free trade flows.

4.2 Method and data

The model is estimated using the Estimated Generalized Least Squares method (EGLS), using cross-section weights. The gravity model is estimated with a panel data structure. The panel data cover the period from 1995 to 2012 and the 10 trading partners: Austria, China, France, Germany, Italy, the Netherlands, Poland, Russia, Slovakia and the United Kingdom.

Data about trade flows, the gross domestic product and population were obtained from the database of UNCTAD and were used on a year base. Data about bilateral trade flows include trade in goods as well as trade in commercial services. Data about bilateral trade and GDP are in current prices and denominated in US dollars. The distance between the Czech Republic and its trade partners was

measured using the great circle formula, which takes into account the longitude and latitude of the capitals. The WTO membership was verified on the website of the WTO. Information about the EU Member States is available on the website of the EU. The basic statistical description of the data is presented in Table 1.

Table 1. Data description

Variable	Observations	Mean	Std.Dev.	Min	Max	Skewness	Kurtosis
$\ln(\text{TR}_{ijt})$	180	15.64590	0.566888	14.95106	16.45030	0.096167	1.352249
$\ln(\text{GDP}_{it} \cdot \text{GDP}_{jt})$	180	31.03612	0.798793	30.05532	32.16754	0.154644	1.330106
$\ln(\text{P}_{it} \cdot \text{P}_{jt})$	180	18.25427	0.031278	18.22480	18.31783	0.795814	2.143343
$\ln(\text{D}_{ijt})$	180	266.2230	0.000000	266.2230	266.2230	na	na
TCI_{ijt}	180	0.957675	0.021459	0.919343	0.983713	-0.332628	1.649354
EU_{ijt}	180	0.500000	0.501395	0.000000	1.000000	0.000000	1.000000

Source: self-elaboration using EViews 7.

4.3 Estimation Results

The overall performance of the model is very good with high R-squared (0.98). The results of the empirical analysis confirmed the original hypothesis, excluding H6. The estimation results are presented in Table 2.

Table 2. Regression results

Dependent Variable: LN_TR_				
Method: Panel EGLS (Cross-section weights)				
Date: 03/24/14 Time: 22:51				
Sample: 1995 2012				
Periods included: 18				
Cross-sections included: 10				
Total panel (balanced) observations: 180				
Linear estimation after one-step weighting matrix				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ln(GDP _{ijt} ·GDP _{ijt})	0.632309	0.030374	20.81752	0.0000
ln(P _{ijt} ·P _{ijt})	2.813530	0.602407	4.670482	0.0000
ln(D _{ijt})	-0.224548	0.040615	-5.528705	0.0000
TCL _{ijt}	4.575634	0.602068	7.599863	0.0000
EU _{ijt}	0.120665	0.032182	3.749440	0.0002
Weighted Statistics				
R-squared	0.983175	Mean dependent var		15.64590
Adjusted R-squared	0.982790	S.D. dependent var		0.566888
S.E. of regression	0.074368	Sum squared resid		0.967847
Durbin-Watson stat	1.400078			
Unweighted Statistics				
R-squared	0.983175	Mean dependent var		15.64590
Sum squared resid	0.967847	Durbin-Watson stat		1.400078

Source: self-elaboration using EViews 7.

As expected, the variable $\ln(\text{GDP}_i \cdot \text{GDP}_j)$ in the nominal value of US dollars has a significant and positive effect on bilateral trade. The estimated coefficient can be interpreted as follows: when the

variable $\ln(GDP_i * GDP_j)$ increased by 1%, the bilateral trade exchange increased by 0.63% in 1995–2012. Similarly, the variable $\ln(P_i * P_j)$ is statistically significant, with an expected positive sign. On the contrary, the coefficient $\ln(D_{ij})$ is negative as expected. When the distance increased by 1%, the bilateral trade exchange decreased by 0.22% in the same period. The estimated coefficient β_4 has a positive sign and is statistically significant. Trade volume increases with rising trade structure complementarities, which are represented by the Heckscher-Ohlin trade model of inter-industry trade. The estimated result can be interpreted as follows: the increase of TCI by 1% caused an increase of bilateral trade by 4.58% in the following period. The variable EU (the membership of countries in the EU) is also statistically significant with a positive sign, which can be interpreted as that the membership in the EU increased bilateral trade by 0.12% in the monitored time. However, the variable WTO (the membership of countries in the WTO) showed itself to be statistically insignificant and was removed from the model. The result of the regression analysis in this way confirmed some previously published studies (see for example Rose, 2004) that the WTO membership does not contribute to a more liberal trade policy of its members. However, it did not confirm the original hypothesis that the membership of the Czech Republic in the WTO has a positive influence on its foreign trade.

5 Conclusion

Foreign trade will take an important position in increasing the economic growth of the Czech Republic with respect to its geographical conditions, economic size and the structure of economy. The growing competition in the world market significantly influences the foreign trade of this small open economy. From this point of view, it is an advantage to be one part of a bigger unit such as the EU. The results of the empirical analysis confirmed that the integration of the Czech Republic with other EU Member States had significant and positive influence on its foreign trade in 1995–2012. The high level of trade complementarity with some EU Member States, and the achievement of lower transaction costs in the movement of goods with the EU Member States than in trade with more remote countries and regions are also important factors.

On the other hand, the results of the empirical analysis did not confirm the significance of the membership in the WTO for Czech foreign trade. This can be influenced by several factors: firstly, the stagnation of multilateral trade negotiations that is obvious especially in the last more than 10 years. Secondly, geographical factors also play an important role in the structure of Czech foreign trade and finally the fact that foreign trade carried out on the MFN base brings less advantages than any other form of preferential trade (free zones or customs unions).

Though the negotiations in the WTO are led by the European Commission on behalf of all its Member States, it is important to support trade liberalisation in those sectors (merchandise trade, especially the group of SITC 7) that are the most important for the Czech economy and to negotiate preferential trade agreements with those states that are the most significant non-EU trade partners of Czechia (Russia and China). For the next development of Czech trade foreign trade it is obvious that, as it is now, the North-North trade is determining, so this fact will also remain maintained in the future.

References

- [1] Anderson, J. E., 1979. A Theoretical Foundation for the Gravity Equation. *American Economic Review*, vol. 69, issue 1, pp. 106-116.
- [2] Armstrong, H. and A. R. Read, 1998. Trade and Growth in Small States: The impact of Global Trade Liberalisation. *The World Economy*, vol 21, issue 4, pp. 563-585.

- [3] Baldwin, R. E., 2006. Multilateralising Regionalism: Spagetti Bowls as Building Blocks on the Path to Global Free Trade. *World Economy*, vol. 29, issue 11, pp. 1451-1518.
- [4] Bergstrand, J. H., 1985. Gravity equation in international trade: some microeconomic foundations and empirical evidence. *The Review of Economics and statistics*, vol. 67, issue 3, pp. 474-481.
- [5] Bergstrand, J. H., 1989. The generalized gravity equation, monopolistic competition and the factor-proportions theory in international trade. *The Review of Economics and Statistics*, vol. 71, issue 1, pp. 143-153.
- [6] Deadorff, A. V., 1995. *Determinants of Bilateral Trade: Does Gravity Work in a Neoclassical World*. NBER Working paper no. 5377 [online]. [2014-06-20]. Available from: <http://www.nber.org/papers/w5377>.
- [7] Diakantoni, A. and H. Escaith, 2009. *Mapping the Tariff Waters*. Working Paper, No. 13, WTO. Available from: http://www.wto.org/english/res_e/reser_e/ersd200913_e.pdf.
- [8] Eaton, J. and S. Kortum, 2002. Technology, geography and trade. *Econometrica*, vol. 70, pp. 1741-1749.
- [9] Frankel, J. A., 1997. *Regional Trading Blocs in the World Economic System*. Washington, DC: Institute for International Economics.
- [10] Fukao, K. et al., 2003. An econometric analysis of trade diversion under NAFTA. *The North American Journal of Economics and Finance*, vol. 14, issue 1, pp. 3-24.
- [11] Goldstein et al., 2007. Institutions in International Relations: Understanding the Effects of the GATT and the WTO on World Trade. *International Organization*, vol. 61, pp. 33-67.
- [12] Greenway, D. et al., 2002. Trade liberalisation and growth in developing countries. *Journal of Development Economics*, vol. 67, issue 1, pp. 229-244.
- [13] Head, K., 2003. *Gravity for Beginners*. [online]. [2014-06-17]. Available from: <http://www3.nd.edu/~agervais/documents/Gravity.pdf>.
- [14] Helpman, E., M. Melitz and Y. Rubinstein, 2008. Trading partners and trade volumes. *Quarterly Journal of Economics*, vol. 123, pp. 441-487.
- [15] Hoekman, B. and M. Kostecki, 1995. *The Political Economy of the World Trading System. From GATT to WTO*. Oxford: Oxford University Press.
- [16] Chaney, T., 2008. Distorted gravity: the intensive and extensive margins of international trade. *American Economic Review*, vol. 98, pp. 1707-1721.
- [17] Kepaptsoglou, K. et al., 2010. The Gravity model Specification for Modelling International Trade Flows and Free Trade Agreements Effects: A 10 Year Review of Empirical Studies. *The Open Economics Journal*, vol. 3, pp. 1-13.
- [18] Linnemannnn, H., 1966. *An Econometric Study of International Trade Flows*. Amsterdam: North-Holland.
- [19] Lissovolik, B. and Y. Lissovolik, 2006. Russia and the WTO: The Gravity of Outsider Status. *Palgrave Macmillian Journals*, vol. 53, issue 1, pp. 1-27.
- [20] Rose, A. K., 2004. Do WTO members have more liberal trade policy? *Journal of International Economics*, vol. 63, issue 2, pp. 209-235.

- [21] Rose, A., K., 2004a. Do We Really Know That the WTO Increase Trade? *American Economic Review*, vol. 94, issue 1, pp. 98-114.
- [22] Shepherd, B., 2013. *The Gravity Model of International Trade: A User Guide*. United Nations – ESCAP. Available from: http://vi.unctad.org/resources-mainmenu-64/digital-library?i=VI&op=all&q=The+Gravity+Model+of+International+Trade+-+A+User+Guide&act=search&option=com_gslink.
- [23] Stoler, A. L., 2010. The Future of “WTO-Plus” Provisions in Preferential Trade Agreements. International Trade Law Symposium Canberra, September 10, 2010.
- [24] Subramanian, A. and S. J. Wei, 2007. The WTO promotes trade, strongly but unevenly. *Journal of International Economics*, vol. 72, issue 1, pp. 151-175.
- [25] Tinbergen, J., 1962. *Shaping the World Economy: Suggestions for an International Economic Policy*. New York: The Twentieth Century Fund.
- [26] Tomz, M. et al., 2007. Do We Really Know That the WTO Increases Trade? Comment. *American Economic Review*, vol. 97, issue 5, pp. 2005-2018.
- [27] Wacziarg, R. and K. H. Welch, 2008. Trade Liberalization and Growth: New Evidence. Oxford Journals. *The World Bank Economic Review*, vol. 22, issue 2, pp. 187-231.
- [28] Winters, L. A., 2004. Trade Liberalisation and Economic Performance: An Overview. *The Economic Journal*, vol. 114, issue 493, pp. F4-F21.
- [29] WTO, 2012. *A Practical Guide to Trade Policy Analysis*. Geneva: WTO.
- [30] WTO, 2013. *World Trade Report 2013*. [online]. [2014-06-12]. Available from: http://www.wto.org/english/res_e/publications_e/wtr13_e.htm
- [31] Zidi, A. and S. M. Dhifallah, 2013. Trade Creation and Trade Diversion between Tunisia and EU: Analysis by Gravity Model. *International Journal of Economics and Finance*, vol. 5, issue 5, pp. 131-147.

Appendix: The Results of Trade Conformity Indexw

	Austria	China	France	Germany	Italy	Netherlands	Poland	Russia	Slovakia	United Kingdom
1995	0,943133372	0,931106630	0,926216059	0,932088400	0,937710035	0,956672481	0,956672481	0,688296436	0,931198287	0,909585067
1996	0,965965475	0,960873448	0,946999882	0,944889669	0,943558072	0,964225722	0,964225722	0,866652533	0,868449035	0,939946337
1997	0,978881483	0,971976394	0,960823772	0,947438840	0,952277736	0,971855907	0,971855907	0,864277805	0,938297491	0,957041662
1998	0,983713400	0,973186243	0,969163743	0,963794746	0,960967448	0,980083805	0,980083805	0,896590695	0,971175219	0,969483570
1999	0,981245255	0,970909557	0,966386564	0,958923310	0,958955723	0,975479904	0,975479904	0,881999118	0,961734411	0,967955596
2000	0,982090053	0,963890468	0,961976058	0,934109715	0,951359532	0,963998116	0,963998116	0,911213785	0,933200905	0,968829239
2001	0,980082849	0,968639443	0,959065490	0,964125964	0,946550301	0,959950196	0,959950196	0,913474836	0,952497982	0,946061586
2002	0,975718390	0,978815236	0,958412339	0,968795418	0,945969381	0,964447564	0,964447564	0,927458517	0,964441935	0,949556060
2003	0,972246041	0,975133713	0,947732065	0,948352135	0,932827556	0,961508789	0,961508789	0,936010175	0,973275792	0,956778912
2004	0,973125300	0,964617994	0,945314681	0,948401780	0,936267747	0,964618056	0,964618056	0,953365356	0,968024494	0,958923983
2005	0,955712835	0,959771787	0,934749991	0,957901010	0,919402866	0,949970139	0,949970139	0,958573176	0,962696406	0,949720925
2006	0,940309271	0,956249289	0,926145353	0,954710439	0,899565620	0,951620793	0,951620793	0,966951401	0,959353736	0,927363968
2007	0,954916472	0,946691276	0,926281163	0,935167476	0,900267412	0,947919344	0,947919344	0,975419407	0,979924334	0,941767532
2008	0,942006928	0,909264822	0,899790250	0,920760185	0,881083060	0,947552836	0,947552836	0,980490793	0,972522501	0,917992688
2009	0,934680647	0,934990922	0,915204536	0,930708986	0,859295599	0,949880126	0,949880126	0,944927328	0,975475260	0,914149132
2010	0,931059095	0,924308924	0,918437235	0,940243315	0,856984456	0,939075054	0,939075054	0,955370190	0,975019333	0,919628996
2011	0,923916990	0,891376523	0,901061533	0,927498971	0,819298790	0,915282208	0,915282208	0,969618150	0,959983789	0,897630843
2012	0,919342721	0,888954997	0,890090115	0,911782191	0,758765443	0,914430338	0,914430338	0,973772564	0,968944931	0,863148452

Source: own calculation.

CROSS-BORDER COOPERATION CZECH REPUBLIC - POLAND

Karin Gajdová

*Silesian University in Opava, School of Business Administration in Karvina, Univerzitní nám. 1934/3, 73340 Karviná
email: gajdova@opf.slu.cz*

Abstract:

State borders, long considered peripheral in every sense, have now become a major concern due to globalization and the ongoing construction of the European Union. Cross-border cooperation and governance are central to its continuing integration and enlargement. There is increasing awareness that we have to understand the nature of borders and how they are changing in order to appreciate the need and the opportunities for cooperation across them. This paper deals with specific border regions, ie border regions of the Czech Republic and Poland. The aim of this article is to introduce Operational program of border cooperation Czech Republic - Republic of Poland for the new programming period, ie. 2014 – 2020. Part of this paper is a concise definition of the program and the performance barriers between the territories in question still exist and are an obstacle to cross-border higher level cooperation.

Keywords:

Cohesion policy, cross border cooperation, czech-polish borderland, barriers.

JEL classification:

D21, E24, R11.

1 Introduction

Cohesion policy is one of priorities of the European Union. Cohesion policy, as the policy of economic, social and territorial cohesion, according the Ministry of Regional Development, it is along with the Common Agricultural Policy the most important policy of the European Union. The general aim of cohesion policy is in accordance Article 174 of the Lisbon Treaty reducing disparities between the levels of development, the backwardness of the least favored regions and strengthening economic, social and territorial cohesion purpose harmonious development of the European Union (Blom-Hansen, 2003). The key instruments of cohesion policy are the EU Structural Funds and the Cohesion Fund, through which applicants may use funds from the EU budget. The European Union conducts its cohesion policy within the seven-year cycle. Aims of the Cohesion policy have changed over time and respond to the needs of existing and acceding members and the general environment of the EU. In the programming period 2007 - 2013 there were three aims. In the new period, cohesion policy of the EU includes the two aims. "Aim 1 investment for growth and employment" and "Aim 2 European territorial cooperation". The aim named European territorial cooperation is focused on promoting cross-border cooperation and to a lesser extent also on transnational and interregional cooperation. It continues to retain three guidelines of the European territorial cooperation (they are cross-border, transnational and interregional). And the right to cross-border cooperation will benefit the most funds.

Cohesion policy meets with different opinions. It is a lot of critical views, but also has lot of supporters. In more recent discussions on the future of Cohesion policy, however, both critics and supporters have tended to agree on the need for a “modernisation” of the policy, in recognition of existing weakness in the current approach and of the emerging challenges faced by the European economy, society and broader integration process (Manzella and Mendez, 2009).

Between the border regions there are still significant differences and they are just trying to reduce by the cohesion policy. The following text will introduce Operational Program Cross-Border cooperation CR-Poland for the new period, as the period from 2014 to 2020. Parts of this paper are a presentation of the programs areas and the operational program and lastly, the current state of cross-border cooperation (respectively barriers to cross-border cooperation).

2 Operational Program Cross-Border Cooperation CR-Poland 2014-2020

Czech-Polish program Cross-Border Cooperation will be managed by the Czech side. The Managing Authority for the program will again perform Ministry of Regional Development and function of the National Authority then the Polish Ministry of Infrastructure and Development (Majerová, 2012). The collaboration of these two ministries was during the first quarter of 2012 established a working group to prepare the Czech-Polish border cooperation program 2014-2020. Euroregions are in this working group always represented by one common representative from each side of the border.

As shown in the table below (Table 1 Distribution of funds), the Czech-Polish program was approved allocation of Czech parties in the amount of 91 223 424 EUR. This represents a share of 30.09% of the total allocation for all five border cooperation programs in the country. Despite this high proportion is absolute level of funds about 12% lower than in the previous period. On the other hand, the Polish side decided to increase the allocation for the Czech-Polish program in the new period to 135 million EUR (2007-2013: 115.79 million EUR). Overall, therefore, the allocation for the new program had grown to 226.22 million EUR compared to previous 219.46 million EUR.

Table 1. Distribution of funds

Program	Allocation 2007 - 2013		Allocation 2014 - 2020	
	EUR	Share in %	EUR	Share v %
ČR – Poland	103 680 000	29,49	91 223 424	30,09
ČR – Slovakia	56 552 727	16,08	45 149 871	14,89
ČR – Austria	69 120 000	19,66	59 898 497	19,76
ČR - Bavaria	55 037 599	15,65	49 176 275	16,22
ČR – Saxony	67 199 631	19,11	57 701 933	19,03
Total	351 589 957	100,00	303 150 000	100,00

Source: own processing, data by Euroregion Silesia.

In the 2014-2020 programming period is defined by the 11 thematic aims that bind to the priorities of the Strategy for smart, sustainable and inclusive growth. Regulation of the European Parliament and the Council number 1299/2013 of 12th December 2013 by special provisions for the support from the European Regional Development Fund to the European territorial cooperation stipulates that at least 80% of the ERDF allocation for each program of cross-border and transnational cooperation focuses on more than four thematic objectives. With regard to this rule thematic focus were chosen specific thematic aims that best allow the use of synergies between the different investment priorities and best possible within the framework of cross-border cooperation to respond to the needs of the border region. The selected thematic objectives are reflected in the four priority axes that reflect the needs and challenges identified in the situational analysis of the program area. Each selected thematic objectives respond to the findings of analysis, which identified challenges and needs of the region. The following table shows the priority axis.

Table 2. Priority axes and thematic aims in the new programming period

	Name of priority axis	Thematic aim
Priority axis 1	Common risk management	Support for climate change adaptation, risk prevention and risk management (TO 5)
Priority axis 2	Employment	Promoting sustainable employment, quality of jobs and labor mobility (TO 8)
Priority axis 3	Education and qualification	Investing in education, skills and lifelong learning (TO 10)
Priority axis 4	Cooperation between the institutions and communities	Support for institutional capacity and building of effective public administration (TO 11)

Source: own processing, data by OPPS ČR-PR.

3 Definition of the programming area

Programming area lying in the Czech-Polish border is formed by NUTS 3 regions, which represents 5 Czech counties: Liberec, Hradec Králové, Pardubice, Olomouc and Moravian-Silesian and 6 Polish sub-regions: Bielski and Rybnicki (Silesia voivodship), Jeleniogorski and wałbrzyski (Dolnoslaskie voivodship), Nyski and Opolski (Opolskie voivodship). To this area on the Polish side also falls township Strzeliński (sub-region Wroclawski in Dolnoslaskie voivodship) and township Pszczyński (sub-region Tyski in Slaskie voivodship).

The total area of the programming area is 47,097 square kilometers. Czech part of the program area covers 23,135 square kilometers (it is 29,3% of Czech Republic), the Polish part consists of 23,962 square kilometers (nearly 8% of the area of Poland). In the definition of the programming area therefore there is no change compared to the programming period of 2007 - 2013.



Fig. 1. Map of regions of cross-border cooperation (Source: Euroregion Silesia)

3.1 Population in border regions

In the programming area there are in 2013 about 7.1 mil. inhabitants, of whom 3.4 mil. seemed to Czech part (it is 32.1% of the population of Czech) and 3.7 mil. To the Polish part (it is 9.7% of the population of Poland). The population density of the individual parts of the territory is above average as compared to the national average and the average of the EU. The overall population density of the

programming area is 151 per inhabitant/Km². Relatively densely populated area is also characterized by significant internal heterogeneity. The highest level of population, both in absolute and relative indicators, shows the eastern part of the territory. It is industrial and highly urbanized area of the Moravian-Silesian Region and the two adjacent sub-regions of Slaskie voivodship, where the population density slightly higher than 1000 inhabitant/ Km². The lowest density (less than 50 inhabitant/Km²) is in a border mountain area Jeseníky on the Czech side and area of Klodzka region and district in the north of Opolskie and Dolnoslaskie voivodship on the Polish side.

From an economic perspective, the problem is in the external migration from area. In comparison with the national level of the Czech Republic and Poland, the situation in the study area is significantly worse. With the exception of Liberec and Pardubice regions show all NUTS 3 regions negative migration balance. Czech part in this sense is in a better situation in comparison with the Polish part. While in the Czech regions, with the exception of the Moravian-Silesian Region migration balance in the regions over the long run - 1 ‰, high emigration poses a particular problem for the majority of the Polish sub-regions and the Moravian-Silesian Region on the Czech side, where the level of migration around - 2 ‰. The exception on the Polish side is subdivision Bielski with positive migration balance (Fojtíková and Tuleja, 2013).

The main reason for the increased migration from the program are the economic factors, in particular the loss of jobs in peripheral areas with poor transport links (Jeseníky, Bruntál) and in structurally affected regions in the east due to the decline of traditional industries (for example extractive industries (Ostrava, region Rybnicki). The problems of attenuation or extinction of traditional industries are facing other border areas (Broumov, Semily, Walbrzych, etc.).

3.2 Structure of the economy and labor market

Program area is significant economic area, but which are not yet completed with the process of economic transformation, which began with the transition to a market economy after 1989. Decline of traditional industries (such as mining, metallurgy, textiles, glass, paper industry and other) means persisting structural problems that have a negative impact on the labor market. Problem is in high long-term unemployment, especially in the so-called structurally affected regions with a strong position in the industry (Moravia-Silesian Region) and agriculture (Opolskie Region).

For the structure of the economy is the dominant sector of services, which contributes to employment approximately one half. In comparison with national averages, employment in this sector is slightly lower due to high employment in the secondary sector (industry and construction), which in turn exceeds the average of the two states. Some regions exceed the national employment in the industry significantly. They are for example Liberec region with almost 50% (Tvrdoň and Skokan, 2011). The reason is historically strong industrial tradition that persists to this day, even in the transformation of the economy was partially reorientation from the industry, which fell into decline, to the new industry. While employment in the primary sector in the Czech part corresponds to the national average (about 3%), in the Polish part of the program area, agriculture still maintains a strong position. It is even though there is a ceasefire in the share of employment by a quarter lower than is the average in Poland (it is 15 %) except sub-region Nyski with more than 25% of employment in diameter.

The registered unemployment rate was at 31. 12. 2013 in Czech selected regions higher than the national average, which stood at 8.2%. The highest unemployment rate was in the Moravian-Silesian Region (10.5%) followed by the Olomouc Region (9.8%), Liberec Region (8.5%), Pardubice Region (7.4%) and the Hradec Králové Region (7.3%).

High unemployment is mainly a problem of Polish regions, the highest in the reference area on the same date in the sub-region Wałbrzyski (20.5%) and Nysski (19.9%), followed by sub-regions Jeleniogorski (17.7%), Opole (11 , 2%), Bielski (10.2%) and Rybnicki (10.1%).

3.3 Economic operators

An important characteristic that has a significant impact on the economy of the assisted area, its flexibility and ability to respond to shocks in the economy, employment characteristics, etc.. is the size structure of enterprises. Likewise, influences the conditions for cooperation and participation in cooperative structures, including cross-border (in general, the use of cooperative structures rather small, flexible companies).

The size structure of enterprises shows a greater concentration of large economic entities, especially in Moravian-Silesian Region, the Pardubice region and sub-regions of Slaskie voivodship. These are regions of the traditional mining and chemical industry as capital intensive industry and the scale of production and thus dominantly implemented major economic entities (Fojtúková and Časnochová, 2012). Large enterprises have in both member states of the program in the common border area increased productivity and added value. This is one of the causes of the relatively high levels of per capita production in the Moravian-Silesian region and sub-regions of Slaskie voivodship, at the same time of high unemployment. The risk of this size structure, however, is less resistant to economic fluctuations. Especially in these regions there is desirable to attempt to increase the diversification of the economy at regional and local level in services by industry to help revive the local economy. Example of similar sector is tourism, which is a potential resource utilization, which represent, for example engineering, cultural and historical attractions in relation to the industrial past and present of these regions.

A positive trend in the economic activities of enterprises is deepening cross-border cooperation of these entities. This is reflected in the number of entrepreneurs who carry out their activities within the program area on the other side of the border. These numbers are uneven and generally manifests itself rather higher interest of Polish entities in cooperation, business and entry into the Czech market than vice versa.

4 Cooperation of cross-border entities and their barriers

Cross-border cooperation of entities in the Czech-Polish border area has very good potential due to common socio-economic problems of the regions on both sides of the border. Economic cooperation and removing barriers to interconnection region has the potential to become the core of development, especially in economically weak regions. The means to achieve this goal may be making these areas for investors, businessmen and visitors from the Czech Republic and Poland. Yet there are still a number of limitations to the actual sharing of economic space, whether in the legislative, institutional, social or infrastructure.

Cross-border cooperation on Czech-Polish border has developed since the 90s. It has different forms and takes place at several hierarchical levels. Cross-border cooperation has sometimes tree sided character, the example is the Czech-Polish-Saxon cooperation within the Euroregion Nisa or Polish-Czech-Slovak cooperation in the Euroregion Beskydy and the European grouping of territorial co-operation TRITIA created in 2013.

Since 1994, cross-border cooperation also is in the Structural Funds. Support for Czech-Polish cooperation of European funding began under the program of Phare CBC in 1999, when the extension of assistance and cooperation between the candidate countries. Initially, this assistance was directed especially to large investment projects and the Common Fund Small Projects. The amounts provided annually from the EU budget were in the order of several million.

After the accession of both countries to the European Union in 2004, the Phare CBC program 2000-2006 transformed into a program of the Community Initiative INTERREG IIIA, which was implemented in the period 2004-2006, the total amount of funds in the amount of 34.5 miles. EUR from ERDF.

In the 2007-2013 the Initiative Interreg IIIA was followed by Operational Program Cross-Border Cooperation CR-Poland, which was already implemented under a separate aim of policy of economic

and social cohesion Objective 3 - European territorial cooperation, with a total volume 219.4 miles. EUR from ERDF.

Important role in cross-border cooperation at the local level play a Euroregions. On the Czech-Polish border there are total of 6: *Nisa* (tripartite, extends also to the Free State of Saxony), *Glacensis*, *Praděd*, *Silesia*, *Těšínské Slezsko* and *Beskydy* (tripartite, decomposes also part of the territory of Slovakia). The figure below shows the Euroregions of the Czech Republic. The oldest region is the Euroregion Nisa, which was established in 1991. The youngest is Euroregion Beskydy based in 2000. Main objective of existence of Euroregions is since their foundation to support the development of cross-border cooperation in the area and meeting support and partnership of people and institutions.

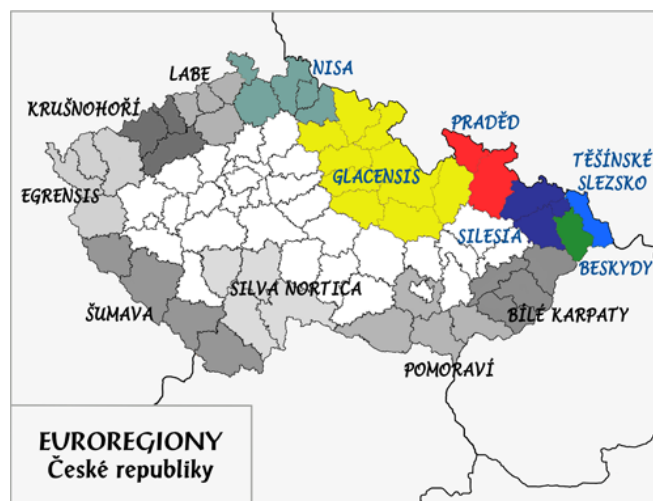


Fig. 2. Euroregions of the Czech Republic (Source: Euroregion PL-CZ)

In the program area there it starts to work European Grouping of Territorial Cooperation (EGTC). This is a new tool that allows public subjects from various countries to create a common legal entity to address specific issues that have cross-border or transnational dimension. This is a new form of cooperation that is developing at both Euro-regions and Regions. On 25. 3. 2013 were registered in the European Grouping of Territorial Cooperation Tritia (EGTC tritium) associating Opolskie and Slaskie voivodships, Moravian-Silesian Region and the Žilina region. And the establishment of the EGTC is more uniting Dolnoslaskie voivodship, Liberec, Hradec Králové, Pardubice and Olomouc regions and Euroregions Nisa and Glacensis.

Another major player in cross-border cooperation are territorial governments. Their cooperation is carried out at all levels, both at the regional level, respectively. voivodship and also at the level of municipalities and districts as well as in Poland. Cooperation has various forms of strategic planning (especially at the regional level and province) to the implementation of specific activities or projects in various thematic areas which are the responsibility of local governments and require common solutions and mutual coordination process. Most are projects focused on the development of accessibility and tourism, risk prevention and environmental protection. There but neither projects aimed at promoting education and business support.

As already mentioned, in the border areas is a growing support of the regions and cross-border mutual cooperation. This cooperation is also faced with various problems and barriers. In the field survey was carried out in the framework of the project "Analysis of the systemic problems of cross-border cooperation on the Czech-Polish border." This is a contract, which was implemented in the framework of the project "Euroregion PL-CZ". The project was co-financed by the European Union - European Regional Development Fund under the Operational Program Cross Border Cooperation CR - PR in 2007-2013 ". The questionnaire survey and expert interviews were conducted in the period October-November 2013. This is a qualitative research. The research was conducted through PROCESS - Centre for Development of Municipalities and Regions, llc.

From the expert interviews it identified some important communication problem in cross-border cooperation on Czech-Polish border. Problem areas are divided into the area of trade and transport, which also significantly affects the area of trade.

4.1 Barriers to cross-border cooperation in the field of business

The problem is the lack of exemptions for companies and entrepreneurs from the border area to permit crossing. There is a limit passage of borders for local businesses and entrepreneurs, resulting in restrictions on the exchange of goods and services in border areas, where these restrictions apply. Road exists, but the passage of trucks not allowed. In the event that there was an agreement between Poland and the Czech Republic on the granting of exemptions for companies and entrepreneurs from the border area would increase the competitiveness of companies.

There is substantial disparity of legislation in the field of trade. Entrepreneurs (traders) do not have confidence that permits valid in one country, is valid in another country. Sometimes it happens that in the Czech Republic there is a trade without a license, but in Poland the license is required. Or on the contrary in Poland there it can be performed without a business license, but in the Czech Republic is a license required. This problem is identified as most important and the need for its solution and unification of legislation.

There are restrictions and barriers in legislation, i.e. issues related to international conventions between the two countries. These international conventions often prevent to greater cross-border cooperation.

There is diversity of legislation in the area of services. If the payer or non payer of VAT from one country provides a service to another state, you need to log in VAT in Prague (if it is a Polish payer / non VAT) or Warsaw (if it is the Czech payer / non VAT). It would be appropriate to abolish the obligation for VAT registration service and replace similar conditions, such as for the sale of goods.

Another problem is the lack of financing, whereby it is not possible realization of certain projects. Most of the projects must be pre-financed to a large extent, co-financed from municipal budgets. There is little support for organizations supporting entrepreneurship. For larger projects, it is a problem, because municipalities do not have enough funds for the launch of the project, so they take loans and must calculate whether they can repay. This is a very serious problem, which dramatically reduces the number of candidates on cross-border cooperation, the Polish- Czech projects. In case it would be possible to obtain a financial deposit, it would be best implemented more projects.

There are problems in parallel applying for grants from various sources EU. Some projects cannot be realized because of obtaining grants will not cover its range. And after it, there is no longer possible to apply for additional funding from other sources. It is therefore not apply for a grant from multiple sources.

There si inconsistencies of assessment of expenditure on Czech and Polish side. There is some decommissioning expenditure on one side (the side of the Czech Republic) , but on the other hand are approved as justified (on the part of Poland) .

Projects are subject to considerable administration. In some projects it is necessary to demonstrate a lot of mandatory attachments, even if the information is otherwise available (e.g. ID of entrepreneurs).

There is a different approach to the industry in both countries. The Czech Republic is a significant industry downturn, are high investment requirements in the field of environmental protection. On the other hand, in Poland a great struggle for the preservation industry, the struggle for working town. This creates the danger of moving beyond large enterprises.

There is lack of available databases, which would result in a list of potential partners for cross-border projects. Looking for partners from the other state is very difficult and time consuming.

4.2 Barriers to cross-border cooperation in the field of transport

Problem areas on the Czech-Polish border with transport are the most common problem that affects both the citizens themselves and tourists and businesses. To businesses that brings additional costs.

The most frequently mentioned problem in the field of transport, the overall condition of roads in border areas. This problem is found to be very serious as a result of the poor condition of roads is reduced safety and extending the time needed to reach the other side of the border. The given fact leads to increases in the cost of both commercial carriers and citizens.

At some border crossings there is a discontinuity associated with a different categorization of roads. Lack of coordination of road infrastructure with the Polish side, there are often different technical status of cross-border roads on both sides of the territory. It prevents through traffic and transport trucks that cannot through these border crossings to pass and must seek alternative crossing. Lorries must go round impassable places, which increases costs, reduces competitiveness of companies on both sides of the border and weakens the position of the cities and municipalities that could possibly be located on the route of passage. There is thus to reduce the possibility of the development of companies and establish new business contacts.

For a very serious problem finds plenty interviewed underdeveloped rail network with a connection to Poland. It required the introduction of railway transport on the Czech-Polish border, which would be especially lucrative for freight.

Another very serious problem is the lack of high-quality connection to the network of roads inland Czech Republic. This leads to the extension of the roll from the interior to the border and on the contrary, thereby reducing the competitiveness of firms.

Lack of public transport and thereby reduce tourism and finish work restrictions for those interested in working in the other country. Without your own personal car is a visit to the border cities impossible. This is a very serious problem. In Poland supports railroad repair the existing line and buys a new fleet. In the Czech Republic it is contrary, there is supported by more bus service. There is thus the impossibility of connection across the border. Missing regular cross-border links, not only railways but also buses, for example through the border stop.

There is no common tariff on cross-border bus routes. Passengers are forced to have 2 tickets and pay in both currencies (as in crowns and in Zloty).

There is problem with the completion of the contract between the Czech Republic and Poland for the construction and maintenance of roads and bridges. It is necessary to conclude an agreement for to improve road links between the Czech Republic and Poland. This would gradually develop Czech-Polish border.

There is a lack of border crossings, or lack of capacity (max to 3.5 tons). There is impossibility of passing vehicles over 3.5 tons over the level crossing at the entrance door. Heavier trucks must go too about 30 km further.

5 Conclusion

Support in the border regions of the country (mainly on the borders of the Czech Republic and Poland) is getting more and more into the foreground. It is important that the regions were supported in cross-border mutual cooperation and constantly increasing not only its economic potential.

The above essay was trying to introduce Operational Program Cross-border Cooperation CR-Poland for new programming period 2014 – 2020. This program is a major source of support for those regions.

This paper was supported by the project Ministry of Education, Youth and Sports under “Institutional support for long-term conceptual development of research organization in 2014 (Business Administration in Karvina, Silesian University in Opava).

References

- [1] Blom-Hansen, J., 2003. Principals, agents, and the implementation of EU cohesion policy. *Journal of European public policy*. Vol. 12 (4). pp. 624-648.
- [2] Euroregio PL-CZ. *Map of Euroregions*. [online]. [2014-06-10]. Available from: <http://www.euroregions.org/cz/index/euroregiony-w-polsce/11.html>.
- [3] Euroregion Silesia. *Map of regions of cross-border cooperation*. [online]. [2014-03-03]. Available from: http://www.euroregion-silesia.cz/show_text.php?id=programy-EU.
- [4] Euroregion Silesia. *Allocation of funds*. [online]. [2014-05-03]. Available from: http://www.euroregion-silesia.cz/show_text.php?id=programy-EU-cil2-o-programu.
- [5] Fojtíková, K. a K. Časnochová, 2012. Moravian-Silesian Region in the Context of Export Policy. In: *Proceedings of the 15th International Colloquium on Regional Sciences*. Brno: Masarykova univerzita, pp. 320-330.
- [6] Fojtíková, K. a P. Tuleja, 2013. Demographic progression of the Moravian Silesian region. In: M. Tvrdoň and I. Majerová, eds. *Proceedings of the 10th International Scientific Conference Economic Policy in the European Union Member Countries*. Karviná: Silesian University, pp. 66-76.
- [7] Majerova, I., 2012. International development cooperation of the Czech Republic in the context of European development. *Prague economic papers*. vol. 21. pp. 166-185.
- [8] Manzella, G. P. a C. Mendez, 2009. The turning points of EU cohesion policy. *Working Paper Report to Barca Report*. Glasgow: University of Strathclyde Glasgow.
- [9] MMR. *Definition of cohesion policy EU*. [online]. [2014-06-12]. Available from: <http://www.mmr.cz/cs/Evropska-unie/Kohezni-politika-EU>.
- [10] OPPS ČR-PR. Operational Program Cross-Border Cooperation CR-Poland. [online]. [2014-06-12]. Available from: <http://www.cz-pl.eu/ke-stazeni.html?action=download&downloadID=1528>.
- [11] Tvrdoň, M. and K. Skokan, 2011. Regional disparities and the ways of their measurement: The case of the Visegrad Four Countries. *Technological and Economic Development of Economy*, vol. 17, pp. 501-518.

PROCUREMENT WITHIN SO-CALLED IN-HOUSE EXEMPTION

Tomáš Gongol¹, Michal Münster²

¹*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: gongol@opf.slu.cz*

²*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: munster@opf.slu.cz*

Abstract

The paper deals with so-called in-house exemption which can be used within procurement procedure according to Czech legal order. The Czech Act on Procurement expressly includes the in-house exemption, which can exclude the scope of the Act and contracting authority may use the direct award of a public contract to the entity which is to the contracting authority in relationship as "internal" (in-house) supplier. The explanation is focusing especially on individual criteria (conditions), which must be fulfilled for the application of in-house exceptions. It defines possibilities of using this exemption in the light of European Court of Justice case law and it takes into account also new legislation of European Union.

Keywords

Contract Award, Contracting Authority, In-house Exemption, Procurement.

JEL classification

H57, K20.

1 Introduction

In general, the public authority is, in the choice of the supplier, i.e. when taking services, supplies or works from public funds, obliged to proceed in accordance with Act No. 137/2006 Coll., on Procurement, as amended (hereinafter referred to as the Act or the AOP).¹ Depending on the estimated value of public procurement, and other facts, the contracting authority chooses from the various types of procurement procedures the one which is permitted by law and for the public authority most appropriate.

The practice of the European Court of Justice (hereinafter also referred to as the Court or Court of Justice) in the area of public procurement, however, results that EU law does not limit the possibility of contracting authority, exercising the tasks assigned to it in the public interest, to use its own administrative, technical and other means, and even doesn't make it obliged to contact on external entities that do not belong to its own structure.²

In this context, the Act expressly includes the in-house exemption,³ which can exclude the scope of the Act and contracting authority may use the direct award of a public contract to the entity which is to the contracting authority in relationship as "internal" (in-house) supplier. The purpose of the exception in question is therefore to exclude from the scope of the Act (and therefore also from obligation to procure under the Act) such contracts that are awarded by the contracting authority to its own internal organizational units; such a body is legally regarded as if it were an organizational unit of the contracting authority, although actually located outside the organizational structure of public authority.

According to the provisions of Article 18 paragraph 1 point e) of AOP, the contracting authority is not obliged to procure under this Act if their object is to provide supplies, services or works to the contracting authority by a person who execute a substantial part of its activities for the benefit of the

¹ This article is based on the legal status valid and effective on 22 June 2014.

² E.g. decision of the Court of Justice in Case C-26/03 Stadt Halle and RPL Lochau Recyclingpark GmbH against the Arbeitsgemeinschaft Thermische Restabfall-und Energieverwertungsanlage TREA Leuna of 11 January 2005.

³ In the theory and practice of decision-making it is also referred to as the inner procurment.

contracting authority and in which the contracting authority has exclusive property rights; contracting authority has exclusive property rights in a person, especially if it has itself any voting rights arising from participation in such person, or if such person has the right to manage the assets of the contracting authority, does not have any own property and exclusively contracting authority exercises control over the management of such a person.

Existing national legislation provides for the application of in-house exceptions basically two key conditions,⁴ which must be cumulatively fulfilled, namely:

- a) the contracting authority must have in the person providing performance (supplier) exclusive economic rights (the criterion of control), and
- b) the person providing the performance (supplier) shall perform a substantial part of its activities for the benefit of the contracting authority with exclusive property rights (the criterion of activity).

The applicable period for assessing whether they are cumulatively fulfilled both of these conditions should be the financial year in which the public contract is awarded.⁵

Compliance with both conditions should guarantee that the in-house exemption will apply only to contractors who are increasingly not participate in the competition and their activities significantly do not compete other business entities operating on materially and locally relevant market and they are not advantaged by direct procurement without proper procurement procedure comparing (competing) entities.

From the legal text it is however clear, that such national legislation in-house exception belongs to legal standards with relatively indeterminate (abstract) hypothesis (particularly in relation to the concept of "substantial part" and partly also to the concept of "exclusive ownership rights"), i.e. legal standards, in which the hypothesis is not directly determined by law and which therefore - to some extent - abandoning the body applying the right (i.e. especially court or the Office for Protection of Competition (hereinafter referred to as the Office)), according to his discretion in each case defines hypothesis of legal standards itself. However, it is bound by the decision-making practice of the Court. The purpose of using vague terms is a possibility to respond flexibly in the future to the current development of the case law of the Court.

In this context it must be pointed out that the in-house exemption has not transposed the provisions of the EU directives,⁶ but was based solely on the decision of the Court.⁷ The Court in the decision C-107/98 Teckal Srl. v Comune di Viano and Azienda Gas Acqua Consorziale AGAC di Reggio Emilia of 18 November 1999 (hereinafter also referred to as Case C-107/98 Teckal) generally defined two basic conditions that must be the fulfilled cumulatively, namely: a) control of the contracting authority over the person to be awarded the public contract, b) the performance of a substantial part of the activities for the benefit of the contracting authority.

⁴ As a further condition it is reported also that "it is the procurement of supplies, services or works" (compare e.g. decision of the Office for the Protection of Competition ref.n.S166/2012/VZ-11394/2012/512/JM of 23 August 2012).

⁵ Interpretation by the Office for Protection of Competition: The exemption from the Act No. 137/2006 Coll., on Procurement set out in the Article 18 paragraph 1 point j) so-called "in-house" award, [online]. 2007 [vid. 22.6.2014]. Available from: https://www.uoohs.cz/download/Sekce_VZ/Metodiky/inhouse.pdf.

⁶ Directive 2004/17/EC of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors, OJ., p. L 134, 30.4.2004, p.1, and Directive 2004/18/EC of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and services, OJ., p. L 134, 30.4.2004, p. 114.

⁷ The explanatory memorandum to the draft of Act No. 179/2010 Coll. amending Act No. 137/2006 Coll., on Procurement, as amended, and certain other Acts, Parliamentary Document No. 833/0, accessible at Digital Repository at the Chamber of Deputies (www.psp.cz).

We will further deal with individual criteria (conditions), the fulfillment of which is necessary for the application of in-house exceptions with the fact that in this respect we also will point to how EU case law views the above criteria (conditions).

2 Criterion of control

One of the key criteria (conditions) for an application of in-house exception is the element of contracting authority control over the activities of the contractor.

In relation to the control criteria may be noted that § 18 paragraph 1 point e) AOP states non-exhaustive list of cases where the contracting authority has exclusive ownership rights in a particular person. This is particularly the case where the contracting authority has itself all the voting rights arising from participation in such person, or if such person has the right to manage the assets of the contracting authority, does not have any own property and exclusively the contracting authority exercise control over the management of such persons (may happen especially in relation to public enterprises and contributory organizations). In connection with the assessment of compliance with those conditions, cannot be excluded that the public authority will have in particular person exclusive property rights without being the case mentioned in the above situations (such may occur in some governmental organizations, which rarely have a certain property). But always will be required that authorization of the contracting authority to a specific person is of such a nature that the person will always be subordinate to the contracting authority, either financially, or concerning managerial control (Decision of the Office for Protection of Competition ref.n. S166/2012/VZ-11394/2012/512/JM of 23 August 2012).

The Court in its decision in Case C-107/98 Teckal - as already mentioned - concluded that the application of the in-house exemption is possible in cases where the public authority which is a contracting authority exercises over the entity concerned similar control, such as it exercises over its own departments and, at the same time when the entity carries out the essential part of its activities with the controlling public authority or public authorities.

The Court further specified in the case C-26/03 Stadt Halle, that to meet the conditions of sole control the public authority must be indeed the sole owner of the legal entity (the supplier) which the public contract shall be awarded on the basis of the exception, and any ownership interest of the private sector, although the minimum percentage rate, is forbidden.

This conclusion was justified by the relationship between the public entity (that is a contracting authority) and its own departments. This relationship is governed by special requirements in achieving the public interest. Private entity participation in the relationship brings different interests and requirements (focused primarily on profit) and the very nature of the issue excludes the contracting authority to exercise over that company control similar to that exercised over its own departments.

Another argument is that in this case (i.e. in a situation when the capital of the controlled legal person is ruled by direct participation of the private entity), by awarding a contract without a proper procurement procedure, the private operator would gain an unfair advantage over its competitors in competition.

The Office for Protection of Competition interprets the term "exclusive ownership rights" in a meaning that in the case of companies established by public contracting authority, in which the contracting authority is 100% shareholder or sole shareholder, this condition will be met. For any - however small - participation of private capital in the person of the supplier therefore it cannot be awarded the contract without proper procurement procedure on the basis of in-house exceptions. It only refers to the ownership of the private sector; ownership share of the public sector is admissible, i.e. it is possible that control over the person (contractor) is exercised by several public administration bodies together (whereas they have even minority ownership in the supplier).

The Court in its decision in Case C-324/07 Coditel Brabant SA v Commune d'Uccle and Région de- Bruvelles Capitale of 13 November 2008 in this context, inter alia, further explained that a public

authority, for the performance of tasks in the public interest, may use their own resources. It is possible also in cooperation with other public authorities (so-called vertical or institutional cooperation, where several public authorities choose to provide certain services or supplies through jointly controlled entities (contractor)). The fact that the contracting authority owns, by himself or with other public authorities, all of the share capital in the company which the contract was awarded to, suggests that the contracting authority exercises over that company control similar to that exercised over its own departments. If the company consists solely of municipalities and associations of municipalities (or public corporations), without the participation of private capital, suggests that in principle it is the condition of the exercise of control similar to that exercised over its own departments. It should be an effective control, the effective control can be achieved only through majority ownership interest, but also other means which the contracting authority allows to decide about the activities of the supplier.

The practice of the Court, as a rule does not prevent a public authority to award the contract to the company whose members are solely public authorities if these public authorities exercise over that company a control which is similar to the control they exercise over their own departments, and the company (supplier) perform a substantial part of its activities for those public authorities.

If it is found out existence of exclusive ownership (or joint ownership within the public sector), it is also necessary to examine whether the entity to whom the contract shall be awarded (supplier) is the subject to control enabling authorities to influence decision making, especially decisions over both strategic objectives and significant decisions of the present subject (cf. judgment of the Court in the Case C-458/03 Parking Brixen GmbH v Gemeinde Brixen, Stadtwerke Brixen AG of 13 October 2005).

3 Criterion of performance of activities

Another decisive criterion (condition), necessary for the application of in-house exception, is an element of activity for the contracting authority.

In this context it may be noted that under § 18 paragraph 1 point e) the AOP, among other things, the contracting authority is not obliged to procure under this Act if their object is to provide supplies, services or works to the contracting authority by person who performs a substantial part of its activities for the benefit of the contracting authority.

Until 14 September 2010, the Act uses the term "great part", which has been replaced by the term "substantial part" since 15 September 2010. The explanatory notes to this change reveals that previously used phrase "the great part of their business" evokes the idea that for the fulfillment of this condition it is sufficient to meet the share of more than 50 %. However, the Office had interpreted, even before the amendment, the phrase "the great part of their business", in terms of essential and substantial activity to the contracting authority. The interpretation was introduced in the sense that any other activity carried out for the other person must have only marginal significance. The case law of the Court in this regard uses the phrase "essential part", eventually the phrase "activities must be almost exclusively devoted to...".

Interpretation of the essential part as a condition of the supplier activity in favor of the contracting authority can thus be found mainly in the decision-making practice of the Court.

The Court in its decision in Case C-340/04 Carbotermo SpA, Consorzio Alisei against the Commune di Busto Arsizio, AGESP SpA on 11 May 2006 stated that requirement the entity (the supplier) to perform a substantial part of its activities for the contracting authority, aims in particular to ensure that public procurement rules have to apply when the company is controlled entity active in the market and therefore can compete with other businesses. The company is not deprived of freedom of action in the market in case if it can perform a significant part of its economic activities with other entities. The purpose of these conditions is therefore to ensure that in-house exception could not be applied to suppliers that perform some of their activities in competition with other operating entities.

According to the cited decision the use of in-house exception is possible only when the activity of supplier in favor of the contracting authority was in substantial part intended only for the contracting authority, and that any other action has only marginal (marginal) character. In other words, the supplier must carry out activities "almost exclusively" to the contracting authority who owns it and exercises control over it. The cited decision in this context further suggests that the for assessment of compliance with this condition must be taken into account not only quantitative but also qualitative factors. In addition to the percentage share will therefore also be crucial the nature of activities in favor to public authority is not awarded (must be random or unique activities, such as the use of the currently available capacity, and not a certain percentage of planned activities carry out, systematically or in long-term benefit of another entity).

The cited decision also shows that it is impossible to determine the exact percentage limits within which the contractor is entitled to provide services to the contracting authority and for others at the same time; analogous application of the rule at least 80% of the activities of the contracting authority adjusted for sector authority is inadmissible. It is therefore necessary based on the circumstances of each case.

The Office in the decision ref.n. R166/2013/VZ-2205/2014/310/MMI/IPs of 31 January 2014, further submits that cited provisions of the Act does not determine for the application of in-house exemption limit as the scope of activities, even minimal. It is not sufficient merely a majority proportion of activity (i.e. over 50%) and does not apply the 80% share of business (although it is mentioned in the explanatory memorandum), as analogous application of the exception provided for sectoral authority does not permit the Court's case law (see above). For the application of in-house exceptions therefore it is not possible to establish certain simple rule, i.e., the exact percentage of the turnover of the supplier (in some cases cannot be excluded also mentioned qualitative criteria). It should therefore be an essential (basic) part of the activities for the contracting authority. Any other activity performed for any third party shall only have a marginal importance. As already mentioned, the contractor must carry out activities "almost exclusively" for the public authority. The fulfillment of the condition has to be examined and assessed in each case individually.

The cited decision in Case C-340/04 Carbotermo also shows that the performance of a substantial part of the activities is crucial turnover, which entity (the supplier) achieves on the basis of the decision on procurement, including the turnover achieved with users, since it is irrelevant who is beneficiary, whether the contracting authority itself or the user. In other words, when assessing decisive activity it must be taken into account all activities of the organization (supplier), which is made based on the award controlling (supplying) contracting authority (i.e. by the will of the authority), regardless of who is the beneficiary, whether a contracting authority or other users. For activities carried out "in favor of the contracting authority" is thus considered also an activity for a public (or otherwise defined user of services), even if these users pay to supplier. Decisive is only whether the activity is undertaken at the request of (or on basis of the award) by the competent authority.

The decision of the Court in Case C-295/05 Asociación Nacional de Empresas Forestales (Asemfo) against Transformación Agraria SA (Tragsa) Administración del Estado of 19 4th 2007 in this context, among others, also shows that if the exclusive property rights in the supplier belong to several public authorities, it is true that the supplier has to carry out a substantial (significant) part of its activities to all these contracting authorities altogether.

4 The new directive

From the above it is evident that, in relation to an indefinite term “substantial part” (and partly also to the concept of "exclusive property" rights) national legislation, nor the decision practise of the Office or the Court contracting authorities do not give a clear interpretative guidance, do not specify the exact percentages of what is or is not considered to be an substantial part.

In this context, it should be considered an important current development in European law on public procurement. This year it entered into force the new Directive 2014/24/EU of 26 February 2014 on public procurement and cancelling Directive 2004/18/ES, published on 28 March 2014 in the Official Journal of the EU (Series L, No. 94) (hereinafter referred to as the Directive). The Directive came into force on the twentieth day following that of its publication in the Official Journal of the EU, and Czech Republic is obliged, as well as other Member States, until 17 April 2016 to take the fourth new rules into national law. Transposition of the Directive into the Czech legal system was included in the government's legislative priorities; from the "Plan of Government's legislative work" reveals that by the end of May 2014 shall have the Ministry for Regional Development submit to the government concept of act on public contracts and concessions, which would be transposition of the Directive. A new law on public procurement should then be submitted to the government in the first quarter of 2015.

In-house exception is within the Guideline referred to in Article 12. Accordance with paragraph 1 cited provisions of Directive the public contracts awarded by the contracting authority to private or public legal person shall fall outside the scope of this Directive if they are cumulatively fulfilled all of the following conditions:

- a) the contracting authority exercises over the legal person concerned a control which is similar to that which it exercises over its own departments; and
- b) more than 80 % of the activities of the controlled legal person are carried out in the performance of tasks entrusted to it by the controlling contracting authority or by other legal persons controlled by that contracting authority; and
- c) there is no direct private capital participation in the controlled legal person with the exception of non-controlling and non-blocking forms of private capital participation required by national legislative provisions, in conformity with the Treaties, which do not exert a decisive influence on the controlled legal person.

It is clear that the Directive, to a certain extent, takes legal conclusions defined by decision-making practice of the Court.

5 Criterion of control

Relating to the control criteria, Directive provides individual control and collective control. Individual control is regulated in Article 12, paragraph 1, point a) and c) of the Directive, in connection with the last two sentences cited paragraph 1 and in Article 12, paragraph 2 of the Directive.

According to cited provision of the Directive there is one of the prerequisites of permitted application of in-house exception condition that the contracting authority controls the legal person, similarly as it controls its own departments. In this context, it is designed rebuttable presumption admitting evidence to the contrary, and that it is considered that the contracting authority controls a legal entity, similarly as control over its own departments within the meaning cited paragraph 1, point a) for the Directive if it has a decisive influence on the strategic objectives and significant decisions of the controlled legal person. Such control may also occur by other legal entities, which itself is controlled in the same way by the contracting authority.

From the above it is clear that within the vertical structure (vertical chain) it would not have to be a direct control - in the sense of one degree (mother controls the daughter), but it also allowed indirect control - in terms of two degrees (daughter, who is controlled by his mother, controls granddaughter which means that mother through her daughter controls granddaughter). We, however, think that other indirect control - in terms of three or more degrees is not permissible (Directive refers only to another legal entity, which is itself the same way directly controlled by the contracting authority, not another such entity).

However, the Directive does not give interpretive guidance in relation to vague terms "strategic objectives" and "significant decisions". Those terms must be considered in each case individually. However, over time, it can be assumed further interpretation by the Court in this regard.

According to the cited provisions of the Directive, another presumption of application of in-house exemption is condition that no private entity has, in the controlled legal person, direct capital participation, with the exception of capital participation, which is not associated with control or the ability to block and such participation shall not constitute a decisive influence in the controlled legal person.

Here it is - to some extent - breached the principle of non existence of private capital in suppliers, established by the decision in Case C-26/03 Stadt Halle, when the Court stated that to meet the conditions of sole control a public authority must be indeed the sole legal owner of the legal person (the supplier) which shall be a public contract awarded on the basis of exceptions, and any ownership interest of the private sector, although the minimum percentage rate, is inadmissible.

It is apparent that the Directive distinguishes between direct capital participation and indirect capital participation since it prohibits (not absolutely, as discussed below) only direct capital participation. Indirect shareholding, i.e. private capital participation in the controlling contracting authority or controlling contracting authorities is permitted, when such private participation does not adversely affect competition among private entities.

Regarding the direct capital participation, it is - as mentioned above - in principle prohibited, with the exception of direct capital participation, which is not associated with control or the ability to block and in accordance with the Treaties require national legislation, and such participation does not have decisive influence on the controlled legal person.

6 The reversed control

Article 12, paragraph 2 of Directive also regulates the situation of so-called reversed control. According to cited provision, the Article 12, paragraph 1 of Directive shall also be applied if the controlled legal person that is a contracting authority enters into a contract to the contracting authority that it controls, or other legal entity controlled by the same contracting authority, if in the legal person to whom the contract was awarded, has no direct capital participation any private entity, except for capital participation, which is not associated with control or the ability to block and in accordance with the Treaties requires national legislation, and such participation shall not constitute a decisive influence in the controlled legal person.

Based on the above, the in-house exemption can also be used in situations where the controlled legal person as a contracting authority enters into a contract to the contracting authority that it controls (i.e. daughter directly awards a contract to the mother (vertical cooperation), or in situation where the controlled legal person as a contracting authority enters into a contract to another legal person controlled by the same contracting authority (i.e. the daughter directly awards a contract to the sister, both of which are controlled by the mother (horizontal cooperation)).

However, as already mentioned, according to the Article 12, paragraph 1 of the Directive it is permitted even indirect control - in terms of two stages (see above). In this context, it would be necessary to interpret Article 12, paragraph 2 of the Directive in such a way that the in-house exemption can also be used in situations where a granddaughter awards a contract to the mother's mother (vertical cooperation) or its cousin (horizontal cooperation), eventually the granddaughter awards a public contract to her mother's sister (diagonal cooperation).

With reference to Article 12, paragraph 1 of Directive it is clear that there must be retained so-called criterion of performance of activities (see below).

7 Joint control

As already mentioned, the in the case C-324/07 Coditel Brabant the Court accepted the vertical or institutional cooperation, where several public authorities choose to provide certain services or supplies through jointly controlled entities (contractor)).

In this context, directive in Article 12, paragraph 3 states that a public authority which does not control the private or public legal person within the meaning of Article 12, paragraph 1 of the Directive, may nevertheless award the contract to the mentioned legal entity without regard to this Directive (i.e. within the in-house exceptions) if all the following conditions are fulfilled:

- a) the contracting authority exercises jointly with other contracting authorities a control over that legal person which is similar to that which they exercise over their own departments; and
- b) more than 80 % of the activities of that legal person are carried out in the performance of tasks entrusted to it by the controlling contracting authorities or by other legal persons controlled by the same contracting authorities; and
- c) there is no direct private capital participation in the controlled legal person with the exception of non-controlling and non-blocking forms of private capital participation required by national legislative provisions, in conformity with the Treaties, which do not exert a decisive influence on the controlled legal person..

For the purposes of point a) of the cited provision, contracting authorities exercise joint control over a legal person where all of the following conditions are fulfilled:

- a) the decision-making bodies of the controlled legal person are composed of representatives of all participating contracting authorities. Individual representatives may represent several or all of the participating contracting authorities;
- b) those contracting authorities are able to jointly exert decisive influence over the strategic objectives and significant decisions of the controlled legal person; and
- c) the controlled legal person does not pursue any interests which are contrary to those of the controlling contracting authorities.

The above provision is designed essentially the same as Article 12, paragraph 1 of the Directive, therefore, we refer to the interpretation of this provision

8 Criterion of performance

Directive in relation to the criterion of performance activities quantified condition of performance of "substantial part" of supplier activities for the benefit of the contracting authority.

According to Article 12, paragraph 1, point b) of the Directive it is the last of the prerequisites for the admissibility of the application in-house exception condition where more than 80 % of the activities of the controlled legal person are carried out in the performance of tasks entrusted to it by the controlling contracting authority or by other legal persons controlled by that contracting authority.

It therefore follows that the performance of 80% of the activity of the contractor is not narrowed only to the benefit of the contracting authority (i.e. in the case of daughters in favor of the mother (direct control), and probably - even if granddaughter in favor of the mother's mother (indirect control)) but there can be counted duties to other legal entities, which referred to the contracting authority controls (i.e. in the case of daughter's, sister's or niece's benefit (direct control), and probably - even in case of granddaughter's in favor of aunt or cousin (indirect control)).

Further, in our opinion, it may not be the activity carried out directly "in favor of the contracting authority or other legal entities, which are controlled by the contracting authority". The used text implies that it is sufficient if it is "carrying out the tasks entrusted to it." When assessing decisive

action it is necessary to take into account all the activities of the organization (supplier) that is made based on the award of controlling contracting authority, regardless of who is the beneficiary, whether a contracting authority or other users. The directive thus takes the conclusions expressed by the Court in its decision in Case C-340/04 Carbotermo.

As part of so-called joint control, the conditions is regulated in Article 12, paragraph 3, point b) of the Directive so that more than 80 % of the activities of that legal person are carried out in the performance of tasks entrusted to it by the controlling contracting authorities or by other legal persons controlled by the same contracting authorities.

Here is the question, how to interpret the phrase "controlled by the same contracting authorities", i.e. whether they control jointly or whether it is sufficient that controls only one of them.

Further clarification - in terms of time - provided for in Article 12, paragraph 5 of the Directive. According to the cited provision, for the determination of the percentage of 80% of activities the average total turnover or an appropriate alternative activity-based measure such as costs incurred by the relevant legal person or contracting authority with respect to services, supplies and works for the three years preceding the contract award shall be taken into consideration. Where, because of the date on which the relevant legal person or contracting authority was created or commenced activities or because of a reorganization of its activities, the turnover, or alternative activity based measure such as costs, are either not available for the preceding three years or no longer relevant, it shall be sufficient to show that the measurement of activity is credible, particularly by means of business projections.

The Directive is, in terms of in-house exceptions, very beneficial, as it clarifies the conditions for its application and increase legal certainty for contracting authorities

9 Conclusion

In principle, the directive as one of the sources of secondary law, obliges only EU Member States. Subjective rights are established only if it is expressly contemplated by the directive. As already mentioned, the transposition deadline of the Directive in the Czech legal order was set to 17 April 2016.

In this context, the question arises, how should be interpreted existing provisions of Article 18 paragraph 1 point e) of the AOP nowadays (until transposition of Directive); i.e. whether under the previous decision-making practice of the Court, or under the relevant provisions of the new directive.

We believe that in the period from the date that the new directive enter into force it is only possible Harmonious interpretation, so-called indirect effect, thus the interpretation of national law in the light of the text and objectives of the Directive (which is in our opinion a higher legal force than earlier decision-making practice of the Court). We are aware that Harmonious interpretation is applicable only in cases, where the national law relating to the application of national methods of interpretation is capable of different interpretations, and one of these different interpretations is in accordance with the Directive. This assumption is, however, in our opinion, in the case of Article 18 paragraph 1 point e) AOP met, as the law is using mostly vague legal concepts.

References

- [1] Act No. 137/2006 Coll., On Public Procurement, as amended.
- [2] Directive of the European Parliament and of the Council 2014/24/EU, public procurement and repealing Directive 2004/18/EC of 26 February 2014, published on 28 3rd 2014 in the Official Journal of the EU (Series L, No. 94).
- [3] Decision of the Court of Justice in Case C-26/03 Stadt Halle and RPL Lochau Recyclingpark GmbH against the Arbeitsgemeinschaft Thermische Restabfall-und Energieverwertungsanlage TREA Leuna on 11 January 2005.
- [4] Decision of the Court of Justice in Case C-458/03 Parking Brixen GmbH v Gemeinde Brixen, Stadtwerke Brixen AG on 13 October 2005.
- [5] Decision of the Court of Justice in Case C-340/04 Carbotermo SpA, Consorzio Alisei against the Comune di Busto Arsizio, AGESP SpA on 11 May 2006.
- [6] Decision of the Court of Justice in Case C-212/04 Konstantinos Adeneler and Others v. Ellinikos Organismos Galaktos of 4 July 2006.
- [7] Decision of the Court of Justice in Case C-295/05 Asociación Nacional de Empresas Forestales (Asemfo) against Transformación Agraria SA (Tragsa) Administración del Estado of 19 April 2007.
- [8] Decision of the Court of Justice in Case C-324/07 Coditel Brabant SA v Commune d'Uccle and Région de Bruvelles-Capitale on 13 November 2008.
- [9] Decision of the Court of Justice in Case C-107/98 Teckal Srl. v Comune di Viano and Azienda Gas Acqua di Reggio Consorziale AGAC Emillio of 18 November 1999.
- [10] Decision of the Office ref S166/2012/VZ-11394/2012/512/JM of 23 August 2012.
- [11] Decisions of the Office for the Protection of Competition ref.n. S166/2012/VZ-11394/2012/512/JM of 23 August 2012.
- [12] Decisions of the Office for the Protection of Competition ref.n. R166/2013/VZ-2205/2014/310/MMI/IPs of 31 January 2014.
- [13] Explanatory memorandum to the draft Act No. 179/2010 Coll. Amending Act No. 137/2006 Coll., on Procurement, as amended. Parliamentary Document No. 833/0.
- [14] Interpretation of the Office for the Protection of Competition to Act No. 137/2006 Coll., on Procurement. [online]. 2007. [vid. 22.6.2014]. Available from: https://www.uohs.cz/download/Sekce_VZ/Metodiky/inhouse.Pdf.

PUBLIC EXPENDITURES IN EU COUNTRIES AND THEIR IMPACT ON PUBLIC SERVICES

Martina Halásková¹, Dušan Halásek²

¹ VSB- Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: martina.halaskova@vsb.cz

² VSB- Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: dusan.halasek@vsb.cz

Abstract

Financial capabilities are one of the key factors of any country's development. Public budgets in EU countries constitute an important instrument for financing intentionally programmed demands in public services. What takes place in most developed countries is decentralisation of public administration and transition of expenditure competencies for ensuring public services on each level of territorial organisation. The crucial interest of fiscal decentralisation is to achieve increasing efficiency, transparency and responsibility in providing public services. The paper is focused on analysing public expenditures in EU countries in the years 2003-2013, and on the significance of public-budget decentralisation. The application part provides an analysis and comparison of public expenditures in EU countries in selected areas of public expenditures (education, research and development, general public services), using the method of multidimensional scaling.

Keywords

Public Finance, Public Expenditure, Decentralisation, Public Services, Multidimensional Scaling.

JEL Classification

H41, H50, H76.

1 Introduction

Public administration performs allocation and redistribution of public expenditure through the systems of public budgets and funds and faces the problem of how best to allocate and redistribute limited financial resources to meet public needs. Public expenditures are part of GDP, which is consumed collectively on the basis of public choice and serves for financing public needs. The crucial problem is to determine the volume of public expenditures, their structure, on what purpose should they be spent, i.e. on which necessities with regard to available funding sources and individual budgets according to governmental levels in EU countries (Faini, 2006; Hilman, 2009; Mikušová Meričková and Halásková, 2014). The processes of decentralization of public administration and approximation to EU standards have brought a series of gradual changes in the area of public finances, which constitute an important parameter of macroeconomic developments in each country and an important condition for meeting public needs. However, as research of this area across EU countries shows, the share of public expenditures on the GDP is information of too aggregated a nature, which does not necessarily provide data about the quality of these expenditures. When considering the economic power of a country and their preferences, EU countries approach the issue of public expenditures quite differently. The attempts to grasp trends of expenditures in the structure of public expenditures, consequently, lead to the division of public expenditures according to their functions Freysson, 2011; Halásková and Halásková, 2014).

It focuses on comparing selected public expenditures in EU countries (education, research development and general public services) over the years 2003-2012. In two periods of 2008 and 2012, these two categories of expenditures are compared using the method of multidimensional scaling.

2 Theoretical approaches to public expenditures

The volume and structure of public expenditures are influenced by the extent and structure of actions taken by the government (government, municipalities) in relation to allocating, redistributing and stabilizing fiscal function. The more the government is engaged in these actions, the larger the volume and structural variety of public expenditures, and vice versa. Jackson and Brown (1994), Stiglitz

(1988) also define objective factors of growth (or fall) of public expenditures. These are geographic, demographic, urban, technological, economic, political or social. Among the most popular theories that explain growth of public expenditures are Wagner's law, displacement effect, the theory of the gradual growth and the theory of welfare state.

Public financing and public expenditure is the theme of many authors' works, such as Hillman (2009), Kaul and Conceição (2006), Rosen and Gayer (2010), Ulbrich (2011). When assessing the dynamics of public expenditures, it is important to consider which indicators will be assessed and which proportions are observed in the analysis. Also, the fact that public expenditures are developing in terms of an economic system has to be taken into account. This is enabled by the indicator of the public-expenditure share on the GDP. For dynamics of public expenditures and analysis of changes in their structure, instruments indicating key proportions inside the total public expenditures can be used. Public expenditures can be divided into expenditures of the central government and the budget, or into expenditures at regional governmental level and its budget, or local administration (self-administration) and its budget. Different arrangements of public expenditures allow for different aggregations of public expenditures, e.g. total public expenditures, expenditures of central or lower budget. The arrangement of public expenditures is used mainly in analytical and comparative research in EU countries.

The subject of research of the fiscal federalism theory is mainly fiscal decentralisation. Theoretical priorities can be highlighted as regards the sign of the effect of different dimensions of fiscal decentralisation on the main fiscal aggregates of the general government, according to the fiscal federalism literature (Blöchliger and King, 2006; Governatori and Yim, 2012; Neyapti, 2010, Szarowská, 2013). However, in most cases the net impact is a priori ambiguous as a result of conflicting arguments. The process of fiscal decentralisation has an impact on many factors and also corresponds with the intentions of the economic policy of the government. Higher or lower degree of decentralisation is based on historical, cultural or geographical factors. An efficient implementation of fiscal decentralisation is dependent upon the targets defined by the government of the respective country. A key element of its interest is to reach increasing efficiency, transparency and responsibility when providing for public services (Smith, 2003). This means that fiscal decentralisation contributes to effective providing of services, mainly by the fact that expenditures correspond more to local priorities and preferences, which motivates local governments to improve mobility of resources, thus increase transparency and responsibility for expenditures.

3 Methodology

When elaborating this paper, analytical methods were applied that are used in the examination of the professional literature, of the statistical data and EU documentation focused on the structure of public expenditures in the EU. The comparison of public expenditures in selected areas of public services in EU countries in the years 2008 and 2012 was carried out using the method of comparative analysis. In the application part, multidimensional scaling is used (Mazzocchi, 2008). This method reveals important dimensions based on similarity or distance of objects. Multidimensional scaling is used primarily to compare objects when it is impossible to derive the basis for comparison. It allows us to compare objects or features that are normally not measureable. The aim of multidimensional scaling is to determine the number of dimensions, and position of the object (coordinates of the object). This means that the greater the similarity between two objects is, the closer the points that are shown in the model are. The advantage of multidimensional scaling is that it does not require assumptions of linearity, multivariate normality or metrics. In addition, multidimensional scaling allows us to analyse relative frequencies and convert them to an array of distances, from which it is subsequently possible to create a two-dimensional graph with dots that indicate similarity or distance between objects. The output of multidimensional scaling is a scatter chart (“a perceptual map”), in which the coordinates are the basic measures (dimensions) and points are products, respondents, opinions, or other comparison objects.

This means that graphic multidimensional scaling shows how various objects do or do not clump. However, it is difficult to define dimensions of an axis in relation to the subject of research (in this article 27 EU countries in which the changes to public expenditures on education, research and development (R&D) and general public services in the years 2008 and 2012 are assessed). Two indicators are crucial for assessing the validity of the multidimensional scaling results. Firstly, there is so-called “s-stress”, a measure of stress ranging from 1 (worst possible fit) to 0 (perfect fit). Unfortunately, it is not possible to put an absolute value on the extent of fit, since s-stress varies with the number of stimuli, or matrices, used in its calculation. Consequently it is necessary to look at several fit indices and get a sense of whether any of them indicate large amounts of error. Secondly, there is square of the correlation coefficient (RSQ) of input distance and the calculated distance of multidimensional scaling, which are determined from the coordinate values of each object in the perceptual map with corresponding number of dimensions. RSQ can take values within the interval $<0, 1>$; where values ≥ 0.60 are considered acceptable for the validity of the result (Mazzocchi, 2008).

4 Analysis of total general government expenditure in EU countries

This part is focused on the analysis and development of total general public expenditure in the EU (28) and fiscal decentralisation (expenditure and income) in EU countries over the years 2003-2013.

4.1 Analysis of total general government expenditure in EU countries over the years 2003- 2013

Total general government expenditure is defined in ESA-95 §8.99 by reference to a list of categories: intermediate consumption, gross capital formation, compensation of employees, other taxes on production, subsidies, payable property income, current taxes on income, wealth, etc., social benefits, some social transfers, other current transfers, some adjustments, capital transfers and transactions on non-produced assets. Total general government expenditure ranges from 46-51% of the GDP in the EU (28) over the years 2003-2013 (Table 1).

Table 1. Total general government expenditure in EU (28) as % of GDP

EU (28)	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
General Government Expenditure	47.2	46.7	46.7	46.2	45.5	47.0	51.0	50.6	49.0	49.3	49.0
Local Government Expenditure	11.3	11.4	11.3	11.4	11.3	11.6	12.4	12.2	11.8	11.8	11.6

Source: EUROSTAT.

As Table 1 shows, general government expenditures in the EU (28) (% of GDP) in the period of 2003-2013 ranged from 46-51%. In the majority of EU countries, public expenditures reached their peak in 2009 and 2010 (51% GDP). In 2010, public expenditures reached 67% of GDP in Ireland, while up to 2008, Ireland had been among the countries with the lowest level. This can be, to some extent, explained by the government support of banks during the financial crisis through capital investments. The ramifications of the economic and financial crisis and concomitant need for public intervention were the main factors of growing expenditures in 2008 and 2009 and following huge growth in 2010 in most EU countries. A significant increase of total general government expenditure against the average value of the EU was observed in Greece (58.5% of GDP) and in Slovenia (59.4% of GDP) in 2013. As the analyses of total general government expenditures in EU countries show,

over the period of 2003-2013, Denmark, France, Finland, Belgium and Sweden were above the average rate of EU countries, below average were mainly Bulgaria, Estonia, Lithuania, Latvia, Romania and Slovakia (Eurostat, 2014).

Local and regional government expenditures constitute about 17% of GDP and about 34% of general government expenditures, public sector (only local public sector about 12% expenditures as % GDP and 24% of general expenditures public sector), Dexia and Cemr, 2012. Table 1 clearly shows that local government expenditures in the EU (28) ranged from 11% to 12% of the GDP over the years 2003-2013. The highest levels of local government expenditures as % of GDP are observed in Scandinavian countries (Denmark 33.8% in 2003 and 37.5% in 2013, Sweden 24.9% in 2003 a 26% in 2013 and Finland 19.3% and 23.9% in 2013). By contrast, the lowest local government expenditure as % of GDP is typically found in small countries, such as Malta (0.6% in 2003 and 0.8% in 2013), Cyprus (1.8% in 2003 and 1.7% in 2013) and Greece (2.4% in 2003 and 3.4% in 2013). These countries also typically have a small rate of fiscal decentralisation (income and expenditure). For more information, see 4.2.

4.2 Public expenditure in EU countries in the context of fiscal decentralisation

The World Bank (World Bank, 2014) divides indicators of fiscal decentralisation into main indicators and indicators based on the composition of incomes and expenditures of lower (decentralised) government levels, and indicators based on incomes and grants of lower government levels. The extent of centralisation and decentralisation of public administration is most often defined by the ratio of central, regional and local government expenditures and total expenditures of public administration, or GDP. Expenditures from local-administration budgets are used for financing needs of local and regional sector. Rising of the volume of local budgets is a reflection of an increased autonomy and responsibility of local government for providing for and financing of the public sector in its own area, but also of the rise of the public sector as a whole. Fiscal decentralisation at the EU level (28) over the years 2003-2013 is presented in Table 2.

Table 2. Fiscal decentralisation in the EU (28) over the period 2003-2013

FD	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Exp.FD EU (28)	23.9	24.4	24.2	24.6	24.8	24.6	24.3	24.1	24.0	23.9	23.6
Rev.FD EU (28)	25.2	25.3	25.1	25.1	25.1	25.5	27.4	26.9	26.2	25.9	25.3

Source: EUROSTAT, author's calculation.

Table 2 clearly shows a relatively stable development of fiscal decentralisation (income and expenditure) in the EU (28). However, noticeable differences and developmental changes are characteristic of the single countries of the EU (Table 3). It is important to consider the fact that financial capabilities of each local government are influenced by various factors (geography, territorial organisation, level of decentralisation as well as the nature of competencies carried out by the local authorities) (Governatori and Yim, 2012). Table 3 makes it clear that over the years 2003, 2009 and 2013, the strongest fiscal decentralisation of incomes and expenditures was present in Denmark and also other Scandinavian countries (Sweden, Finland).

In 2003, a strong decentralisation took place in Ireland, where a lower extent of decentralisation (expenditure and income) is observed due to reforms and changes. The Netherlands, Poland and Italy are among the countries with a larger extent of fiscal decentralisation. Medium level can be observed in the United Kingdom Lithuania, Latvia, Estonia and the Czech Republic. These countries are around or above average of the EU (28). Hungary shows signs of the medium level of fiscal decentralisation

over the period in question; in 2013, however, shows a significant decline in expenditure decentralisation due to a fall in local expenditure and reduced autonomy of local budgets. Moreover, a strong extent of centralisation considering the minimal amount of own resources, is observed in Malta, Cyprus and Greece. A marked extent of centralisation of public administration is observed in Ireland, Portugal, Spain and Luxembourg. The extent of fiscal decentralisation of expenditures (Exp. FD) and fiscal decentralisation of revenues (Rev. FD) in EU countries over the years 2003, 2009 and 2013 is provided in Table 3.

Table 3. Fiscal decentralisation in EU countries (28)

Country	Fiscal Decentralisation of Expenditures			Fiscal Decentralisation of Revenues		
	2003	2009	2013	2003	2009	2013
BE	13.7	13.2	13.3	15.3	14.9	13.8
BG	16.3	19.2	21.7	16.0	20.7	23.6
CZ	25.4	26.8	24.1	28.2	29.6	25.9
DK	61.3	64.8	65.2	61.3	66.2	66.7
DE	15.2	16.7	17.4	15.8	17.7	17.7
EE	27.6	25.2	26.1	25.5	25.2	25.2
IE	42.2	14.7	11.2	42.4	20.6	13.5
EL	5.3	6.1	5.8	6.1	8.6	8.3
ES	15.9	15.8	13.1	15.2	19.1	16.9
FR	19.3	21.4	21.4	20.9	24.2	22.3
HR	28,5	26.4	26.8	29.4	28.2	30.2
IT	30.9	32.1	29.6	32.4	35.1	31.4
CY	4.0	4.7	3.7	4.2	5.2	4.5
LV	26.9	29.2	28.5	28.2	32.2	27.6
LT	26.3	24	24.3	27.4	29.3	25.1
LU	13.9	12.8	11.9	13.7	12.8	12.4
HU	26.8	23.9	15.2	31.1	25.4	21.4
MT	1.3	1.4	1.8	1.9	1.8	1.9
NL	35.6	34	30.9	37.6	36.9	31.9
AT	15.4	15.6	15.6	15.9	16.3	16.1
PL	29.1	33.2	31.3	32.7	36.8	34.4
PT	13.9	15	13.1	14.2	19.9	15.3
RO	20.0	24.5	25.7	21.6	29.6	27.8
SI	18.6	20.5	16.3	19.7	22.4	21.2
SK	18.2	17.3	16.3	19.2	19.4	18.1
FI	37.9	40.6	40.8	34.5	41.4	41.1
SE	44.7	47.9	49.1	45.0	48.1	50.1
UK	29.2	28.1	25.6	31.4	34.8	28.9

BE-Belgium, BG-Bulgaria, CZ-Czech Republic, DK-Denmark, DE-Germany, EE-Estonia, IE- Ireland, EL-Greece, ES-Spain, FR-France, HR-Croatia, IT-Italy, CY-Cyprus, LV-Latvia, LT-Lithuania, LU- Luxembourg, HU-Hungary, MT-Malta, NL-Netherlands, AT-Austria, PL-Poland, PT-Portugal, RO- Romania, SI- Slovenia, SK-Slovakia, FI-Finland, SE-Sweden, UK-United Kingdom

Source: EUROSTAT, author's calculation.

5 Analysis and comparison of expenditure in EU countries exemplified on selected public services

For the analysis of expenditure in EU countries for the period 2003-2012, expenditure on research and development for all sectors (% of GDP) was selected, public expenditure on education (% of GDP) and expenditure on general public services (% of GDP). The strategy Europe 2020 defines five mutually intertwined targets pertaining to employment, research and development, climate change, energy, education and poverty reduction. The member states ought to undertake to invest in research and development (R&D) 3% of their GDP (1% from the public and 2% from the private sector) by 2020. This should result in 3.7 million new jobs and contribute to an increase of annual GDP by

800 billion euro by 2025. Expenditure on research and development by sector performance over the period 2003-2012 is around 2% of GDP in the EU (28). The highest total expenditure on research and development is found in Scandinavian countries, i.e. Finland (3.5% of GDP), Sweden (3.4% of GDP) and Denmark (3% of GDP), followed by countries of continental Europe: Germany, France and Austria (2%-3% of GDP). The lowest rate of total expenditure on research and development is found in Cyprus, Romania (around 0.5% of GDP) and Bulgaria, Greece and Latvia (around 0.6% of GDP). The average public expenditure in the EU is as low as 0.25% of GDP (European Commission, 2010, 2014). The development of expenditure on selected public services in the EU (28) over the years 2003-2012 (% of GDP) is provided in Figure 1.

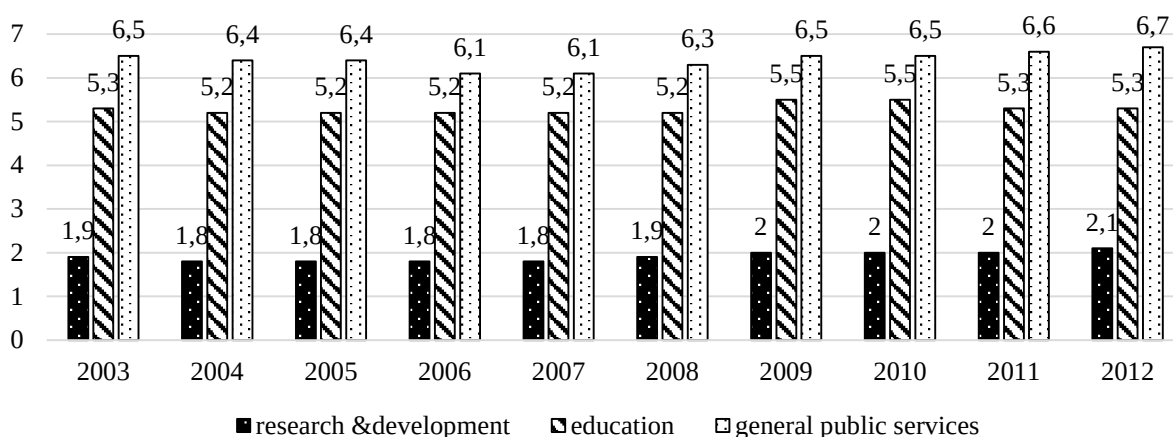


Figure 1. Selected expenditure in EU (28) 2003- 2012 as % of GDP (Source: EUROSTAT)

Total public expenditure on education varies across the EU, being closely associated with the long-term economic situation and historical development of the respective country. The volume of total expenditure on education is chiefly expressed as a GDP percentage of the country in question (Stiglitz, 1988). The highest percentage in EU countries comprises primary and secondary education, representing, on average, about 3.6% of GDP, in tertiary education 1.2% of GDP. Public expenditure on education in the EU (28) in the period 2003-2012 is about 5.3% of GDP. The highest expenditure on education in EU countries as % of GDP is in Denmark (7%-8%), Sweden (around 7%), Portugal (6%-7%) and in Cyprus (around 7%). By contrast, the lowest expenditure on education is in Greece (4%), Romania (3%-4%), Bulgaria (around 4%) and in Slovakia (around 4%).

General public services, classified in accordance with COFOD, include expenditure on executive and legislative bodies, financial and tax issues, expenditure on foreign economic support, on elementary research and transfers among levels of public administration, associated with debts. Expenditures on general public services in the EU (28) in the period 2003-2012 is about 6.5% of GDP. The highest expenditure on general public services as % of GDP in the selected period is found in Greece (12%-13%), Cyprus (11%-12%) and Hungary (9%-10%). A marked rise from 3.7% in 2008 to 5.8% in 2012 is noted in Ireland. The lowest expenditure, by contrast, is found in Baltic States (Estonia around 3%, Lithuania around 4.3% and Latvia around 4.5%).

5.1 Comparison of selected expenditure in EU countries using multidimensional scaling

For comparison of public expenditure in the EU (27), three variables were used (total expenditure on research and development (R&D), public expenditure on education and public expenditure on general public services) in 2008 and 2012, using the method of multidimensional scaling.

To assess the validity of outcomes of multidimensional scaling, S-stress = 0.83 is crucial, i.e. the extent of positive correlation of the difference between object distances (EU countries) and $RSQ = 0.97$, i.e. the square of correlation coefficient of input object distances and distances arrived at through multidimensional scaling. The RSQ indicator reached the value of 0.97, which proved the quality of multidimensional scaling when using two axes. The model would not benefit significantly from a third dimension. Among EU countries (27), from the viewpoint of public expenditure, there are more significant differences in general public services than education, and research and development, which is proved by the distance on Dimension 1 (expenditure on general public services), where the values range from -2 to 4, while value on Dimension 2 (expenditure on education, and research and development) range from -1,5 to 1,5. The following can also be perceived:

- Dimension 1: the more to the right a country is found, the higher its public-expenditure share on general public services is, and vice versa.
- Dimension 2: the more to the top a country is found, the higher its public-expenditure share on education, and research and development is, and vice versa.

These dimensions thus show that the lowest public expenditure from the analysed variables have countries most to the left and at the same time most to the bottom in the 3rd quadrant, and by contrast the highest public expenditure are in countries most to the right and to the top in the 1st quadrant. Also, Figure 2 makes it evident that countries around the intersection of the points 0,0 (dimension 1 – expenditure on general public services and dimension 2 – expenditures on education and research and development) reach average levels in the EU (27). Figure 2 also provides a more detailed comparison of expenditure on education, research and development and general public services in EU countries (27) using the method of multidimensional scaling in the years 2008 and 2012. Figure 2 shows a distribution of EU (27) countries into seven clusters, based on their similarity and dissimilarity of selected expenditure as % of GDP in years 2008 and 2012.

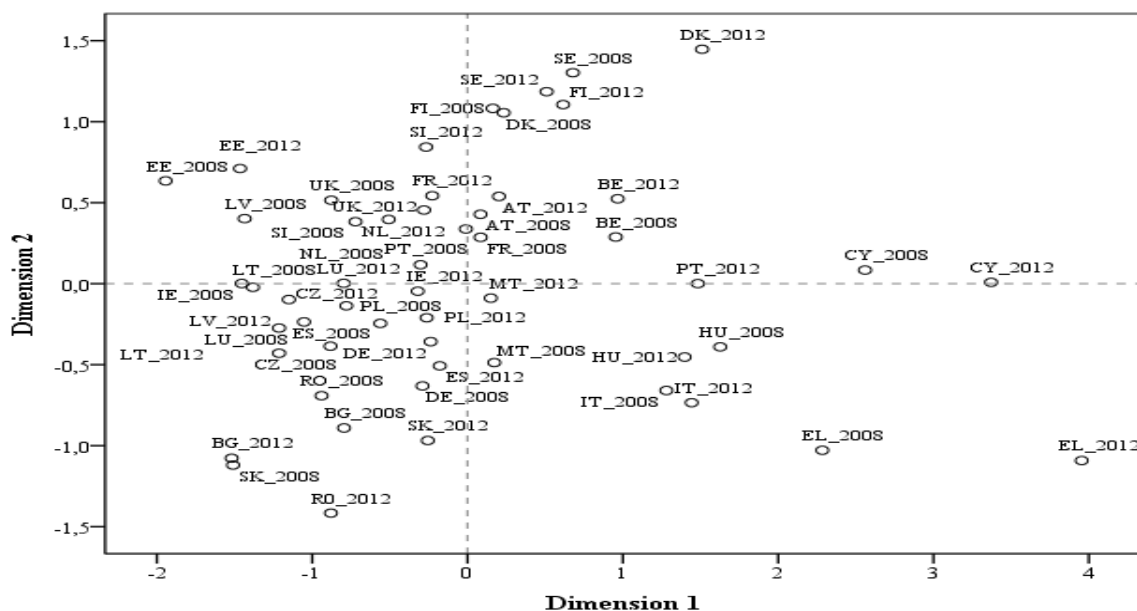


Figure 2. Outcome of the comparison of expenditures on R&D, education and general public services in EU countries (27) in the Years 2008 and 2012 (Source: authors, using the SPSS software)

Cluster 1 represents EU countries with the highest rate of expenditure on education, and research and development (R&D), along with average or slightly above average expenditure on general public services. **Cluster 2** represents Estonia with a high rate of expenditure on education and R&D, but

with a low rate of expenditure on general public services. **Cluster 3** represents EU countries that showed average to slightly below average expenditure on education and R&D, along with average to below average expenditure on general public services in years 2008 and 2012. **Cluster 4** is composed of EU countries with the lowest rate of expenditure on education, R&D and general public services. **Cluster 5** are EU countries with slightly above average and higher expenditure on general public services, but below average expenditures on education and R&D in comparison to other EU countries. **Cluster 6** is a set of EU countries with average expenditure on education and R&D, also reaching one of the highest expenditure on general public services, compared to other EU countries.

Table 4 provides distribution of EU countries into clusters according to public expenditure on education, R&D and general public services as % of GDP in years 2008 and 2012.

Table 4. Division of EU countries (27) into clusters based on different areas of public expenditure

Clusters	EU Countries (27) Based on Public Expenditures on Education, Research and Development and General Public Services
Cluster 1	DK 2008, DK 2012, FI 2008, FI 2012, SE 2008, SE 2012, SI 2012
Cluster 2	EE 2008, EE 2012
Cluster 3	AT 2008, AT 2012, BE 2008, BE 2012, CZ 2008, CZ 2012, DE 2008, DE 2012, ES 2012, IE 2008, IE 2012, LV 2008, LV 2012, LT 2008, LT 2012, MT 2008, MT 2012, PL 2008, PL 2012, SI 2008, UK 2008, UK 2012, LU 2008, LU 2012, ES 2008, PT 2008, NL 2008, NL 2012
Cluster 4	BG 2008, BG 2012, SK 2008, SK 2012, RO 2008, RO 2012
Cluster 5	EL 2008, EL 2012, HU 2008, HU 2012, IT 2008, IT 2012
Cluster 6	CY 2008, CY 2012, PL 2012

Source: authors, using the SPSS software.

Based on comparison of expenditure on education, R&D and general public services in EU countries (27) in years 2008 and 2012 (Table 4 and Figure 2), it is possible to say that:

- in terms of the expenditure rate (education, R&D and general public services) as % of GDP, the least similar states are Bulgaria, Slovakia and Romania, with the lowest rate of expenditure on education, R&D and general public services (cluster 4), and Scandinavian countries (Denmark, Sweden and Finland), with the highest rate of expenditure on education and R&D, along with above average expenditure on general public services (cluster 1),
- a comparable rate of expenditure on education and R&D (around 6.5%-7.5% of GDP) and general public services (around 6-6.5% of GDP) is found in Portugal in 2008, Ireland in 2012, France in 2008 and Poland in 2012 (cluster 3), with the exception of Belgium in 2008 and 2012 with slightly above average expenditure on education and R&D (8.2% of GDP) and also above average expenditure on general public services (8.1% of GDP).

Based on the structure of selected expenditure, among the least similar countries belongs Greece, with the highest expenditure on general public services and also one of the lowest expenditure on education and R&D (found in cluster 5), and Estonia, with the highest expenditure on education and R&D but the lowest expenditure on general public services when compared to other EU countries (cluster 2). Also, the comparison of the selected categories of expenditure in EU countries in years 2008 and 2012 proved that:

- the most notable rise in expenditure on general public services was in Portugal (+2.8% of GDP), Greece (+3.1% of GDP), Slovakia and Denmark (+2.3% of GDP),
- the most notable drop in expenditure on education and R&D was in Latvia (-1%), Romania (-1.7%, of which 1.5% is reduction on education); however, a rise in this expenditure was in Denmark (+1.2, of which 1% on education), Slovenia (+1.4%), in the Czech Republic and Malta (+1%).

6 Discussion and conclusion

Structure of public expenditure changes in time depending on changes in economic, social and political structure of society, on changes in the role of the state and changes in stabilising fiscal policy. Both the 20th and the beginning of the 21st century is generally characterised by a marked dynamics of the growth of public expenditures in advanced countries, apart from small vicissitudes (Faaini, 2006; Freysson, 2011; Jackson and Brown, 2003; Ulblich, 2011). A practical problem in particular EU countries is harmonisation of decentralisation of factual competences in the public sector, i.e. expenditure decentralisation with an appropriate extent of decentralisation of public income (fiscal decentralisation). Decentralisation process of public administration and transferring expenditure competences for providing for public services on each level of territorial self-administration varies significantly across EU countries and is influenced by economic, social, political, territorial factors and reform changes.

Fiscal decentralisation can be regarded, according to some authors (Aristovnik, 2012; Blöchliger and King, 2006; Finžgar and Oplotnik, 2013), as a crucial element of decentralisation of public administration, based on the idea that providing for public goods and services at local level is more efficient and economical. The downside of decentralised provision of public goods and services is generally associated with their quality (Stiglitz, 1988). As the structure and dynamics of public expenditure, fiscal federalism and fiscal decentralisation in EU countries is associated with a number of open questions, these issues can be used for further research.

The Lisbon strategy also develops pressure on a higher volume of necessary budgetary resources, both at the level of the common EU budget and the level of budgetary systems of the member states. An important factor is the nature and structure of public expenditures at individual governmental levels in EU countries. When financing, the EU countries should put emphasis on growth-enhancing items, i.e. the key thematic areas of the Europe 2020 strategy (education and skills, research, development and innovation or investment in the network). The Strategy Europe 2020 places considerable emphasis on improved conditions of financing research, development and innovations in EU countries, aiming to create new jobs and production of goods and services ensuring sustainable growth of economics in the EU through implementation of innovative ideas. Member states should by no later than 2020 begin investing in research and development 3% of GDP (1% of public finances). The main indicator of competitiveness and development of knowledge economy in the EU is the sphere of research, development and innovation support, and expenditure on education (European Commission, 2010, 2014; Majerová, 2012).

The analysis and comparison of expenditure on education, and research and development (R&D) in all sectors in the EU (27) over the years 2003-2012 proved that expenditure on education in EU countries is about 5.3% of GDP and total expenditure on R&D according to all sectors reach 1.8%-2% of GDP, of which public expenditure comprise just 0.25% of GDP in the EU (28). Next expenditure in EU countries (27) over 2003-2012 used for comparison was general public services, which is about 6.5% of GDP. Marked differences were confirmed in comparative expenditures in EU countries, which are the result of numerous factors (structure and volume of public budgets, impact of financial and economic crisis, reform measures in the concept of public policies in connection to public services). Differences in expenditures on education, R&D and general public services in EU countries in 2008 and 2012 were also proved through the method of multidimensional scaling.

7 Acknowledgment

This paper was supported within Operational Programme Education for Competitiveness – Project No. CZ.1.07/2.3.00/20.0296.

References

- [1] Aristovnik, A., 2012. Fiscal Decentralization in Eastern Europe: Trends and Selected Issues. *Transylvanian Review of Administrative Sciences*, vol. October, issue 37E, pp. 5-22.
- [2] Blöchliger, H. and D. King, 2006. Less than you Thought: The Fiscal Autonomy of Sub-central Governments. *OECD Economic Studies*, vol. 43, issue 2, pp. 155-188.
- [3] DEXIA and CEMR, 2012. *Sub-national Public Finance in the European Union*. [online]. [2014-06-23]. Available from: http://www.ccre.org/docs/Note_CCCE_Dexia_EN.pdf.
- [4] European Commission, 2010. *Europe 2020. European strategy for smart, sustainable and inclusive growth*. [online]. [2014-06-25]. Available from: <http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>.
- [5] European Commission, 2014. *Innovation union Scoreboard 2014*. [online]. [2014-06-26]. Available from: http://ec.europa.eu/enterprise/policies/innovation/files/ius/ius-2014_en.pdf.
- [6] EUROSTAT. Statistic database, 2014. *Total General Government Expenditure*. [online]. [2014-06-20]. Available from: <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>.
- [7] Faaini, R., 2006. Fiscal Policy and Interest Rates in Europe. *Economic Policy*, vol. 21, issue 47, pp. 443-489.
- [8] Finžgar, M. and Ž. J. Oplotnik, 2013. Comparison of Fiscal Decentralization Systems in EU-27 According to Selected Criteria. *Lex Localis - Journal of Local Self-Government*, vol. 11, issue 3, pp. 651-672.
- [9] Freysson, L., 2011. General Government Expenditure Trends 2005–2010: EU Countries Compared. *Eurostat, Statistic in Focus*, issue 42, pp. 1-11.
- [10] Governatori, M. and D. Yim, 2012. European Economy. *Fiscal Decentralisation and Fiscal Outcomes*. Economic papers 468. [online]. [2014-06-26]. Available from: http://ec.europa.eu/economy_finance/publications/economic_paper/2012/pdf/ecp468_en.pdf.
- [11] Halásková, M. and R. Halásková, 2014. Assessment of Public Expenditures in Selected Areas of Public Services in EU Countries. In: D. Stavárek and P. Vodová, eds. *Proceedings of the 14th International Conference on Finance and Banking*. Karviná: SU OPF, pp. 88-98.
- [12] Hillman, A. L., 2009. *Public Finance and Public Policy: Responsibilities and Limitations of Government*. New York: Cambridge University Press.
- [13] Jackson, P. M. and C. Brown, 1994. *Public Sector Economics*. Oxford UK & Cambridge USA: Blackwell.
- [14] Kaul, I. and P. Conceição, 2006. *The New Public Finance: Responding to Global Challenges*. New York: Oxford University Press.
- [15] Majerová, I., 2012. International Development Cooperation of the Czech Republic in the Context of European Development. *Prague Economic Papers*, vol. 2012, issue 2, pp. 166-185.
- [16] Mazzocchi, M., 2008. *Statistic for Marketing and Costumer Research*. London: Sage.
- [17] Mikušová Meričková, B. and R. Halásková, 2014. Income Redistribution and Socio-economic Development. *Review of Economic Perspectives*, vol. 14, issue 2, pp. 91-104.
- [18] Neyapti, B., 2010. Fiscal Decentralization and Deficits: International Evidence, European. *Journal of Political Economy*, vol. 26, issue 2, pp. 155-166.
- [19] Rosen, H. S. and T. Gayer, 2010. *Public Finance*. New York: Mc Graw-Hill.

- [20] Smith, P. C., 2003. Formula Funding of Public Services: An Economic Analysis. *Review of Economic Policy*, vol. 19, issue 2, pp. 301-322.
- [21] Stiglitz, J. E., 1988. *Economics of the Public sector*. London: Norton & Company New York.
- [22] Szarowská, I., 2013. Trends of COFOG government expenditure in the EU15. In: M. Tvrdon and I. Majerova, eds. *Proceedings of the 10th International Scientific Conference: Economic Policy in the European Union Member Countries: Selected Papers*, pp. 280-290. Karviná: SU OPF.
- [23] Ulbrich, H. H., 2011. *Public Finance in Theory and Practice*. London: Routledge.
- [24] WORLD BANK, 2014. *Decentralization & Subnational Regional Economics*. Working Paper. [online]. [2014-06-20]. Available from: <http://www1.worldbank.org/publicsector/decentralization/what.htm>.

THE “NO BAIL-OUT” PRINCIPLE IN THE EURO AREA’S RESCUE MECHANISMS

Mojmír Helísek

University of Finance and Administration, Estonska 500, 101 00 Praha 10, Czech Republic
email: mojmir.helisek@vsfs.cz

Abstract

To overcome the debt crisis, which takes place in some euro area countries, especially the European Stability Mechanism was created. Many authors argue that it is a breach of the *no bail-out* principle (prohibition of the financial aid). The paper deals first with the question what is the content of the *no bail-out* principle? Another question is whether the ESM assistance is a violation of this principle? The *no bail-out* principle is interpreted according to the Treaty on the Functioning of the EU. This principle means a prohibition of the liability for commitments or a prohibition of assumption of commitments by the Union or a Member State. A comparison of this interpretation with forms of assistance provided by the ESM leads to the conclusion that the *no bail-out* principle is not violated. The paper also discusses this conclusion in the context with the prospects of the euro’s introduction in the Czech Republic.

Keywords

No Bail-out, Debt Crisis, European Stability Mechanism, Euro Area, Bail-in.

JEL Classification

E 42, E 44, F 15.

1 Introduction

The debt crisis that affected some countries of the euro area led to the development of rescue mechanisms that should mitigate this crisis or help find solutions and prevent the situation from happening again. These mechanisms call for discussion as to whether they contradict the principles of the monetary union, specifically with the principle of *no bail-out* (prohibition of assistance), described in the Treaty on the Functioning of the European Union.

The goal of this paper is to answer the question, of what exactly stands for the *no bail-out* principle? Let’s find the answer in the Treaty on the Functioning of the European Union (TFEU). Another question is whether granting assistance through the European Stability Mechanism (ESM) leads to the breach of this principle? To this end, relevant forms of assistance provided by ESM are examined. The conclusion offers evaluation whether the *no bail-out* principle is breached or not, i. e. whether the European Stability Mechanism questions or does not question the credibility of the institutional organization of the euro area.

It does not involve an academic discussion only. Reservations towards rescue mechanisms (as well as towards the credibility of the euro area) are used as argumentation to question the obligation to replace the national currency with the euro.¹ Clarification of this question has therefore practical economic-political relevance.

2 Literature review

Criticism of the rescue mechanisms, especially the European Stability Mechanism, brought about by breaching the principle of *no bail-out*, can be found e.g. in the work by T. Sarrazin *Europe doesn’t need the euro*. The European Union should insist on declaring insolvency by the governments of debtor countries. All of this would be in line with the Maastricht Treaty. T. Sarrazin is also a harsh critic of all safety mechanisms that negate this principle. An exception in the form of applying the *bail-out* principle (i.e. to provide assistance) would be admissible if the mistrust in the bonds of some

¹This questioning of the obligation to accept the euro occurs “only” at the level of discussions, both expert and political. However, it is not mentioned in any official government statements. We might come across a hint at the change of conditions of the euro area functioning in comparison with the situation when the Czech Republic was entering the EU and committed itself to accept the euro (see the Ministry of Finance, Assessment, 2013, p. 3).

countries were not based on their enormous debt. Creation of the European Financial Stabilisation Facility (EFSF) in 2010 and the European Stability Mechanism in 2012 resulted in the legalization of the *bail-out* policy. It happened under the pressure of the argumentation that if any country decided to leave the single currency, the markets would stop believing in the future of the euro.

Sarrazin (2012) first claims that the supporters of the *bail-out* system are the owners of state bonds, i.e. mainly banks that want to be protected against losses (p. 185). However, what makes them believe that the creation of ESM has breached the *no bail-out* principle? “While in case of the EFSF [...] the breach of the *no bail-out* principle could be justified by a temporary state of deficiency, in case of the ESM [...] the policy of the *bail-out* system is legalized by amending the contract. There will be a new regulation (article 136, paragraph 3 of the Treaty on the Functioning of the European Union) which shall authorize euro states to create such a mechanism. [...] However, now relevant [debtor] states can decide to what extent this principle is still true by judging from the form of the future promised assistance” (p. 188).

We can find other critics of the euro area rescue mechanisms among works presenting Czech or Slovak experts, e.g. in the anthology of Krutílek, O., ed. (2013):

- “the prohibition of the so-called *bail-out* was omitted, i.e. contractual provision prohibiting the payment of government debt by other countries (or the guarantee)”, “we have abandoned the principle that every country is responsible for its debt” (author S. Janáčková, p. 24, 25);
- “European leaders [...] breach the *no bail-out* clause [...] the ESM permanently transfers financial backing of irresponsibility of the government and financial institutions to tax payers (also) in other countries” (author P. Gonda, p. 63, 64).

In another publication, S. Janáčková (2014) claims: “[...] the euro area saw something that can be called a change of rules in the course of the game. We have abandoned a certain principle which says that every country is responsible for its debt and other members are not obliged to grant fiscal assistance in any way” (p. 99).

Also, P. Mach (2012) believes that “the EU breaches the prohibition of rescue of bankrupt states” and that “the Member States of the euro area slavishly (“irrevocably” and “unconditionally”) commit themselves to paying hundreds of billions in favour of this debt union” (pp. 55, 60).

On the other hand, O. Dědek (2014) points out that *bail-out* (financial aid) is no gift but “assistance offered under strict conditions” (p. 297). He also points out that this interpretation of the Treaty on the Functioning of the European Union was decided by the Court of Justice of the European Union in 2012: the aforementioned Treaty does not imply that it prohibits the assistance provided by the EU or other Member States to another Member State if it applies to assistance that does not exempt the beneficiaries of the assistance from responsibility for their obligations.

Similarly, for example, Schäfer (2012) points out that most legal experts agree that the *no bail-out* principle does not rule out “direct credits of member states to another distressed member state as in the case of Greece or Ireland”. The *no bail-out* principle does not rule out credits channeled through organizations such as the ESM (p. 186).

3 *No bail-out* and the treaty on the functioning of the European Union

The expression *bail-out* stands for assistance, aid, rescue, i.e. its negative form of *no bail-out* means prohibition of assistance, aid and rescue.²

What does the Treaty on the Functioning of the European Union prohibit? The assistance regulations are specified in article 125, paragraph 1 of the TFEU. The aforementioned article reads: “The Community *shall not be liable for or assume the commitments* of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of any Member State, without prejudice to mutual financial guarantees for the joint execution of a specific

²Also in compounds: *bail-out fund*, *bail-out mechanism*, *no bail-out clause*, *bail-out package*, *bail-out money*, *no bail-out principle* etc. (<http://cs.bab.la/slovník/anglicky-cesky/bailout>).

project. A Member State *shall not be liable for or assume the commitments* of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of another Member State, without prejudice to mutual financial guarantees for the joint execution of a specific project.”³ (Text highlighted by M. H.)

The Treaty does not prohibit “assistance”, but “liability for the commitments” and “assumption of the commitments”. In this context, the expression of *no bail-out* has to be interpreted not as “prohibition of assistance”, but only as “prohibition of liability for the commitments” and “prohibition of assumption of the commitments”.

The ESM set-up was allowed by supplementing art. 136 of the Treaty on the Functioning of the European Union. This article was amended by the European Council Resolution dated 25. 3. 2011.⁴ Article 136 was supplemented with a new paragraph: “The Member States whose currency is the euro may establish a stability mechanism to be activated if indispensable to safeguard the stability of the euro area as a whole. The granting of any required financial assistance under the mechanism will be made subject to strict conditionality”.⁵

The supplement of the Treaty on the Functioning of the European Union makes it clear that:

- it does not introduce the possibility of “liability for the commitments” or “assumption of the commitments”,
- it does not prohibit other forms of financial assistance.

4 Assistance provided by the european stability mechanism

The debt crisis of some countries of the euro area initiated the set-up of several rescue mechanisms. In May 2010, the European Financial Stability Facility (EFSF) was introduced. It was created for a temporary period of 3 years and granted loans to those governments of the euro area that could not take out a loan at an acceptable interest rate on financial markets. In addition, it issued its bonds at the capital market. The debt produced this way is guaranteed by the member states of the euro area at a ratio based on their share in the capital of the European Central Bank (ECB).⁶

The volume of bonds, which the EFSF could sell, was determined by the degree of the guarantee from countries involved in the EFSF. The original amount was EUR 440 billion; later it was increased to EUR 780 billion. As a consequence of various insurance policies that were necessary for maintaining the high rating of the EFSF bonds, the EFSF effective loan capacity first amounted to EUR 250 billion, then to EUR 440 billion. In connection with expanding the EFSF loan capacity, there was also a wider scope of financial assistance tools from loans to other tools that were subsequently taken over by the ESM (see hereafter). The only exception were loans for the recapitalization of the banking sector that were in case of the EFSF granted to governments only and not to banks as it is possible in the ESM.

In addition to the EFSF, the European Financial Stabilisation Mechanism (EFSM) was also created in May 2010 with the loan capacity of EUR 60 billion, for granting loans to any EU country, not only to the euro area, as it is the case of the EFSF. The EFSM debt is guaranteed by the EU budget, i.e. by the EU member states, proportionally by the key of their contributions to this budget.

As of 8 October, 2012 (originally planned as of July 2013) the EFSF agenda was taken over by the European Stability Mechanism. The ESM set-up, the international government organization residing in Luxembourg, was decided on by a contract signed by the Ministers of Finance of the euro

³Consolidated Version of the Treaty on the Functioning of the European Union.

⁴European Council Decision of 25 March 2011, p. 2. This amendment to EU establishing agreements was also adopted in the Czech Republic, specifically by the Senate on 25. 4. 2012 and by the Chamber of Deputies on 5. 6. 2012.

⁵Consolidated Version of the Treaty on the Functioning of the European Union.

⁶The share in the ECB capital is determined by the share of the relevant country in the population and the EU GDP (with the same weight of both indicators).

area countries on 11. 7. 2011⁷ and certified at the European Council Summit on 21. 7. 2011. The ESM members are member states of the euro area; non-member states can participate in the ESM financial operations (as providers) on a bilateral basis ad hoc.

The ESM functions differently from the EFSF. It has capital subscribed totalling EUR 700 billion, of which EUR 80 billion will be paid-up capital (in 2012-2014) and EUR 620 billion, the so-called disposable capital in the form of capital that will be granted if needed by the ESM member states. It refers to capital due upon request. The ESM loan capacity totals ca EUR 500 billion, given the need to create a reserve fund and some other tools of the so-called credit enhancement.

The allocation specifying the size of the contribution of capital of relevant ESM member states was determined by the ECB paid-up capital with the exception of less developed countries (below the limit of 75 % GDP per capita of the EU average) that had been granted an advantageous allocation for a temporary period of 12 years since joining the euro area. The preference decreases their capital subscribed at the expense of more developed countries. Besides the capital subscribed (paid-up and disposable), the ESM can take out a loan at capital markets, in the form of bond issues with the maturity of 1-30 years.

The financial assistance provided by the European Stability Mechanism, the so-called *stability support* has following forms (based on the Treaty Establishing the European Stability Mechanism):

- ESM precautionary financial assistance – an offer of lines of credit to governments that have difficulties with paying off their debt, however, the markets did not completely lose trust in them,
- financial assistance for the re-capitalisation of financial institutions – i.e. to grant loans directly to banks, contrary to the EFSF when the loans were granted to governments and from them subsequently to banks, which led to increased government debt,
- ESM loans – short-term and medium-term loans to governments,
- primary market support facility – purchases of government bonds on the primary market, i.e. directly at auction sales of the Ministry of Finance of that respective country,
- secondary market support facility – intervention in secondary i.e. bank-to-bank markets of government bonds.

There are certain conditions of the economic and budget discipline, incorporated in the so-called *macro-economic adjustment programme*, which have to be met in order to be granted the assistance. An essential condition for providing assistance is also the fact that the financial stability of the whole euro area is threatened.

Applications for a loan are assessed by the European Commission together with the ECB and the International Monetary Fund (IMF) and following this evaluation the conditions for financial assistance are determined. The involvement of the International Monetary Fund is advisable (and it's the usual practice) not only at the expert level but also at the financial one.

The ESM financial assistance has the so-called *seniority status*, which means that the ESM has the status of preferential creditor in case of insolvency of an indebted government or a bank (however after the IMF). Its claims are preferred to the claims of the private sector. The EFSF did not create this status.

The summary of the aforementioned forms of assistance granted by the EFSF, EFSM and ESM implies that it does not involve “liability for the commitments”, or “assumption of the commitments” of a EU Member State by another EU Member State or the EU bodies. Functioning of these rescue mechanisms does not therefore contradict the *no bail-out* principle.

The same conclusion applies in cases when due to insolvency of indebted governments or banks, these obligations would have to be paid by their guarantors, i.e. governments participating in the EFSF mechanism, the EU budget in case of the EFSM or the government subscribing capital in case of the ESM. Not even in these cases are the governments as debtors towards the EFSF, EFSM or

⁷Treaty Establishing the European Stability Mechanism, signed on 11. 7. 2011 and supplemented on 2. 2. 2012.

ESM exempt from the obligation to pay. It is not about the responsibility for their commitments or undertaking their commitments.⁸ The *no bail-out* principle has not been breached in this case either.

Loans granted from the stabilization mechanisms are connected to interest that has to cover at least the refinance cost. If the loans granted from the stabilization mechanisms were duly paid off including the interest, the ESM would make a profit that would be split among the ESM member states. In case of some countries, this profit could exceed the costs related to the ESM funding.⁹

5 Participation of the private sector – *bail-in*

Assistance granted from the sources of the European Stability Mechanism can be accompanied by the involvement of the private sector in this assistance. This requirement is in line with the Treaty Establishing the European Stability Mechanism. This involvement must be effected in accordance with the IMF practice, as part of the macro-economic adjustment programme in “an adequate and proportionate form”, “in exceptional cases” (Preamble, par. 12). This involvement is described as *bail-in*, i.e. self-help, or involvement in losses, when the responsibility is partially transferred to the creditor. The application of the *bail-in* principle indicates debtor’s efforts to deal with the debt issue.

For the first time, the *bail-in* principle was applied during assistance granted by the European Stability Mechanism, in case of Cyprus in 2013 while arranging loans necessary for the consolidation of the Cyprus banking sector. Technically speaking, it was extra taxation of bank deposits over EUR 100 000 (rates of 40-80 %) at closed bank Cyprus Popular Bank;¹⁰ at the Bank of Cyprus there were transfers of a part of deposits to the bank stock and other measures.

In case of the EFSF, it was a partial “state bankruptcy” of Greece early March 2012. The Greek Government agreed with private creditors on replacing the current bonds worth EUR 172 billion with new bonds of lesser value, which meant 53.5 % depreciation of the claims value. We’d better describe this measure as “selective restructuring” of the debt than the “state bankruptcy”.

6 Conclusion

Supplementing article 136 of the Treaty on the Functioning of the European Union allowed the set-up of the European Stability Mechanism. Its operations are criticized for breaching the principle of prohibition of assistance (*no bail-out*), which is defined in article 124 of the Treaty on the Functioning of the European Union. *Bail-out* can be interpreted only as liability for the commitments or assumption of the commitments. Neither the supplement of art. 136, nor the ESM operations, however, this does not mean. It involves granting financial aid mainly in the form of loans that is conditioned by observing the previously agreed macro-economic adjustment programme and which is interest-bearing.

The above-mentioned information implies that in the “justification” of the ESM operations it is not necessary to refer to the application of solidarity principles mentioned in article 122 of the Treaty.¹¹

- solidarity during serious situations concerning difficulties with the supply of e.g. energy products,
- solidarity during natural disasters or emergencies uncontrollable events.

⁸This fact is pointed out in case of the EFSF by Dědek (2014, p. 301).

⁹That might also be the case of the Czech Republic if it were the ESM member (see Chmelař et al., p. 52: “The Czech Republic might benefit quite a lot from the contribution to the ESM in case of a subdued crisis and by maintaining its low interest rates and inflation”).

¹⁰Nevertheless with numerous exceptions – e.g. the taxation did not apply to Greek deposits.

¹¹This „official response“ is allowed by Baldwin, Wyplosz, 2012, p. 534. However, at the same time they claim that by establishing the ESM the governments are not obliged to guarantee the obligations of other governments, they just offered loans.

The same applies to guarantees granted by the member states to the European Financial Stability Fund or to the subscribed capital granted by the ESM member states to this mechanism.

Providing financial assistance through the European Stability Mechanism is therefore not in breach of the Treaty on the Functioning of the European Union. This financial assistance therefore does not deny the rules of the euro area's functioning.

7 Acknowledgement

This article is one of the outputs of the research projects “Introduction of the euro in the Czech Republic – progress in preparations or change of obligation?”, funded as part of a specific university research at the University of Finance and Administration for 2014.

References

- [1] Baldwin, R. and C. Wyplosz, 2012. *The Economics of European Integration*. 4th Ed. Maidenhead: Mc Graw Hill.
- [2] Chmelař, A. et al., 2014. Ekonomické vyhodnocení členství České republiky v Evropské unii po deseti letech. Alternativní scénáře a kvantifikace. Sekce pro evropské záležitosti Úřadu vlády České republiky [*Economic Evaluation of the Czech Republic's Membership in the European Union after Ten Years. Alternative Scenarios and Quantification*. Department for European Affairs of the Government of the Czech Republic. In Czech only] [online]. [2014-06-01]. Available from: <http://www.vlada.cz/assets/media-centrum/aktualne/finalni-vytistena-verze.pdf>.
- [3] *Consolidated Version of the Treaty on the Functioning of the European Union*. Official Journal of the European Union. C 83/47. [online]. [2014-03-30]. Available from: <http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1401206662980&uri=CELEX:C2012/326/01>.
- [4] Dědek, O., 2014. Doba eura. Úspěchy i nezdary společné evropské měny [*Time of the Euro. Successes and Failures of the Common European Currency*. In Czech only]. Praha: Linde.
- [5] European Council Decision of 25 March 2011 amending Article 136 of the Treaty on the Functioning of the European Union with regard to a stability mechanism for Member States whose currency is the euro. [online]. [2013-06-01]. Available from: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32011D0199>.
- [6] Janáčková, S., 2014. Peripetie české ekonomiky a měny aneb nedejme si vnútit euro [*Peripeties the Czech economy and the Currency or Do Not Be to Impose the Euro*. In Czech only]. Praha: Institut V. Klause.
- [7] Krutílek, O. (ed.), 2013. Euro v Česku: Ano, či ne? [*Euro in the Czech Republic: Yes or No?* In Czech only]. Brno: Studio Arx.
- [8] Mach, P., 2012. *Jak vystoupit z EU*. Druhé vydání [*How to Withdraw from the EU*. Second edition. In Czech only]. Praha: Dokořán.
- [9] Ministry of Finance of the Czech Republic and the Czech National Bank, 2013. Assessment of the Fulfilment of the Maastricht Convergence Criteria and the Degree of Economic Alignment of the Czech Republic with the Euro Area. [online]. [2014-02-01]. Available from: <http://www.zavedenieura.cz/en/documents/fulfilment-of-maastricht-criteria>.
- [10] Sarrazin, T., 2012. *Europa braucht den Euro nicht. Wie uns politisches Wunschdenken in die Krise geführt hat*. Deutsche Verlags-Anstalt: München.

- [11] Schäfer, H. B., 2012. The Sovereign Debt Crisis in Europe, Save Banks Not States. *The European Journal of Comparative Economics*, vol. 9, issue 2, pp. 179-195.
- [12] *Treaty Establishing the European Stability Mechanism*, 2011. [online]. [2014-06-01]. Available from: http://ec.europa.eu/economy_finance/articles/financial_operations/2011-07-11-esm-treaty_en.htm.

ERRORS IN SHORT RUN FORECASTS NEXT-DAY VOLATILITY WITHIN THE GREEK CAPITAL MARKET: EMPIRICAL RESEARCH BEFORE AND AFTER THE GLOBAL FINANCIAL CRISIS

Tomáš Heryán

*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: heryan@opf.slu.cz*

Abstract

The current article has focused on the comparison of selected variables' development within the Greek equity market, before and after the global financial crisis. There is. An investigation is made through estimating short run forecasts and calculating errors of the both, equity risk premium examined as usual, and capital market risk examined as a sum of selected volatilities. Therefore, the aim of the study is to estimate errors in short run forecasts next-day volatility of selected variables within the Greek capital market. As the estimation method it is used GARCH (1, 1). It is obtained daily data for period from 1999 to March 2014. The results have clearly proved differences between errors in forecasts before the global financial crises and in the period after the Lehman Brother's bankruptcy. The contribution from current study is also within a proof that correlation values as well as previous day significant volatility do not have to be always negative. Finally, it is created a motivation for a future research in that area, too.

Keywords

Equity Risk Premium, Short Run Forecasting Errors, the Greek Equity Market, GARCH (1, 1) Model.

JEL Classification

C53, C58, G01, G12, G17.

1 Introduction

The aim of the current paper is to estimate errors in short run forecasts next-day volatility of selected variables within the Greek capital market. The estimation period, from January 1999 till the end of March 2014, is divided into two sub-periods in according to financial crises to make a comparison of results from both periods.

Floros et al. (2013) tried to examine the impact of the U.S. subprime mortgage crisis, the Euro crisis, and the Greek sovereign debt crisis on the risk premium within the Greek stock index futures market. Their study is absolutely the first, which provide a detailed analysis of the impact of the current financial crises on the risk premium of the Greek stock index futures market. They also report evidence of in-sample predictability of excess returns in the FTSE/ASE-20 futures market. That factor motivates current paper, as well. Even whether the aim of the current article is definitely not to investigate any predictability variables among the Greek capital market, it is also connected to the problematic of equity risk premium and its development in the Greece. Contribution of this study is in three ways: (i) to examining equity risk premium, for the first time it is obtained Maastricht interest rates in according to EMU criteria for its common pricing of a bond's yield. (ii) It is compared results of estimating output for two relations, for a spread as well as for a sum of stock prices' and interest rates' volatility. (iii) Methodologically, it is proved that correlations between current returns and future returns volatility do not have to be always negative.

Paper structure is as follows. After the Introduction there is the second part, in which it is briefly reviewed a recent literature connected mainly with the methodology used in the paper. The third part describes the data and theoretical assumptions of the estimating model. Then, there is a discussion on empirical results included main findings. Finally, the fifth part concludes the article.

2 Literature review

Nelson (1991) argues that GARCH models have been applied in modelling the relation between conditional variance and equity risk premium. These models have in according to his opinion at least

three major drawbacks in asset pricing applications: (i) He found *a negative correlation* between current returns and future returns volatility. (ii) GARCH models impose parameter restrictions that are often violated by estimated coefficients and that may unduly restrict the dynamics of the conditional variance process. (iii) Interpreting whether shocks to conditional variance “persist” or not is difficult in GARCH models, because the usual norms measuring persistence often do not agree.

Donadelli and Persha (2014) argue, the average equity risk premium in emerging markets is well-known to be significantly higher than in developed markets. They founded also that correlations between industrial stock market excess returns, but even a measure of global economic policy uncertainty are consistently *negative*, and follow similar patterns. Their study is unique but it suffers a bit from the sample of selected countries. For example, they used also some economies with strong bank based systems, i.e. the Czech Republic. We have a very weak capital market from the view of trading volume as well as from initial public offerings (IPO) in our country. Just 14 companies made IPO of its shares within the Prague Stock Exchange. Even three of them represent more or less 80% from whole Czech market capitalization.

Heryán (2014) proved that forecasts’ errors after the global financial crisis are at higher level in pre-crisis period in both, the UK and U.S. capital markets. However, it is not objective use the forecasting to make any particular suggestions or even implications. Precisely because, it was highlighted within the whole problematic of short run forecasts next-day volatility of equity risk premiums, there are some errors. He examined *a negative correlation* between risk premium and its historical values, as well. It complies and support the arguments of Nelson (1991), who proved also one of major drawbacks within GARCH models’ estimating, which is *a negative correlation*.

3 Data and methodology

To calculate equity risk premium it is obtained *Maastricht criterion interest rates* data for the Greece from Eurostat, international statistical database, and daily returns of the Greek representation stock index, *Athens Composite Index*. All data is in daily frequency and our estimation period is from January 1999 to May 2014.

Firstly, it was necessary to fill some gaps in time series due to missing data, which exist because of holidays as well as due to some audits or different non-trading days within the Greek stock exchange. It is done through using the same data, the last one before data missing. The equity risk premium’s development is then explained ex post as a spread between growth changes of stock prices against development of debt market interest rates. In Table 1 we can see all combinations and impacts of possible changes of selected variables and its impact on the risk within the Greek equity market in percentages. Assumptions included in Table 1 are consistent in basics with Donaldson and Mehra (2008). They argue, since disaster states are ones of extremely high marginal utility of consumption, we might expect their incorporation to push up risk-free asset prices and diminish risky ones. As a result, the premium should rise (Donaldson and Mehra, 2008, p. 82).

Table 1. Possible changes and its impact on the market risk

% change of stock prices	% change of interest rates	Impact
Positive	Positive	Lower risk
Positive	Negative	Higher risk
Negative	Negative	Lower risk
Negative	Positive	Higher risk

Source: author’s illustration.

The first contribution of the study is just an idea of comparison differences between estimating two different variables among the Greek capital market. *Equity risk premium* is counted through the

spread (MINUS) between stock prices development and the development of Maastricht interest rates for the Greek debt market. On the other hand, we can also explore whole *capital market risk* as a sum of both volatilities (PLUS). Figure 1 shows then that both volatilities are very similar. Therefore it is almost impossible to see the both in one graph. Firstly, what is interesting, as we see from the table in Appendix 1, while maximum value of equity risk premium is 13.71%, maximum within capital market risk is just 13.15% even whether it is calculated as a sum of stock prices and interest rates' development. It is caused by the problematic in according Table 1 (see previous paragraph). Minimum value of equity risk premium, -10.26% is higher against minimum of capital market risk, 14.50%. Standard deviation is then at lower level in the case of equity risk premium. Secondly, from Figure 1 is evident while in period after the Lehman Brothers' bankruptcy in 2008, when stock prices felt down and the global financial crisis was reflected in full, there is also another period of sovereign debt crisis in Europe. Maastricht interest rates increased in that period very quickly. Therefore our estimation period is divided into two sub-periods, period before both crises and period after the 15th September 2008.

Moreover, Gibson et al. (2014) proved inter alia within their study that Greek financial markets were not rational during the sample period 2008–2009, when the Greek sovereign debt crisis began hand in hand also together with the euro-area crisis more generally. Their findings show that prior to 2008–2009, the markets failed to incorporate Greece's deteriorating fundamentals into the price of Greek sovereigns. From conclusion it also suggests that sovereign downgrades and political uncertainty appear to have been drivers of the sharp rises in Greek sovereign spreads from 2008–2009 onwards, over-and-above the impact of the economic fundamentals.

Chionis et al. (2014) argue that inflation and unemployment, the both seems to be significant determinants for the yield of Greek bonds. During the crisis, the degree of influence for unemployment increased significantly from 1.39% to 10.24%. Inflation turns to accelerate the speed of adjustment coefficient increases from 12 to 21 percentages during the crisis. They examined a similar impact of inflation on the Greek bond yields. Immediately after the burst of the Greek crisis in addition to these two factors a new factor seems to be a significant for the development of bond yields, the fiscal deficit.

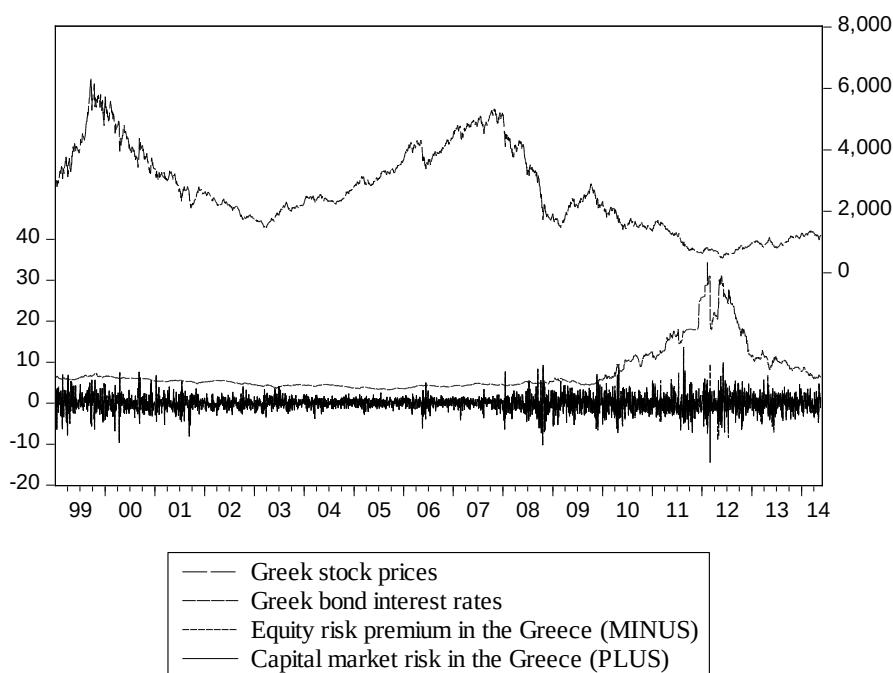


Figure 1. Selected economic variables in the Greece (Source: author's calculation)

Methodologically it used volatility GARCH (1, 1) model. An equation of GARCH model (1) and its variance equation (2), is described in according to Asteriou and Hall, 2011:

$$Y_t = \alpha + \beta_i Y_{t-1} + \varepsilon_t, \quad (1)$$

$$h_t = \alpha_0 + \sum_{i=1}^1 \varphi_i h_{t-1} + \gamma_i Y_{t-1} + \sum_{j=1}^1 \vartheta_j \varepsilon_{t-j}^2 \quad (2)$$

where Y_t means today's volatility as a change of equity risk premium or capital market risk of i (the Greece) in time t , ε_t means residuals, and α is a constant. Within the model it is used a Generalized Error Distribution (GED) assumption. Asteriou and Hall, 2011 indicated that GARCH models also allow us to add explanatory variables in the specification of the conditional variance equation h_t . Due to them it might help to explain the variance better. Therefore it is added explanatory Y_{t-1} into the conditional variance specification within equation (2). Symbol h_{t-1} means GARCH in time $t-1$, symbol ε_{t-j}^2 means an ARCH process as a sum of the squared residuals within the variance equation of the model. All variables within conditional variance equation h_t it has to be significant to reach main results of GARCH model in a good condition.

4 Empirical results

As the first, it will be discussed GARCH models' estimation output within all our estimated sub-periods. Then we will be able to compare errors in short run forecasts next-day volatility of equity risk premium as well as of capital market risk.

Table 2. GARCH models' output

Dependent Variable: Today's volatility						
Method: ML - ARCH (Marquardt) - Generalized error distribution (GED)						
Variable	ALL MINUS	Before MINUS	After MINUS	ALL PLUS	Before PLUS	After PLUS
α	0.0128	0.0160	-0.0096	0.0115	0.0150	-0.0137
β_i	0.0694 ^a	0.0767 ^a	0.0607 ^b	0.0554 ^a	0.0806 ^a	0.0275
Variance Equation						
α_0	0.0348 ^a	0.0681 ^a	0.2770 ^a	0.0437 ^a	0.0690 ^a	0.2827 ^a
ϑ_j	0.0875 ^a	0.1184 ^a	0.0553 ^a	0.0989 ^a	0.1166 ^a	0.0702 ^a
φ_i	0.9052 ^a	0.8503 ^a	0.8894 ^a	0.8912 ^a	0.8519 ^a	0.8691 ^a
γ_i	-0.0789 ^a	-0.1159 ^a	-0.1041 ^b	-0.0907 ^a	-0.1160 ^a	-0.0988 ^b
GED	1.2577 ^a	1.3182 ^a	1.2627 ^a	1.2752 ^a	1.3251 ^a	1.2700 ^a
D.W. stat	1.9523	1.9566	1.9337	1.9771	1.9651	1.9620

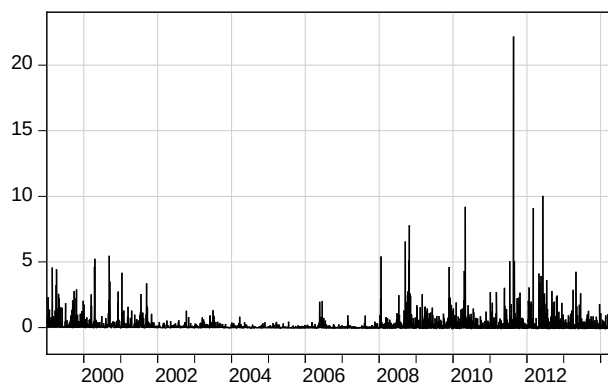
Note: Symbol ^a, ^b means statistically significance at 1% and 5% level.

Source: author's calculation.

Appendix 2 shows us an Autoregressive Conditional Heteroskedasticity process within residuals of OLS regression models as the first. As we see, the heteroskedasticity is successfully eliminated through the using of GARCH (1, 1) models. In table 2 we see estimated results from GARCH estimations. It has been proved statistically significant positive impact of previous-day volatility to next-day volatility in all cases except one. In the case of capital market risk (PLUS), there is evident

no relationship between previous and next-day volatility within the crises period. Even whether constant α is not detected as significant in any case, we see that all variables within variance equations as well as GED parameters are statistically significant. On D.W. stat we see only a little positive autocorrelation. Nevertheless, estimated results, although close to zero, are in a good condition.

Errors in forecasts next-day volatility of equity risk premium (MINUS)



Errors in forecasts next-day volatility of capital market risk (PLUS)

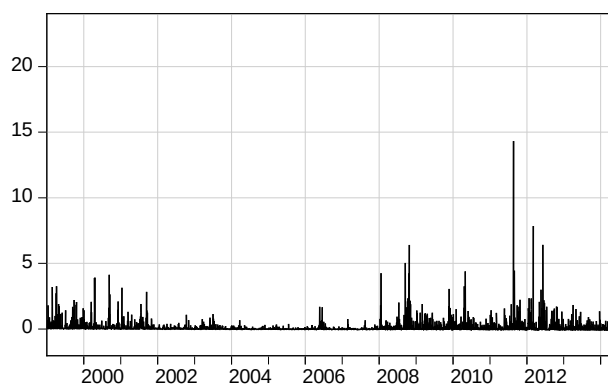


Figure 2. Errors in forecasts of equity risk premium and capital market risk (Source: author's calculation).

Figure 2 shows us examined variance of errors in forecasts among both variables. From appendix 1 it is evident, while examined variance of errors in forecasts within the case of capital market risk is 14.41%, examined variance of errors in forecasts within the case of equity risk premium is at a higher level, 22.27%. Standard deviation is 0.68% and it is also a higher level in the case of equity risk premium than in the case of capital market risk, 0.48%. But more interesting thing which has been proved within figure 2, is that a higher level of errors in short run forecasts next-day volatility among the Greek capital market is not detected only in the period affected by financial crises, the global financial crisis and the EU sovereign debt crisis, as well. However, we clearly see that even before the Greece joined to the EMU, in 1999–2000, there is also a higher level of its errors. So, in general, we could argue that Greek financial markets were not rational during that early period, too.

The second interesting finding is in a comparison of both errors, among equity risk premium as well as capital market risk, we can see in the case of counted as a spread to examine equity risk premium that there has been estimated higher errors in its short run forecasts next-day volatility. Therefore it could be make an argumentation that it is better to calculate capital market risk through a sum of stock prices' and interest rates' (or bond yields) volatility. Nevertheless, there is just a question for a future research, whether the results would be a similar in the case of using some government bond yields' volatility (not just Maastricht interest rates as in this paper). But it has to be strictly rejected from these results because coefficient for capital market risk is not statistically

significant in period affected by financial crises. In the case of capital market risk it cannot be said that previous day volatility impacts significantly to development of capital market risk volatility in crises times of the Greek economy.

Finally, from the mathematical point of view, it is necessary to pay more attention to the problematic of correlations between current returns and future returns volatility. In appendix 3 we see that correlation values between current and future returns volatility are all positive. Only correlation between GARCH variance and current volatility is negative. But also autocorrelation values of predicted volatilities are very close to zero. It is totally opposite result against to argumentation of other previous studies (Nelson, 1991; Donadelli and Persha, 2014; Heryán, 2014).

5 Conclusion

The aim of the current study was to estimate errors in short run forecasts next-day volatility of selected variables within the Greek capital market. It was compared results of estimating output for two relations, for *equity risk premium*, counted as a spread, as well as for *capital market risk*, examined as a sum of stock prices' and interest rates' volatility.

While it was proved that among capital market risk it has been reached lower errors in its short run forecasts next-day volatility, from estimation outputs it is evident that previous day volatility in the case of capital market risk is not significant in the period affected by financial crises, the global financial crises and the EU sovereign debt crises. It could be suggested, using of equity risk premium volatility is therefore better than capital market risk volatility, definitely in the case of the Greek economy. Nevertheless, what is really interesting, there are big differences within errors in forecasts before and after the joining the Greece to the EMU. We could not make any particular suggestions for economic policy from our results, yet. But it has been proved that before the joining to the EMU when they accepted euro as a currency, it was at higher level which is a bit similar as in the crises period, in the case of estimated errors in short run forecasts next-day volatility within the Greek capital market.

Therefore, in a future research it should be made a comparison together with results reached by using volatility of selected government bond yields to examine equity risk premium, as well. And what is also important, it is still necessary to pay more attention on the problematic of correlations between current and next-day volatility and its impact to whole estimation output, also from the mathematical point of view.

6 Acknowledgement

The paper was financially supported by the Moravian-Silesian Region within the project number RRC/05/2013 of grant title 3: Talented students' support, under the program Science and Research Support in the Moravian-Silesian Region 2013.

References

- [1] Asteriou, D. and S. G. Hall, 2011. Modeling the Variance: ARCH-GARCH Models. In: *Applied Econometrics*. Part V, Time Series Econometrics. 2nd edition, pp. 287-318.
- [2] Chionis, D. et al., 2014. Long-term government bond yields and macroeconomic fundamentals: Evidence for Greece during the crisis-era. *Finance Research Letters*. [online]. [2014-06-06]. Available from: <http://dx.doi.org/10.1016/j.frl.2014.02.003>.
- [3] Donadelli, M. and L. Persha, 2014. Understanding emerging market equity risk premia: Industries, governance and macroeconomic policy uncertainty. *Research in International Business and Finance*, vol. 30, pp. 284-309.

- [4] Donaldson, J. and R. Mehra, 2008. Risk-Based Explanations of the Equity Premium. In: R. Mehra, ed. *Handbook of the equity risk premium*. [online]. [2014-06-06]. Available from: http://williamfang.weebly.com/uploads/9/1/3/4/9134217/handbook_of_the_equity_risk_premium.pdf.
- [5] Floros, C. et al., 2013. Financial crises, the decoupling–recoupling hypothesis, and the risk premium on the Greek stock index futures market. *International Review of Financial Analysis*, vol. 28, pp. 166-173.
- [6] Gibson, H. D. et al., 2014. Fundamentally Wrong: Market Pricing of Sovereigns and the Greek Financial Crisis. *Journal of Macroeconomics*, vol. 39, pp. 405-419.
- [7] Heryán, T., 2014. Errors in short run forecasts next-day volatility of equity risk premium in the UK and U.S. market: Empirical research before and after the global financial crisis. *Procedia Economics and Finance* (in print).
- [8] Nelson, D. B., 1991. Conditional Heteroskedasticity in Asset Returns: A New Approach. *Econometrica*, vol. 59, issue 2, pp. 347-370.

Appendix

Appendix 1: Descriptive statistics of selected variables

	<i>Equity risk premium</i>	<i>Capital market risk</i>	<i>Errors of risk premium's forecasts</i>	<i>Errors of capital market risk's forecasts</i>
Mean	-0.0217	-0.0217	0.2431	0.1827
Median	0.0000	0.0000	0.0518	0.0414
Maximum	13.7111	13.1511	22.2693	14.4122
Minimum	-10.2640	-14.5043	-0.0006	-0.0006
Std. Dev.	1.8441	1.8036	0.6785	0.4848
Skewness	0.0060	-0.1405	12.9568	11.0685
Kurtosis	6.9401	7.4948	319.9619	232.7247
Jarque-Bera	2596	3391	16906623	8903880
Probability	0.0000	0.0000	0.0000	0.0000
Sum	-86.9123	-87.1523	975.3410	732.8637
Sum Sq. Dev.	13643	13051	1846	943

Appendix 2: Heteroskedasticity tests

Heteroskedasticity Test: ARCH within OLS regression model of Equity risk premium

F-statistic	94.0248	Prob. F(1.4009)	0.0000
Obs*R-squared	91.9160	Prob. Chi-Square(1)	0.0000

Heteroskedasticity Test: ARCH within OLS regression model of Capital market risk

F-statistic	79.5475	Prob. F(1.4009)	0.0000
Obs*R-squared	78.0387	Prob. Chi-Square(1)	0.0000

Heteroskedasticity Test: ARCH within GARCH (1, 1) model of Equity risk premium

F-statistic	0.6718	Prob. F(1.4009)	0.4125
Obs*R-squared	0.6721	Prob. Chi-Square(1)	0.4123

Heteroskedasticity Test: ARCH within GARCH (1, 1) model of Capital market risk

F-statistic	1.5305	Prob. F(1.4009)	0.2161
Obs*R-squared	1.5306	Prob. Chi-Square(1)	0.2160

Appendix 3: Correlations between current returns and future returns volatility

Covariance						
t-Statistic		<i>Risk premia</i>	<i>Market risk</i>	<i>Autocorrelations of predicted</i>		
Probability		<i>(X₀ MINUS)</i>	<i>(X₀ PLUS)</i>	<i>volatility</i>		
	<i>X₀</i>	3,4008	3,2531	<i>n(lags)</i>	<i>MINUS</i>	<i>PLUS</i>
		-----	-----	1	0,0590	0,0420
		-----	-----	2	-0,0060	-0,0370
				3	0,0080	0,0110
<i>GARCH variance</i>		-0,1744	-0,1358	4	0,0050	0,0020
		-1,8604	-1,4875	5	-0,0130	-0,0090
		0,0629	0,1370	6	-0,0170	-0,0370
				7	0,0220	0,0120
<i>Fitted values</i>		0,2361	0,1802	8	-0,0020	-0,0050
		2770901	2208824	9	-0,0070	0,0020
		0,0000	0,0000	10	0,0000	0,0050
<i>Predicted volatility</i>		3,6435	3,3596			
		187,9552	245,1120			
		0,0000	0,0000			

MONETARY RELATIONS OF FRANCE AND GERMANY – IMPACT ON EUROZONE

Vladan Hodulák¹, Oldřich Krpec²

¹Masaryk University, Department of International Relations and European Studies, Jostova 10, 602 00 Brno, Czech Republic
email: hodulakv@gmail.com

²Masaryk University, Department of International Relations and European Studies, Jostova 10, 602 00 Brno, Czech Republic
email: okrpec@gmail.com

Abstract

This paper discusses the thesis that the main danger for Eurozone survival does not lie in the areas that most economists have focused on; that is, it lies neither in insufficient regulation of the financial sector (banking union) nor in fiscal irresponsibility of the European governments (fiscal compact). The Eurozone technically has unlimited financial resources at its disposal to solve its recent financial problems, but the potential threats are rather of a political origin. The most important challenges are the distinct expectations that the strongest European economies harbored before the foundation of the Eurozone. The French sought to gain more autonomy in the conduct of their domestic economic policy, which had been impeded by external constraints, particularly exacerbated by German monetary policy. The German goal was to prevent permanent upward pressure on their currency, which had been undermining their export-led economic model. These distinct expectations did partly influence the institutional arrangement of the Economic and Monetary Union. However, the essence of the Franco-German conflict has not been adequately addressed and we hold that the Eurozone in its current setting is not able to fully resolve it. That being said, the ECB can employ means that could allow it to postpone the solution for a very long time.

Keywords

France, Germany, Monetary Policy, Eurozone, Monetary Integration.

JEL Classification

E42, E52, F55, F59.

1 A breakdown of the current situation (delineation of the key challenges)

This paper aims at picturing the development in the EU by focusing on the Franco – German relations as of the financial crisis embarking in 2008. We will describe the current situation and identify the key challenges and present the scenarios of the future development.

The world financial crisis had intensified the problems which had been appearing in the European economy for a longer period of time and demanded from the EU states to take a particular stance in this regard. The first problem was an exceeding exposure of the European banks to the credit - related risks, the second problem was a measure of the public debt which was a result of the specific institutional setting of the Eurozone. The problems with the long term imbalances of the member states' balances of payment within the Eurozone are somewhat sidelined, which is, ironically, the key challenge in terms of the long term functioning of the Eurozone.

Firstly, concerning the *issue of the banking sector*. Paris and Berlin had taken a similar stand how to solve the banking crisis. Both states had at the critical point decided to assist its banks, while insisting on averting similar events in the future by forming the banking union and taming of speculative capital flows through the financial transactions taxes (Inman, 2011). Establishment of the banking union was approved at the meeting of the European Council in December 2012 and it was agreed to enter into effect from 2014.

In terms of the Eurozone functioning as a whole, the difficulties of the banking sector do not present a fatal problem. As the lender of last resort that disposes with de facto unlimited resources, ECB can rescue any bank or any state which gets into problem by rescuing its banking sector (Sojka, 2010). Bailing out of any entity can, however, lead to the fundamental redistributive effects, which is why it depends on a political will. It is likely to expect that the states that are not important for the system, such as, for example, Cyprus, can serve as an example to deter others and that they will be

treated harshly. The states important for the system which face problems in the banking sector, such as Spain and, possibly, France, will be likely treated in a much more moderate manner. A change of rules or of their interpretation would not in their case be disqualified either.

Among all the problems related to the Eurozone functioning, *the debt crisis* has attracted the most attention in the recent years. It is the specific problem of states which pay in EURO. As suggested in the theory (Krpec and Hodulák, 2013), states owing in their own currency do not have problems in the majority of cases, while the evaluation by rating agencies is usually irrelevant for them. It is either the Eurozone countries or the countries which allowed its important economy sectors to get into debt in a foreign currency (Latvia, Hungary) that have stepped into serious debt problems and, in that manner, met external limitations which even a monetary sovereign state could not overcome easily (Wray, 2012).

Germany insists on preventing further problems related to the Eurozone states' financing and on implementing the policy of austerity measures. For that reason, Germany had asked for a more restrictive version of the Stability and Growth Pact, which resulted in signing of the Fiscal Pact by the majority of EU states in 2012. A newly established European Stabilization Mechanism (ESM) was accordingly associated to the Fiscal Pact. States with financial difficulties would have an access to the ESM funds only in case they would be willing to implement the requested austerity reforms and to abide by the Pact rules. As of the commencement of the financial crisis in 2008, Germany has been intensively trying to impose progressively stronger restrictions of budget – related decision making mainly in the southern wing of the Eurozone (Kregel, 2008). Based on the experience with the original Stability and Growth Pact, which had proved to be inefficient, the Germans utilized the Fiscal Pact to enforce the obligation of each state to accept the laws that limit their budget deficits. France takes much more reserved stance towards the Fiscal Pact.

The ECB plays an absolutely decisive role in the resolution of the Eurozone crisis. Its role has been changing in a gradual pace. Initially, the ECB had in 2010 introduced the program of the limited bonds purchase (program SMT), while, since September 2012, it has decided to move to their unlimited purchase at the secondary market (program OMT). The ECB had in that manner de facto performed a monetary financing prohibited by the EU Treaty under the veil of maintaining financial stability (Hampl, 2012). The ECB's decision on the unlimited purchase of bonds means the fundamental defeat for Germany. From the beginning, the Germans have perceived the enhancement of its role in a very inimical manner and the German representative was the only who voted against it. Officially, purchase of a country's bonds is tied to its request for help from ESM and adoption of the austerity measures. The purchase decision is, however, de facto in the ECB's competence.

We should also note that the EU as a whole will always be technically solvent, because the ECB is capable of creating practically unlimited amount of money. However, without its help, individual states can become insolvent. The dynamic of the recent years demonstrates that, the greater problems it has, the progressively more does the Eurozone break the ban on monetary financing. Germany strives to stop the whole trend, however, it had to yield because its incomppliance would likely lead to the dissolution of the Economic and Monetary Union. It is clear that, as a creditor, Germany aims at disabling monetary financing of debts for it could lead either to the moral hazard or potentially real reduction of its financial claims due to inflation. The first variant appears as the likely outcome, which the Germans try to counter, for example, through the means of the Financial Pact. The unbalance of the balances of payment between the Eurozone member states, however, cause by far greater problems in comparison to the budget deficits, without whose solution the previous remedial measures will end at best incomplete.

Furthermore, we should emphasize that the debt crisis is a purely European problem and, therefore, with a solution resting in Europe. The EU in any case does not need to borrow, for example, from China. The member states' debts are denominated in EURO and the ECB is capable of providing the necessary financing in case of urgency. We can, theoretically, imagine that the EU would need a loan in abroad, but only if it was indebted in a foreign currency or if it needed to assure imports from

importers who would not be willing to receive the payment in the European currency and, accordingly, that it would not be able to sell EURO at the international monetary market. However, both scenarios are highly unlikely in the near future.

The third and the most foundational problem which is, however, insufficiently addressed, is related to the *imbalances on the current accounts* within the Eurozone. This is a somewhat paradox if we consider that imbalances of the current accounts were the main topic of the European monetary negotiations already in the 1980s. It is not a coincidence that the states that got into problem had rather high current account deficits, while the states usually considered “deficit-responsible” had their current accounts in surplus. Germany is proud of its export surpluses and it perceives them as a proof that the chosen route is the right one. It asks from other states to, more or less, accept the German way of solution which rests on the internal devaluation - mainly the reduction of labor expenses (Bibow, 2013). On the contrary, the states of the Eurozone south wing and France complain that the imbalances are the result of the German neo-mercantilist policy and that they are unsustainable in the long run. German surpluses are possible only because other states are capable and willing to spend. If Germany, as their greatest creditor, asks the southern countries to balance their budgets, the former must accordingly admit that it would need to create a sufficient demand for their production and, in that manner, enable its current account turn into deficit.

The Eurozone crisis has also put France in a problematic place. The French current account is in deficit and the situation in the country has been slowly, but permanently getting worse. Such a state of affairs results from the chosen resolution of the Eurozone crisis and the German reaction it had evoked. Austerity measures in the states with budget problems mean that these countries need to start generating surpluses on their current accounts in order to even be able to repay their foreign debt.¹ This is indeed what has been gradually happening. If we take into account that Germany does all it can to maintain its surpluses, there must be someone who could absorb “the excessive” production. Given a moderately positive development of the current account of the whole Eurozone, it is apparent that a part of production is absorbed by the countries within the Eurozone which purposefully do not apply a neo – mercantilist policy and still do not have a debt problem, namely France. This has been facilitated by both high budgeted deficits of the French government and French banks’ credit creation and increased indebtedness of the French private sector.

We can assume that the socialist president Holland will wish to at least partially adhere to its program and refuse to introduce a German version of the austerity measures. That can lead to the further amplification of budget deficits, which at the time of the current account balance increase can contribute to the outflow of capital from the country (or increase in a foreign debt). In that manner, the similar dispute from 1982-83 is looming under the new institutional circumstances. This situation is very dangerous for France. It implies that it is gradually getting into similar problems like other states of the southern wing of the Economic and Monetary union. The contemporary development of international investment positions of Germany and France makes it pretty clear that, along with the lasting current account deficits/surpluses, Germany is becoming an important creditor and France is, on the contrary, getting into debt.

France is gradually finding itself in a paradoxical situation. Its long term goal in the monetary field was to constitute such a monetary system which would prevent a dominant position of any state, so France would not have to submit its economic policy to it. Due to the emergence of EURO, France succeeded in eliminating only the symptom (a strong German mark), but not to resolute a core of the problem – German tendency of sustaining permanent current account surpluses. During the crisis in 1983 or 1993, France had always had an option between a monetary sovereignty and continued integration, where it had in both cases chosen the latter. However, setting the rules of the Economic and Monetary Union based on the German ideas has gradually become a strategic problem for France

¹ It is a simplification which, however, well correlates with empiric data. It is theoretically possible that the state with a high foreign debt generates sufficient level of incomes as a result of a high domestic economic growth drawn by a domestic credit creation. In such a scenario, those states could allow themselves to keep very moderate deficits of their current accounts for a long period of time.

(Cottle, 2013). In case its difficulties get more severe, France's willingness to stay in the system, which it helped establish as one of the main actors, is questionable, as this systems fails in its original function – i.e. binding Germany.

The present situation in the EU is even more complex for it requires cooperation between the conservative German government and socialist French government. In terms of the long term development, that is the worst possible constellation. Based on the historical retrospective, we can make the following preliminary conclusion regarding the development of the German – French relations. The two states have great difficulties to make compromises in their economic policies at critical moments. The tendency to take a path of least resistance prevails. In the past, this was the broadening the ERM fluctuation band; now it is the transformation of responsibilities in the ECB. Such an approach, however, majorly only postpones the actual resolution of the problem.

2 Scenarios

There are three main scenarios of the future development of German – French relations. The main observed indicator in scenarios is the development of the current account imbalances. The analysis is primarily directed to the development of the French current account, because France is currently at much more vulnerable position than Germany. The analysis is not primarily focused on budget deficits, albeit that indicator, naturally, plays an important role. Budget deficits themselves, however, do not have to pose an international problem. Moreover, due to the ECB politics, it was indicated the bank would employ de facto monetary financing, if necessary, and that it would technically (but not politically) solve any problem related to the public debts. The current account deficits are a problem by definition itself, they reflect the change of financial claims and obligations of individual countries between themselves and, in that manner, they have a strong conflict potential. Unlike the deficits of public budgets, they need to be solved in the long term horizon.

Table 1. Scenarios

Scenario	description
<i>Convergence of interests</i>	France's adjustment through the austerity measures Germany's adjustment through the demand stimulus Introduction of the balancing transfers External demand stimulus
<i>Status quo</i>	Maintenance of the French deficit level through the combination of measures Using the role of ECB, increase in German claims Germany refusing the further increase in claims
<i>Divergence of interests</i>	ECB refusing to finance the deficits of the French current account

Source: authors.

2.1 Scenario No. 1 – convergence of interests

The first scenario counts with a gradual successful turnover of the French current account trend of development by finding the positions matching the Germany's ones. That can take place in several ways which will be elaborated below in more details. The realistic scenario then can take the form of the combination of individual subscenarios.

The first manner the convergence of interests and settlement of imbalances can occur is to adopt the similar solution like during the 1982/83 crisis, i.e. France's submission to the German leadership. This scenario presumes the settlement of current accounts by the French implementation of the

austerity measures. That can take place in two ways. Either the growth of the private debt would be limited or the level of budget deficits would be lowered. Whatever the case, it would in the short term result in a decreased standard of life of the greatest part of the French society, which would likely cause intrastate tensions. France has a strong tradition of an active engagement of different political movements, whereby a tough austerity policy could destabilize the country. According to his announcements, President Hollande seeks to lower deficits of the government budget under 3% GDP. He intends to achieve the latter both through the means of restricted expenses as well as increased tax burden for the rich (John and Rinke, 2013). The aftermath of this policy is that France would experience the capital outflow. Given the unfavorable prospect of the French GDP development, it is very unlikely that Hollande will succeed in reaching a 3% limit. Even if the French leadership succeeded in implementing the sufficiently austerity measures that would strengthen the French competitiveness (Münchau, 2014), the impacts of the chosen policy for the indebted countries of the southern wing should be reconsidered. Due to the French policy, leading to the restriction of the current account deficits, these countries would probably experience a turndown of another channel which currently enables them to at least partially repay their loans.

Another possible solution is that Germany changes its politics. As an important net international creditor, Germany can allow itself to implement a significant demand stimulus that would enable to lower its high levels of the current account surpluses, which would certainly lead to the improvement of the balance in Eurozone southern wing and France. What challenges this scenario is the level of the German public debt that is very similar to the French one. A more extensive budget stimulus on German side is, for that reason, unlikely even in case the left wing won the elections. It is the German private sector that would need to generate the demand stimulus, for example, through the increased loan creation. Development of the private debt in last few years does not give much hope in this direction, as the German demand has been on a slow rise in the recent years thanks to the stagnation of the real incomes of the majority of the German society.

The third manner to find the joint stand and to solve balance of payment imbalances can be found in the emergence of the actual fiscal union and introduction of massive transfer payments (Krugman 1999). Factually, it is the solution similar to the one presented by the Marshall Plan and which exists within every individual state.

Within a state, there is a similar imbalance between the imaginary regional current accounts as it is between the states. In the majority of states, however, the massive transfer payments occur between the regions which level up these imbalances.² If the EU is to perform the role of the fiscal federation, its budget would have to multiply in order to, at least partially, approximate to the USA federal budget. These financial resources would then have to be directed to the states with the largest current account deficits. The USA, for example, for purpose has its military bases in the states with the largest deficits on their imaginary current accounts, by which they benefit from an income of resources and have their deficient current account balanced by an inflow of investments and transfers from the center (Varoufakis and Holland, 2011: 64-65).

We should also mention the Eurobonds in relation to the fiscal union. Their idea is to reduce the indebtedness risk and, consequently, to reduce interest rates under which countries take loans. It is self – evident that the Eurobonds are the logical choice in case of the actual fiscal union emerged. However, their role is problematic without a proper agreement. The ECB can force lower interest rates through its OMT program. The program is, however, intended for states in the state of crisis, meaning that the Eurobonds make sense in case the ECB does not decide to apply them broader. Their potential emergence would likely signify a significant political gesture. However, that would not mean the resolution of the main Eurozone problems.

² There are also other assistant channels of how to settle regional current accounts imbalances over time. One of them is the interstate migration. The increased migration can also help at the EU level, but given its permanently very low levels, it is not to expect that it could bring a foundational turnover in the present trend of development within the Eurozone.

2.2 Scenario No. 2 – maintenance of status quo

The second scenario presents the ways of keeping the status quo. That means that France would uphold its state - centered model of the economic policy and conduct its left – oriented policy directed to the demand stimulus and that Germany would continue in its conservative economic policy turned to the austerity and maintenance of an exceedingly high current account surpluses. Again, a three subscenarios can be identified, while the actual development can take the form of the combination of their separate characteristics.

In the *first case*, let us consider a significant growth of the current account surplus at the level of the whole Eurozone. Due to the latter, Germany could maintain its surplus, while the deficits of the southern wing and France would go lower, potentially even turn into surpluses. This development should come as an effect of a demand stimulus from abroad or significant weakening of EURO. The USA on regular basis assumes a role of consumer of last resort, by which it had assisted, for example, the resolution of the German – French tensions both in 1983 and 1993. The USA has succeeded to overcome the recent economic crisis rather successfully, however, the voices calling for implementation of the austerity measures alike to the European ones grow stronger so, in consequence, one cannot overly rely on the demand stimulus arriving from the USA.

At the beginning of 2013, the debates regarding the formation of the Transatlantic Free Trade Area were revived. The Eurozone might, in result, obtain a particular market share at the expense of China and other Asian countries, which would lead to the increase in the European current account surpluses. With regard to the absence of significant barriers between the USA and the EU in the field of trade with industrial products and with a number of services, however, the final outcome will certainly be rather insignificant. Very likely, liberalization will not affect the fields where a notable trade growth might be considered because of their political sensitivity (typically agriculture). However, formation of the Transatlantic Area could have a significant moral and political effect and, therefore, help resolving some internal European problems by enabling a smoother reaching of compromises. Besides the USA, there are also other countries that can be considered for triggering a demand stimulus. In the first place, we need to mention China, whose demand for European imports is on rise. The states of the South America (especially Brazil and Argentina) and Japan might be of help as well. The majority of mentioned countries have, however, learnt their lesson from the indebtedness and financial crisis that the developing countries had experiences in the 1980s and 1990s and they have been making a great effort to keep their current accounts at least in balance. They do that both through the means of various administrative import barriers as well as by controlling the value of their currencies. The typical example is Brazil that intervenes upon every more notable appreciation of its currency.³

The Eurozone can increase its own competitiveness (and, therefore, current account surpluses) if the ECB manages lowering the value of EURO in relation to other world currencies. As expected, France is seeking to implement the politics of EURO depreciation at the international financial markets, whereas Germany, however, stands against that policy and experiences no significant EURO depreciation.

The *second subscenario* counts on bridling the trend of the increasing current account deficit in France. France can succeed in sustaining the current account deficit within the range between 1 and 3% GDP. Such a development would have to lead to the growing pressure on the government by creditors at the time of positive constellations (i.e. economic stagnation in the EU, in the worst case). President Hollande would have to limit a demand stimulus and redistribute currently available resources through the reform of taxes. Further development would depend on the development of a total country's debt. If French GDP would rise in a sufficient pace so that a ratio of a total government

³ Interventions that aim at depreciating the domestic currency can be theoretically implemented interminably, while interventions that aim at strengthening the domestic currency are limited by a number of foreign exchange reserves and access to a credit denominated in foreign currencies.

debt to GDP would grow only slowly or not at all, then France could continue such a policy until the next elections. A likelihood of such a scenario is somewhat weakened both by estimated poor economic growth of France as well as high government debts.

The *third subscenario* assumes that France decides to carry out a large fiscal stimulus which would result in a rising current account deficit. In such a situation, it is in the short term to expect at least the increase in the public debt along with the increase in interest rates in case of French bonds. France could get into similar situation as Italy and it would have to ask ESM and ECB for help. In this part, we will assume a passive role of Germany, while we will add a tough German reaction in the forthcoming part. France as the second largest EU economy has a much larger influence and it is capable of implementing a far greater “adjustment” of the Eurozone rules of functioning. In cooperation with the states of the southern wing, it might succeed in enforcing a purchase of its bonds (and, therefore, reduction of interest rates) by the ECB under very moderate terms. It is clear that, should be France threatened by a direct crisis with state budget financing, it would cause a massive capital outflow from the country. However, the Eurozone has already experienced such a situation, as demonstrated by mutual balances of the central banks within the European payments system TARGET 2. It provides evidence that, together with the mounting financial problems of Spain and Italy, an outflow of capital from these countries and their relocation to Germany took place.⁴ That was revealed upon the increased number of Bundesbank’s financial claims on the rest of the Eurozone. Once the OMT program was announced, the trend reversed, the risk of the Eurozone disintegration was commenced in a timely manner and a part of a short term capital started returning to Spain and Italy.

There are several similarities of the contemporary development with the one in 1992. In both cases, it involved massive transfers of short term capital related to the uncertainty in international financial markets. In both cases, central banks were compelled to intervene, whereas the greatest burden was carried by the Germans. However, there are important differences between the two events. In 1993, Germany decided to reduce further interventions, which resulted in the broadening of the ERM fluctuation band, while such a decision (i.e. unilateral refusal of OMT) would today probably mean the dissolution of the Eurozone. In relation to the recent development, we should also mention another fact. As the ECB had announced a potentially unlimited purchase of bonds within the OMT program, Bundesbank can in that manner theoretically accumulate financial claims on other banks in the system for a very long period of time. In reality, of course, it is very unlikely, although this scenario should not be disqualified in the short term perspective.

2.3 Scenario No. 3 – divergence of interests

The third scenario presents a possible development in case the French and German interests diverged. With respect to the current governmental constellation in both countries, we can in terms of development consider that both countries sustain at their current positions and that they are unwilling to make compromises in case the French problems with the current account got more severe. The scenario presumes that France would decide to support her economic growth through the domestic demand stimulus, while Germany would continue in its restrictive budget policy. In that manner, we speak of an analogous situation to the one from 1982/83. What speaks in favor of this scenario is the fact that both governments are answering primarily to the local inhabitants and that they could lose their profile if they opted to change their long term pursued strategies. This scenario is, however, counterbalanced by a weight of the European integration project, making the disintegration of the Eurozone a little likely scenario.

Scenario No. 3 is founded on the same development like the last subscenario in the previous part. That means that creditors would react on the French demand stimulus by downgrading the French bonds, which would lead to the growth of required interest rate. France would have to turn to ESM

⁴ And other states, including the countries outside the Eurozone, significant resources flew, for example, to the Great Britain, which makes sense given the fact it is a monetary sovereign state, moreover, with a strong financial sector centered in the City of London.

and ECB for help. Unlike the previous chapter, here we presume that Germany would not play a passive role. In that case, there are two options to consider.

In the first place, Germany would stand against French effort to avoid the agreed rules and the ECB would together with ECM request extensive austerity measures. France would have to either accept the requested measures, which would lead to the first subscenario in the chapter devoted to the convergence of interests. Or it would decide to sacrifice EURO and return to the monetary sovereignty. Unlike, for example, Greece, France can afford such an order of events. It is the country with a developed energy sector, which is self – sufficient in food and has a favorable geographic position. Realistically, the shift would not have to be so painful for France and its material costs could be even lower than in Argentina’s case in 2002. Due to the depreciation of the newly established franc, one could in the course of several years expect an increase in the French export capacity and a pretty high economic growth. Of course, in the political realm, the situation would be entirely different. For the EU, such a movement would mean an enormous blow from which it might not fully recover. There is a small likelihood that EURO would survive without France, whereas other Eurozone states would suddenly have to face a much more competitive France. Situation would not have to be critical in case the integration level returned to the level from the start of the 1990s. In the midterm, departure of France and the following dissolution of the Eurozone would mean a much greater problem for Germany. German currency would probably appreciate, current account surpluses would disappear and the previous policy of the increasing competitiveness by reducing domestic expenses would under new conditions lead to much greater tensions inside the country.

The second case calculates with the situation where France would bend the Eurozone regulations (or their interpretation) in its own favor, but Germany would not be willing to tolerate it and it would return to mark. The outcomes would be probably practically the same like in the first case.

In case the Eurozone collapsed, the current balance of TARGET2 system would be a problem as it de facto encompasses the mutual debts of individual central banks. Moreover, it is to expect that these amounts would steeply rise shortly prior to the Eurozone disintegration. Disputes regarding the settlements of financial claims would probably present the greatest problem in an effort to sustain a maximum level of integration. Like in the case of abandoning the Eurozone, it holds true that, in the midterm horizon, the French position is rather favorable while the German one is more vulnerable.

3 Conclusion – evaluation of each scenario

This section is divided into two subject parts. In the first part, we will focus on the general understanding of the main problematic points of the future development. In the second one, we will comment on each scenario.

The submitted scenarios are elaborated focusing on the emergence of a balance of payment disequilibrium. Historical experience indicates that it is exactly these imbalances that accompany the main historical turns in the interstate economic relations. Imbalances can be solved in two main ways.⁵ The first way is to depreciate the domestic currency. This move usually leads to the increased competitiveness by reducing the production prices for foreign consumers, while, in the short term, the local inhabitants experience a lowering of their living standards. The effect of a depreciated currency is usually, however, pretty broadly distributed and it does not exceedingly affect the basic living needs of the inhabitants. Furthermore, the major part of population accepts this situation as inevitable or non – discussable, which is why the adjustment through the depreciation of the domestic currency proves to be politically easier to implement. This sort of adjustment is not applicable in the

⁵ Depreciation of domestic currency and internal adjustment have been the most frequently applied methods of adjustment at least since the end of the Second World War. However, there is a number of other solutions. A frequently used solution in the past was to attack the country with the current account surpluses, such as, for example, the Opium Wars, in which the Great Britain attacked China precisely due to the trade deficits. Another solution is a massive emigration of population, which is the form of adjustment currently experienced in Latvia. In sum, we can conclude that alternative ways of adjustment do not imply too great risks, but they are presently unacceptable choices for the majority of states.

monetary union, although it had been quite a common practice in the past at the EC level, which can be showcased by the situation from 1982/83.

The second type of adjustment is internal devaluation, i.e. nominal reduction of domestic prices. The final effect is the same like in the case of depreciated currency, i.e. the increased competitiveness due to the drop of prices for foreign consumers; however, this process brings great economic and political challenges along. The main economic challenge is the growth of the real indebtedness – unlike wages; nominal debt level (mortgage, for example) in foreign currencies does not get lower, which leads to the increase in real debt burden and to the repayment problems. Internal devaluation is usually interwoven with the years of economic collapse or, at best, of stagnation. A country can prove evading an economic collapse in case it increased its export in a rather prompt and massive manner. However, that is a likely scenario only in the environment of general international economic boom. Under internal devaluation, the political challenges render enormous. Interest groups inside a country fight among each other for who would carry the greatest costs that the adjustment imposes. Each sector in the economy and each group seek to relocate the costs to others, which triggers strong political tensions. The latter is rising relative to the measure of economic collapse, which is usually connected to the internal adjustment. It was, for example, Argentina that had been struggling to execute an internal adjustment for several years, whereas this effort had led to the economic crisis and social decay that ended only after the state bankruptcy had been declared in 2002, which was already discussed. Germany had undergone a very successful internal adjustment at the start of this century, whereby it is its success that is, ironically, the source of those main problems the Eurozone is currently facing. For implementing such a policy, Germany had a well composed economic and social structure and, moreover, it was lucky that the whole action was conducted at the time of the strong global economic growth. The states of the southern Eurozone wing are presently with difficulties seeking for internal adjustment.

The members of the monetary union, by definition, cannot settle the external unbalance by changing the exchange rate, which is, ironically, for internal political reasons usually one of the simplest ways and which is the reason for being potentially appealing for some Eurozone states. Nonetheless, such a choice would logically imply a disintegration of the monetary union, which is the possibility covered by the scenario number 3. In our opinion, disintegration of the Eurozone is unlikely. There are enormous international political costs outweighing potential gains. France and Germany would probably opt for this step only in situation that poses a serious threat to the state. We can picture the situation in which the policy of austerity measures implemented from the outside would lead to the immense culmination of social tensions in France and to the paralyzing of the state apparatus similarly to what has been lately happening in Greece. It is likely that France would react more swiftly to such a development, especially if we take into account that, from the current perspective, France would return to monetary sovereignty rather easily.

Scenario No. 2 assumes that France would avoid undergoing the internal adjustment.⁶ In the first case, it is because an external demand stimulus would take place that would stop the previous trend of the increasing French current account. In our view, this is a pretty likely alternative; however, the growth of the external demand will probably not suffice to President Hollande in realizing his plans in the economic field. In accordance with the second subscenario, we expect that the government will have to impose particular austerity measures which, however, will not exceedingly culminate the social tensions in France. The third subscenario seems little likely to us. Both France and Germany will seek to escape it because it would imply an enormous rise of internal political pressure on the German government.

Scenario No. 1 takes into account an amicable resolution of the external misbalance. In the first case, France would undergo the internal adjustment without severe problems. Given the previous historical experience with the policy of internal adjustment, the fact that we are in the phase of

⁶ In the short run, Germany does not have to undergo adjustments. As a country with high surplus levels at its current account, the Germans are only hardly vulnerable in the short term.

economic stagnation and if we consider the specifics of the French society, then we speak of a very unlikely alternative. The second case counts on the German assistance. This scenario is very dependent on composition of the German government. In case of a notable victory of the political left in the future, it is a possible one. The last subscenario presents a permanent solution of external imbalances within the Eurozone and we recommend it. However, it is a little likely scenario for cultural and political reasons.

The most probable variant of the midterm development is a mutual impact of features found inside a few described scenarios. The second subscenario of the second scenario will be the foundation. It is to expect that President Hollande would have to abandon his promises and that the demand stimulus by the French government will be very limited. Germany will probably somewhat loosen its budget policy in order to reduce the external economic pressure on its south – western neighbor (Parkin and Donahue, 2013). It is to expect that the world demand will grow, which will be contributed by the USA, China, states of the South – Eastern Asia and South America. The increased world demand will result in the increased current account surpluses of the entire Eurozone and moderated pressure on France. A downswing trend of its current account will cease, however, the overall account will stay in deficit. The European economy will be probably stagnating for another several years. A more vigorous solution of the imbalance issue will likely arrive only in a further future. The present Eurozone has means how to keep postponing it for a significant period of time.

References

- [1] Bibow, J., 2013. On the Franco-German Euro Contradiction and Ultimate Euro Battleground. *Contributions to Political Economy*, vol. 32, issue 1, pp. 127-149.
- [2] Cottle, D., 2013. France Has Never Liked Its Euro Too Strong. *The Wall Street Journal*. [online]. [2014-07-15]. Available from: <http://blogs.wsj.com/moneybeat/2013/10/23/france-has-never-liked-its-euro-too-strong/>.
- [3] Hampl, M., 2012. Evropská měnová integrace a postavení jejího bývalého hegemonu. *Politická ekonomie*, vol. 60, issue 6, pp. 707-722.
- [4] Inman, P., 2011. Eurozone crisis threatens to spread to France as Paris is warned over its debts. *TheGuardian*. [online]. [2014-07-15]. Available from: <http://www.theguardian.com/business/2011/nov/10/eurozone-crisis-threat-to-france>.
- [5] John, M. and A. Rinke, 2013. Germans irked as Hollande says EU cannot dictate French reforms. *Reuters*. [online]. [2014-07-15]. Available from: <http://www.reuters.com/article/2013/05/30/us-france-germany-idUSBRE94T0WE20130530>.
- [6] Kregel, J., 2008. The discrete charm of the Washington consensus. *Journal of Post Keynesian Economics*, vol. 30, No. 4, pp. 541-560.
- [7] Krpec, O. and V. Hodulák, 2013. Konkurenceschopnost národních ekonomik – kritická reflexe konceptu. *Politická ekonomie*, vol. 61, issue 6, pp. 752-770.
- [8] Krugman, P., 1999. Balance Sheets, the Transfer Problem, and Financial Crises. *International Tax and Public Finance*, vol. 6, issue 4, pp. 459-472.
- [9] Münchau, W., 2014. The real scandal is France's stagnant economic thinking. *Financial Times*. [online]. [2014-07-15]. Available from: <http://www.ft.com/intl/cms/s/0/0a469808-7f6e-11e3-b6a7-00144feabdc0.html>.
- [10] Parkin B. and P. Donahue, 2013. IMF Backs U.S. Treasury in Criticizing German Exports. *Bloomberg*. [online]. [2014-07-15]. Available from: <http://www.bloomberg.com/news/2013-10-31/germany-strikes-back-at-u-s-criticism-over-economic-policy.html>.

- [11] Sojka, M., 2010. Monetární politika Evropské centrální banky a její teoretická východiska pohledem postkeynesovské ekonomie. *Politická ekonomie*, vol. 52, No. 1, pp. 3-19.
- [12] Varoufakis, Y. and S. Holland, 2011. *A modest proposal for overcoming the euro crisis*, No. 11-03. Levy Economics Institute.
- [13] Wray, R., 2012. *Modern Money Theory*. New York: Palgrave MacMillan.

ASSESSMENT OF THE PROGRESS OF WESTERN BALKANS IN THE ECONOMIC FIELD OF COPENHAGEN CRITERIA

Michaela Horúcková¹, Marian Lebieczik²

¹Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 73340
Karvina, Czech Republic
email: horuckova@opf.slu.cz

²Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 73340
Karvina, Czech Republic
email: lebieczik@opf.slu.cz

Abstract

The Copenhagen criteria are a collection of economic, political and legal requirements, on which the Union assess whether a country that wants to be a EU member is eligible to join the European Union, or not. Currently, there are eight countries aspiring to become members of the European Union and the EU in its reports annually evaluates the progress of these countries. Six of these countries represent countries of the Western Balkans, whose prospects of membership have been repeatedly reaffirmed by the Council. However, the full integration of the Western Balkans into the EU structures seems to be a long process since the progress of individual countries considerably differs. This paper aims to assess the fulfilment of the economic field of the Copenhagen criteria of Western Balkan countries over years 2006-2013 and to assess which of the following countries is closest to fulfilling this area of the accession criteria.

Keywords

Copenhagen Criteria, European Union, EU Enlargement, EU membership, Western Balkans.

JEL Classification

F15, F50, F53.

1 Introduction

The European Union (EU) is a unique economic and political community of 28 countries where all these countries have committed to promote fundamental values on which the EU is founded (see Article 2 of the Consolidated version of the Treaty on European Union). According to the Article 49 of the Consolidated version of the Treaty on European Union, any European country which respects the values mentioned in the above mentioned Article 2 (for instance, the respect for human dignity, freedom, democracy etc.) and which is committed to promote them may become a EU member. But this is not enough and the EU membership is requiring, among others, the fulfilment of conditions of eligibility, so called Accession or Copenhagen criteria agreed upon by the European Council in June 1993 on Copenhagen summit. These criteria were strengthened by the Madrid Summit in 1995.

Copenhagen criteria were established in response to the collapse of the Soviet Union, when the former Eastern European countries were seeking to join the European Union. Those criteria consist of three main areas: *political criteria*, *economic criteria* and *the ability to take on the obligations of membership* well known as *Acquis Communautaire*, which also includes the adherence to the aims of political, economic and monetary union (European Commission [online], 2011). In 1995, the fourth criterion was found and this stress out the necessity of gradual and harmonious integration through the “*development of the market economy, the adjustment of their administrative structures and the creation of a stable economic and monetary environment*” (European Parliament, 1998). This criterion used to be known as administrative criterion. Both summits dealt with the issue of enlargement of the EU. On Madrid summit, the European Council concluded that “*enlargement is both a political necessity and a historic opportunity for Europe*” (European Parliament [online], 1998) and pointed out that enlargement is the only thing that could ensure the stability and security of the continent and can bring the new prospects for economic growth and general well-being for both side – applicant countries and current EU members.

Currently, there are eight countries applying for EU membership (European Commission, 2014). In terms of their actual development they are divided into two groups – *potential candidate* and *candidate countries*. There is also the third group of countries, so called *acceding countries*, but currently any of those countries has this status. As suggested by the title of the paper, this paper deals with the Western Balkans and for this reason author examines six countries – Bosnia and Herzegovina (BaH) and Kosovo¹ as potential candidate countries and the rest of Western Balkans belonging to the candidate countries – Albania, The Former Yugoslav Republic of Macedonia (hereinafter only Macedonia), Montenegro and Serbia.

Given that the extent of the Copenhagen criteria is wide, this paper aims to assess only the fulfilment of the economic part of the Copenhagen criteria over years 2006-2013 and within the comparison analysis to find out which of the examined countries is in terms of economic accession criteria the most ready for EU membership. These criteria are twofold – *the existence of a functioning market economy* and *the capacity to cope with competitive pressure and market forces within the Union*. A being a functioning market economy requires to be macroeconomically stable, free interplay of market forces, free market entry and exit, adequate legal system and sufficiently developed financial sector and being competitive in the Union requires the existence of a functioning market economy, sufficient human and physical capital, adequate sectoral and enterprise structure, state influence on competitiveness and economic integration with the EU.

2 Basic characteristic of the Western Balkan countries and their relations with the EU

The European Union, as a global actor, supports peace and prosperity and it helps to overcome conflicts around the world. That is one of its main missions and it does this through its policies within the area of external relations and foreign affairs including common foreign and security policy, enlargement policy, etc.

At the end 20th century, after the collapse of the Soviet Union and the related disintegration of the former Yugoslavia, countless wars for independence and civil wars occurred in the Western Balkans. These conflicts took place directly behind the EU only few decades ago and for this reason the EU makes an effort to integrate these countries into its structures to make such conflicts unthinkable in temporary world and the EU uses the enlargement policy in this matter as a tool for promoting peace, stability, freedom and economic prosperity (Horúcková and Lebieczik, 2014).

All Western Balkan countries have been offered Stabilisation and Association Agreements (SAAs) within the Stabilisation and Association Process (SAP) established in 1999 and all these countries have a clear EU perspective. It all has started in 1997, when “*the conditions for establishing contractual relations with these countries were first laid down in the Council Conclusions of April 1997*” (European Union: External Relations [online], 2014). In June 2003, the EU-Western Balkans summit in Thessaloniki took place and on this summit, the European union has committed to fully and effectively support the integration of the Western Balkans into its structures. The Council reaffirmed the European perspective of Western Balkans in December 2006 and stressed that “*each country’s progress towards the European Union depends on its individual efforts to comply with the Copenhagen criteria and the conditionality of the Stabilisation and Association Process*” (Council of the European Union, 2007, p. 3). Since that time, the Council repeatedly expressed its strong support for integration of the Western Balkans into the European Union.

2.1 General information about Western Balkans and basic economic overview

At the first glance, it may seem that Western Balkans is a group of countries that have similar history, culture, economy etc. and that these countries are very similar to each other, but that is not such a truth since as is shown in table 1, there are many differences between these states.

¹ Under the United Nation Security Council Resolution (NSCR) 1244/99

Of course, the countries differ both in population and in land area, but there is also a considerable linguistic and religious diversity and varied ethnic composition of the population. Table 1 provides basic information on capital city, total area and population, major ethnic group(s), dominant religion(s) and official language(s) and currency in individual countries.

Table 1. General information about Western Balkan countries

	Albania	BaH	Kosovo	Macedonia	Montenegro	Serbia
Capital city	Tirana	Sarajevo	Pristina	Skopje	Podgorica	Belgrade
Area (km ²)	28 748	51 209	10 908	25 713	13 812	88 361
Population (mil.)	2.80	3.79	1.73	2.06	0.62	7.19
Major ethnic group	Albanians	Bosniaks Serbs	Albanians	Macedonians	Montenegrians Serbs	Serbs
Dominant religion	Islam	Islam Christianity	Islam	Christianity	Christianity	Christianity
Official language	Albanian	Bosnian Croatian Serbian	Albanian Serbian	Macedonian	Montenegrin	Serbian
Official currency	Lek	Convertible mark	Euro	Makedonian denar	Euro	Serbian dinar

Source: BusinessInfo.cz (2012), BusinessInfo.cz (2013), BusinessInfo.cz (2014a), BusinessInfo.cz (2014b), BusinessInfo.cz (2014c), BusinessInfo.cz (2014d), BusinessInfo.cz (2014e), Horúcková (2014), own processing.

The very brief economic overview of selected macroeconomic indicators is recorded in table 2. This table compares data from 2006 with data from 2012. Year 2012 refers to the increase in GDP per capita compared to 2006. However, the economic performance of these economies remains weak and insufficient in comparison with the average of the EU-28. In almost all countries, there was a decline in GDP in 2012 when the real GDP growth has been reaching negative values (except Albania and Kosovo). That was the after-effect of the global economic crisis that strongly affected mentioned economies, but countries despite the deceleration during and after the crisis finally came out of the recession in 2013 (Eurostat [online database], 2014). Nevertheless, the real GDP growth is not high enough to converge with the EU level. Price levels in these economies are increasing over years, but despite that fact, the price convergence with the EU has more or less kept at the same level. High unemployment remains a major problem in all economies. In Kosovo, the unemployment rate even scored 35% in 2012. On the other side, the positive change regarding the labour force is seen in the development of the average nominal wages and salaries, where all countries recorded in average about 50% increase from 2006 to 2012. In Montenegro, the wages and salaries even increased by up to 98%. With the exception of Albania and Montenegro, there is deterioration in the inflows of FDI inflows. The export performance of the countries in 2012 with respect to 2006 in almost all countries increased (with the exception of Bosnia and Herzegovina and Montenegro).

There are many factors affecting the standard of living, such as the level of income, employment rate, poverty rate, quality and availability of education, life expectancy, access to quality healthcare, infrastructure, inflation rate, gross domestic product and many others. As is shown in table, there was not only the growth in the economic level between these years, but there was also a gradual increase in living standards of population, which is also demonstrated by the fact that average wages and salaries rose more sharply than the price level.

Table 2. Basic economic overview (2012)

Country	Albania		BaH		Kosovo		Macedonia		Montenegro		Serbia	
Indicator	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012	2006	2012
GDP per capita (EUR)	2,404	3,344	2,594	3,419	1,875	2,650	2,566	3,651	3,443	5,386	3,144	4,134
GDP per capita (PPS)	5,500	7,800	6,300	7,500	n/a	n/a	7,100	9,000	8,400	10,300	7,700	9,000
GDP per capita (PPS), EU-28=100)	23	30	27	29	n/a	n/a	30	35	36	41	33	35
Real GDP growth rate (%)	5.0	1.3	6.2	-0.7	3.4	2.7	5.0	-0.4	8.6	-2.5	3.6	-1.5
Inflation rate (%)	2.4	2.0	6.1	2.0	0.6	2.5	3.2	3.3	2.9	2.5	11.7	7.3
Consumer price index (2005=100)	102	122	106	125	n/a	n/a	103	124	103	130	n/a	n/a
Comparative price levels (EU28=100)	51.4	51.0	52.6	53.7	n/a	n/a	43.7	46.5	56.4	55.7	49.7	51.2
Price level indices (EU28=100)	41.7	44.1	44.8	48.5	n/a	n/a	35.9	40.0	40.8	48.9	41.0	45.5
Average nominal monthly wages and salaries (EUR)	234	360	293	416*	n/a	n/a	221	340	246	487	377	508
Unemployment rate (%)	12.4	13.9	31.8	28.6	33.9	35.1	36.0	31.1	24.7	19.7	20.8	23.9
FDI net inflows (% GDP)	3.6	7.5	6.8	2.1	9.4	4.5	6.5	3.0	0.0	15.3	17.0	0.9
Export of goods and service (% GDP)	25	33	37	31	14	18	47	54	48	44	30	40

* Data available only for 2011, n/a – data is not available

Source: Eurostat (2014) and The World Bank (2014), own processing.

2.2 Western Balkan Countries on their path to the EU membership

As was already mentioned above, there are six countries applying for membership of the European Union and each country progresses towards this membership at its own pace, depending on various factors and circumstances.

The first official step towards the EU is the signing of the SAA agreement and the whole process ends when the country signs the accession agreement and becomes a EU member. As is shown in table 3, there is only one Western Balkan country that does not yet have contractual relations with the European Union and this is Kosovo. This arises primarily from the country's declaration of independence in 2008 what means that the country is quite “young” and despite some progress over last years it still facing many problems such as its recognition when, for instance, only 23 of 28 EU members and 109 of 193 United Nations countries do recognize Kosovo’s independency. Nevertheless, the country has increased its capacity to meet obligations stemming from a SAA (European Commission, 2012b).

But there is also another country that considerably lags behind other countries of the region in the integration process and as is evident from the table, it is Bosnia and Herzegovina whose reform efforts are – unlike Kosovo – insufficient or none.

Actually, only one country from the Western Balkans has already begun the negotiation process what moves the country closer to the EU membership and that is Montenegro. The country has opened nine of thirty-five chapters and provisionally closed two of them (state of play: 31 March 2014) (European Commission [online], 2014).

Serbia, Macedonia and Albania are almost at the same level in terms of their path towards the EU membership – they all are candidate countries and any of these countries has not yet begun the accession negotiations.

Table 3. Progress of the Western Balkan countries on their path to the EU membership

Country	SAA signed	SAA enters into force	European partnership	Application for EU membership	Candidate status	Accession negotiations	Accession agreement
Albania	12.06.2006	01.04.2009	15.10.2007	01.04.2009	27.06.2014	--	--
BaH	16.06.2008	--	18.02.2008	--	--	--	--
Kosovo	--	--	--	--	--	--	--
Macedonia	09.04.2001	01.04.2004	18.02.2008	22.03.2009	16.12.2005	--	--
Montenegro	15.10.2007	01.05.2010	22.01.2007	15.12.2008	17.12.2010	29.06.2012	--
Serbia	29.04.2008	01.09.2013	18.02.2008	22.12.2009	01.03.2012	--	--

Source: European Commission (2014), own processing.

3 Assessment of the Western Balkans in terms of economic accession criteria

The Commission annually publishes documents titled Communication from the Commission to the European Parliament and the Council in which are devoted to the Enlargement strategy and Main Challenges in the given years. These documents deal with the key challenges affecting the enlargement process, pre-accession instruments addressing the key priorities, progress in the enlargement countries and agenda for the given period and last but not least these documents include the conclusions on the candidates and potential candidate countries, which will be the basis for the following part of this section, which deals with the fulfilment and comparison of the economic accession criteria between years 2006 and 2013.

As was already mentioned, the economic accession criteria are twofold. The first condition requires *the existence of a functioning market economy* and the second one requires *the capacity to cope with competitive pressure and market forces within the Union*. Both of this condition will be assessed in separate sub-sections. The last section of this part will be devoted to the main challenges for Western Balkans.

3.1 The existence of a functioning market economy

The fulfilment of the criteria requiring the existence of a functioning market economy is captured in table 4. There is shown that the progresses of countries in fulfilling of this condition significantly differ and reflects the progress captured above in table 3.

Albania is one of the countries that achieved at least some progress in every year. *Montenegro* is the same case as *Albania*. *Macedonia* is considered for well-advanced in terms of fulfilment of this criterion, made further progress during whole period but there are still areas, which need to be improved. Uneven progress is shown in case of *Serbia*, which has reached different level of progress in each year. For instance, in 2006 good progress was recorded and vice versa in 2012, there has been no progress. *Kosovo* and *Bosnia and Herzegovina* made very little, limited or uneven progress.

Table 4. The existence of a functioning market economy

	Albania	BaH	Kosovo	Macedonia	Montenegro	Serbia
2006	Some progress	Limited progress	Limited progress	Some progress	Some progress	Good progress
2007	Some progress	Little progress	Limited progress	Some progress	Some progress	Some progress
2008	Some progress	Uneven progress	Limited, uneven	Some progress	Some progress	Some progress
2009	Good progress	Little progress	Very little	Some progress	Some progress	Limited progress
2010	Some progress	Little progress	Limited progress	Some progress	Some progress	Some progress
2011	Some progress	Little progress	No progress	Some progress	Some progress	Some progress
2012	Some progress	Little progress	Good progress	Some progress	Some progress	No progress
2013	Some progress	Some progress	Some progress	Some progress	Some progress	Some progress

No progress = there has been no progress; *Little/limited progress* = only little/limited progress (minor changes) was made, the area is not advanced enough; *Some progress* = there is a progress, but still the further efforts are needed; *Good progress* = in the given area, good results were achieved; *Uneven progress* = progress cannot be unambiguously determined.

Source: Commission of the European Communities (2006), Commission of the European Communities (2007), Commission of the European Communities (2008), Commission of the European Communities (2009), European Commission (2010a), European Commission (2010b), European Commission (2010c), European Commission (2011a), European Commission (2011b), European Commission (2012a), European Commission (2012b), European Commission (2013), own processing.

3.2 The capacity to cope with competitive pressures and market forces within the Union

Table 5 shows whether the countries were able to cope with competitive pressures and market forces within the European Union. From this table is evident that *Bosnia and Herzegovina*, *Kosovo* and *Serbia* needs to make further reform efforts to fulfil this condition and currently, they are not able to withstand competitive pressures and market forces within the EU. *Macedonia* is the only country that has advanced considerably closer to membership in terms of this criterion and was able to meet this condition throughout the period. *Montenegro* as well as *Albania* has met this criterion in 2011.

Table 5. The capacity to cope with competitive pressure and market forces within the Union

	Albania	BaH	Kosovo	Macedonia	Montenegro	Serbia
2006	☒	☒	☒	☒	☒	☒
2007	☒	☒	☒	☑	☒	☒
2008	☒	☒	☒	☑	☒	☒
2009	☒	☒	☒	☑	☒	☒
2010	☒	☒	☒	☑	☒	☒
2011	☑	☒	☒	☑	☑	☒
2012	☑	☒	☒	☑	☑	☒
2013	☑	☒	☒	☑	☑	☒

☑ Country should be able to cope with competitive pressures and market forces within the Union

☒ Considerable further reform efforts need to be pursued

Source: Commission of the European Communities (2006), Commission of the European Communities (2007), Commission of the European Communities (2008), Commission of the European Communities (2009), European Commission (2010a), European Commission (2010b), European Commission (2010c), European Commission (2011a), European Commission (2011b), European Commission (2012a), European Commission (2012b), European Commission (2013), own processing.

3.3 Current progress and main challenges for Western Balkan countries in terms of economic accession criteria

The following part is devoted to the main findings on the current progress and main challenges for the individual Western Balkan countries (for more information see: Commission of the European Communities, 2006), Commission of the European Communities (2007), Commission of the

European Communities (2008), Commission of the European Communities (2009), European Commission (2010a), European Commission (2010b), European Commission (2010c), European Commission (2011a), European Commission (2011b), European Commission (2012a), European Commission (2012b), European Commission (2013)).

Albania has broadly achieved macroeconomic and price stability, has recorded the economic growth and further progress throughout the given period, but despite that progress, the country suffers by many problems that hamper its economic development and further progress to fulfil these economic criteria. Grey economy and informal sector remains a long-term problem as well as high unemployment. These problems are accompanied by the weak educational system that remains unable to equip the labour force with the skills needed by the changing job market. Although the investment and human capital have improved, their levels are still inadequate as well as the level of infrastructure and because of that there are shortcomings in business climate. Government deficits, current account deficits, and low export base persist and the weakness in the rule of law remains another of the major challenges.

Bosnia and Herzegovina is a country is specific administrative division of the country when the country is divided into the two entities – the Federation of Bosnia and Herzegovina (FBaH) and Republika Srpska (RS) and there is also a single administrative unit of local self-government existing under the sovereignty of Bosnia and Herzegovina – the Brcko District. This division has made a problem in fulfilling these criteria since there are different levels of government that remains problematic in terms of the consensus on economic and fiscal policy essentials even though there was some improvement. There is also a problem with the large and inefficient public sector with multiple overlapping competences on state, entity and municipal or cantonal level. Legal and juridical systems remain weak and needs to be reformed as well as the pension reform. Privatisation process should be reinvigorated to support the private sector and the business climate should be improved as well. Unemployment rate remains very high, labour market conditions are poor and structural rigidities, for instance, the high rates of social contribution or poorly targeted social transfers impede job creation. Deeply widespread informal sector also remains a concern.

Kosovo is a country that despite the reform efforts still reaches only little progress. Its progress is slow and it is necessary to continue the reform efforts to support macroeconomic stability, competitiveness, private sector, business climate, rule of law and it can be said that there is almost no area in which the sufficient progress would be made to fulfil these criteria. Country faces many important challenges such as really high unemployment (even the highest in region) or informalities and suffers from the regional problem and low economic development.

Macedonia is well advanced in terms of these economic criteria and even though there was a progress throughout the whole period, in some areas the country still remains weak and further efforts are needed. For instance, the country is facing – as well as in other Western Balkan countries – very high unemployment, but there are also other concerns such as rising deficits and public debt causing country's vulnerability, weaker sustainability of public finances, fiscal policy or large informal sector, informal sector, etc. But despite all these facts, the country is considered to be macroeconomically stable.

Montenegro is a country that was more severely affected by the global economic crisis in 2009. In that time, there was a deterioration of many economic indicators and slowdown in the reform pace. After a moderate recovery in 2011, the Montenegrin economy has decelerated and the country came out from recession in 2013. The political consensus on market economy fundamentals and economic policy was broadly maintained and in terms of macroeconomic stability the country performed weak in last years. Even though the state influence in the economy is limited, the business climate needs to be improved since there is widespread corruption and poor legal system and these things make the business climate unfavorable for other investment. Montenegro needs to strengthen its competitiveness to attract more investment and support productivity. The rule of law remains a concern as well as high unemployment. The economy's problem is also the informal sector, which

represents a major challenge.

Also *Serbia* was hit by the global economic crisis in 2009, in 2010 has started to recover and in the second half of 2012 has again recorded deterioration. These times affected the macro-stability and it also reflects the reached progress, which was limited in 2009 and there was even no progress in 2012. That situation caused a delay in reform efforts. The regional problems – high unemployment and large informal sector – still remain the major challenges. *Serbia* suffers from high state budgets. State interference in the economy and the number of state-owned companies are still very high – according to Arsić (2012) is estimated at about 1,300 companies under state control employing about 280,000 people, which is over 15% of formally employed. *Serbia* needs to make more effort to improve business climate, which remains a long-term problem.

4 Conclusion

To sum up, all Western Balkan countries made a certain progress on their paths towards the European Union. Some countries are more advanced than others, which is, *inter alia*, caused by the reform efforts, which were not too intense in some countries. Macroeconomic and price stability was in most of the countries largely maintained (except the time of global economic crisis where many economies experienced a significant deterioration). In most of the countries, the corruption, weak rule of law and legal uncertainty remained major obstacles to sustainable economic development. State influence in economies still remains high and delays in privatisation persist, which cause business rigidity and unfavourable business climate. There is an untapped potential of human capital and also infrastructure in many countries is not developed enough. The problem of very high unemployment is accompanied by the low qualification of human resources and is largely given by the high social security that hinders job creation. The large informal sector remains a concern. All these countries are facing many other challenges as high external but also governmental deficits, etc. Economic integration with the European Union remained largely high or increasing.

Only three countries of Western Balkans – *Albania*, *Macedonia* and *Montenegro* – currently should be able to cope with competitive pressure and market forces within the Union and in terms of the other criterion of economic accession criteria requiring the existence of the market economy, each country made at least a certain progress.

In terms of the economic part of the Copenhagen criteria, *Albania*, *Macedonia* and *Montenegro* made a notable progress whereas the reform efforts of *Bosnia and Herzegovina* were insufficient, so that the country is lagging behind the other countries of the region.

There are two other criteria that countries must meet before becoming an EU member, but given the intensity and depth of the persistent problems in the area of economic accession criteria, it can be stated that the integration of the Western Balkans will be a long-term process. The EU perspective is somewhat distant from these countries and since there are also many persisting long-term problems not only in the economic area of accession criteria, it is expected that these countries will not become EU members in the next 10 to 15 years.

5 Acknowledgement

This paper was supported by the Ministry of Education, Youth and Sports within the Institutional Support for Long-term Development of a Research Organization in 2014.

References

- [1] Arsić, M. 2012. Reform of State Owned and Public Enterprises. In: *Quarterly Monitor of Economic Trends and Policies in Serbia*. Issue 28. Belgrade: The Foundation for the Advancement of Economics (FREN), pp. 72-82.
- [2] BusinessInfo.cz., 2012. *Souhrnná teritoriální informace Černá Hora* [online]. [2014-06-30]. Available from: <http://services.czechtrade.cz/pdf/sti/cerna-hora-2012-11-27.pdf>.
- [3] BusinessInfo.cz., 2013. *Souhrnná teritoriální informace Kosovo* [online]. [2014-06-30]. Available from: <http://services.czechtrade.cz/pdf/sti/kosovo-2013-11-07.pdf>.
- [4] BusinessInfo.cz., 2014a. *Souhrnná teritoriální informace Albánie* [online]. [2014-06-30]. Available from: <http://services.czechtrade.cz/pdf/sti/albanie-2014-04-01.pdf>.
- [5] BusinessInfo.cz., 2014b. *Souhrnná teritoriální informace Bosna a Hercegovina* [online]. [2014-06-30]. Available from: <http://services.czechtrade.cz/pdf/sti/bosna-a-hercegovina-2014-04-01.pdf>.
- [6] BusinessInfo.cz., 2014c. *Souhrnná teritoriální informace Makedonie (FYROM)* [online]. [2014-06-30]. Available from: <http://services.czechtrade.cz/pdf/sti/makedonie-fyrom-2014-04-11.pdf>.
- [7] BusinessInfo.cz., 2014d. *Souhrnná teritoriální informace Srbsko* [online]. [2014-06-30]. Available from: <http://services.czechtrade.cz/pdf/sti/srbsko-2014-05-05.pdf>.
- [8] Commission of the European Communities. 2006. Communication from the Commission to the Council and the European Parliament: Enlargement strategy and Main Challenges 2006-2007. COM(2006) 679 final. [online]. [2014-06-30]. Available from: http://ec.europa.eu/enlargement/pdf/key_documents/2006/nov/com_649_strategy_paper_en.pdf.
- [9] Commission of the European Communities, 2007. Communication from the Commission to the Council and the European Parliament: Enlargement strategy and Main Challenges 2007-2008. COM(2007) 663 final. [online]. [2014-06-30]. Available from: http://ec.europa.eu/enlargement/pdf/key_documents/2007/nov/strategy_paper_en.pdf.
- [10] Commission of the European Communities, 2008. Communication from the Commission to the Council and the European Parliament: Enlargement strategy and Main Challenges 2008-2009. COM(2008) 674 final. [online]. [2014-06-30]. Available from: http://ec.europa.eu/enlargement/pdf/press_corner/key_documents/reports_nov_2008/strategy_paper_incl_country_conclu_en.pdf.
- [11] Commission of the European Communities, 2009. Communication from the Commission to the European Parliament and the Council: Enlargement strategy and Main Challenges 2009-2010. COM(2009) 553 final. [online]. [2014-06-30]. Available from: http://ec.europa.eu/enlargement/pdf/key_documents/2009/strategy_paper_2009_en.pdf.
- [12] Consolidated versions of the Treaty on European Union and the Treaty on the functioning of the European Union. 2012. In: Official Journal of the European Union, C326, vol. 55.
- [13] Council of the European Union, 2007. *Brussels European Council 14/15 December 2006: Presidency Conclusions*. [online]. [2014-06-30]. Available from: http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/ec/92202.pdf.
- [14] European Commission, 2010a. Communication from the Commission to the European Parliament and the Council: Enlargement strategy and Main Challenges 2010-2011. COM(2010) 660 final. [online]. [2014-06-30]. Available from: http://ec.europa.eu/enlargement/pdf/key_documents/2010/package/strategy_paper_2010_en.pdf.

- [15] European Commission, 2010b. Communication from the Commission to the European Parliament and the Council: Commission Opinion on Albania's application for membership of the European Union. COM(2010) 680. [online]. [2014-06-30]. Available from: http://ec.europa.eu/enlargement/pdf/key_documents/2010/package/al_opinion_2010_en.pdf.
- [16] European Commission, 2010c. Communication from the Commission to the European Parliament and the Council: Commission Opinion on Montenegro's application for membership of the European Union. COM(2010) 670. [online]. [2014-06-30]. Available from: http://ec.europa.eu/enlargement/pdf/key_documents/2010/package/mn_opinion_2010_en.pdf.
- [17] European Commission, 2011a. Communication from the Commission to the European Parliament and the Council: Enlargement strategy and Main Challenges 2011-2012. COM(2012) 666 final. [online]. [2014-06-30]. Available from: http://ec.europa.eu/enlargement/pdf/key_documents/2011/package/strategy_paper_2011_en.pdf.
- [18] European Commission, 2011b. Communication from the Commission to the European Parliament and the Council: Commission Opinion on Serbia's application for membership of the European Union. COM(2011) 668 final. [online]. [2014-06-30]. Available from: http://www.media.srbija.gov.rs/medeng/documents/european_commission-opinion_en.pdf.
- [19] European Commission, 2011c. *Economic and Financial Affairs: Economic accession criteria*. [online]. [2014-06-30]. Available from: http://ec.europa.eu/economy_finance/international/enlargement/criteria/index_en.htm.
- [20] European Commission, 2012a. Communication from the Commission to the European Parliament and the Council: Enlargement strategy and Main Challenges 2012-2013. COM(2012) 600 final. [online]. [2014-06-30]. Available from: http://ec.europa.eu/enlargement/pdf/key_documents/2012/package/strategy_paper_2012_en.pdf.
- [21] European Commission, 2012b. Communication from the Commission to the European Parliament and the Council on a Feasibility Study for a Stabilisation and Association Agreement between the European Union and Kosovo. COM(2012) 602 final. [online]. [2014-06-30]. Available from: http://ec.europa.eu/enlargement/pdf/key_documents/2012/package/ks_feasibility_2012_en.pdf.
- [22] European Commission, 2013. Communication from the Commission to the European Parliament and the Council: Enlargement strategy and Main Challenges 2012-2013. COM(2012) 700 final. [online]. [2014-06-30]. Available from: http://ec.europa.eu/enlargement/pdf/key_documents/2013/package/strategy_paper_2013_en.pdf.
- [23] European Commission, 2014. *Enlargement*. [online]. [2014-06-30]. Available from: http://ec.europa.eu/enlargement/countries/check-current-status/index_en.htm.
- [24] European Parliament, 1998. *Madrid European Council 15 and 16 December 1995: Presidency Conclusion*. [online]. [2014-06-30]. Available from: http://www.europarl.europa.eu/summits/mad1_en.htm.
- [25] European Union: External Action, 2014. *EU relations with the Western Balkans*. [online]. [2014-06-30]. Available from: http://eeas.europa.eu/western_balkans/index_en.htm.
- [26] Eurostat, 2014. *Statistical Database* [online]. [2014-06-30]. Available from: <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>.
- [27] Horúcková, M., 2014. Comparison of the Business Environment of the Western Balkan Economies. In: *Economic, Political and Legal Issues of International Relations 2014, Volume*

of Scientific Papers. Bratislava: Ekonomická univerzita v Bratislavě – Fakulta medzinárodných vzťahov, pp. 198-205.

- [28] Horúcková, M. and M. Lebiezik, 2014. Economic Development of Montenegro and its Progress Towards EU Membership. In: *Proceedings of the 2nd International Conference on European Integration 2014*. Ostrava: VŠB – Technical University of Ostrava, Faculty of Economics, pp. 262-271.
- [29] The World Bank, 2014. *Data*. [online]. [2014-06-30]. Available from: <http://data.worldbank.org>

EUROPEAN UNION AND LIBERALIZATION OF GLOBAL TRADE: THE CASE OF AGRICULTURE

Martin Hrabálek

*Mendel University in Brno, Faculty of Regional Development and International Studies, trida Generala Píky 2005/7,
613 00 Brno, Czech Republic
email: martin.hrabalek@mendelu.cz*

Abstract

The article deals with the current situation of liberalization of global trade in agriculture and the position of the European Union in the talks during the Doha Round of the WTO. The author uses the framework of foreign policy analysis to analyze the most important internal factors that determine the formation of EU position, such as position of key member states. Then he moves attention to the global level to compare the position of the Union with the positions of other key players of the Doha Round negotiations - the United States, the Cairns Group comprising the big agricultural producers and the developing countries. Analyzing these particular positions he seeks to find out the possible prospects of agricultural trade liberalization, that has significant impact on possible liberalization in other areas, such as manufactured goods and services.

Keywords

European Union, World Trade, Agriculture, Liberalization.

JEL Classification

Q17.

1 Introduction

The European Union as a whole forms the largest producer and trader in the global economy. As such it has large impact on how international rules of trade are set, managed and enforced. Apart from its general position in the world trade, it is also an important player as regards agriculture, with strong position both as exporter and importer of agricultural goods.

The aim of this article is to analyze the role the EU plays in the trade liberalization talks within the current Doha Round of the World Trade Organization (WTO) in the area of agriculture. This particular area, currently forming less than 10 per cent of the total agricultural trade, heavily affects the outcome of the overall negotiations that last for more than ten years already and whose success is still doubtful.

The role of the EU in the international trade negotiation and its interests will be compared with the role and interests of other key players, be it for example the United States or the group of large agricultural exporters known as the Cairns Group. Based on the analyses of the prospects of global trade liberalization will be evaluated.

2 Methodology

The article is set within the foreign policy analysis framework, as external economic relations of the national states and in this case also international organization form ever larger part of foreign policy (Breuning, 2007). Foreign policy analysis tries to decompose factors leading to decisions in foreign policy and focuses on the process of decision formation.

The nature of the European Union that currently consist of 28 member states makes analysis of its foreign policy much more difficult than that of an individual state. There are multiple diverse interests inside particular member states and also between them, where the least common denominator has often to be sought on the EU level.

Basically we have to understand the external relations of the EU as „three level game“, adding one level to the classical Putnam’s two level game (Putnam, 1988). Apart from domestic and international level we have to count also the EU level where the member states negotiate between themselves. The scope of this article does not allow to deal more precisely with the domestic politics of each member

state. The article thus focuses on the most important ones and then on the process how the common position of the EU is formed between the member states and at the same time how this common position affects global trade negotiations. In these negotiations the EU faces different opinions from the United States, from large agricultural producers such as Brazil and from very varied group of developing states that form a large part of members within WTO. Its primary focus is thus what we can call macro level of foreign policy analysis (Hudson, 2007).

3 Agricultural policy of the European Union

Since the very beginning of the European integration the common agricultural policy (CAP) has been an important part of cooperation between the member states. Although its share on the EU budget has dropped significantly since the peak in 1970s, nowadays it still represents almost 40 per cent of the EU budget expenses. In total numbers the EU spends over 50 billion EUR per year on agriculture, as we can see in Figure 1.

CAP has always been under constant pressure both from some of the member states themselves because of its share of the EU budget and from thirds states during multilateral negotiations. For several decades it remained largely unchanged, but since the first reform in 1992 it has regularly undergone large changes (Garzon, 2007). The McSharry reform in 1992 was from a large part an output of external pressures within the Uruguay Round of GATT, where many states did argue that the CAP lead to large distortions of the world markets, mainly through export subsidies and support of production. At the same time it was a reaction to large overproductions inside the EU in several commodities. One of the effects of McSharry reform was the gradual decline of export subsidies that were perceived largely controversial. Currently, as a part of negotiating offer in the Doha round, this kind of subsidies is practically non-existent in the EU while in the past they formed a large share of the costs of CAP as can be seen in Figure 1. This could be perceived as a large step forward from a trade perspective.

Second important reform in 2003 led to more market-oriented CAP and drastically decoupled the payments from production. Again one of the driving factors for the reform came from abroad, as the EU sought a way to improve its own position in the negotiations through decoupling and using the argument of multifunctionality of agriculture.

After the so called health check of 2008 a new round of negotiations started in the EU in 2010 so the new rules would be adopted before the start of the multiannual financial framework for years 2014-2020. How difficult is to reach an agreement on the new rules could be illustrated on the fact that the discussions took almost three years and new rules will be applied with a delay from 2015 onwards.

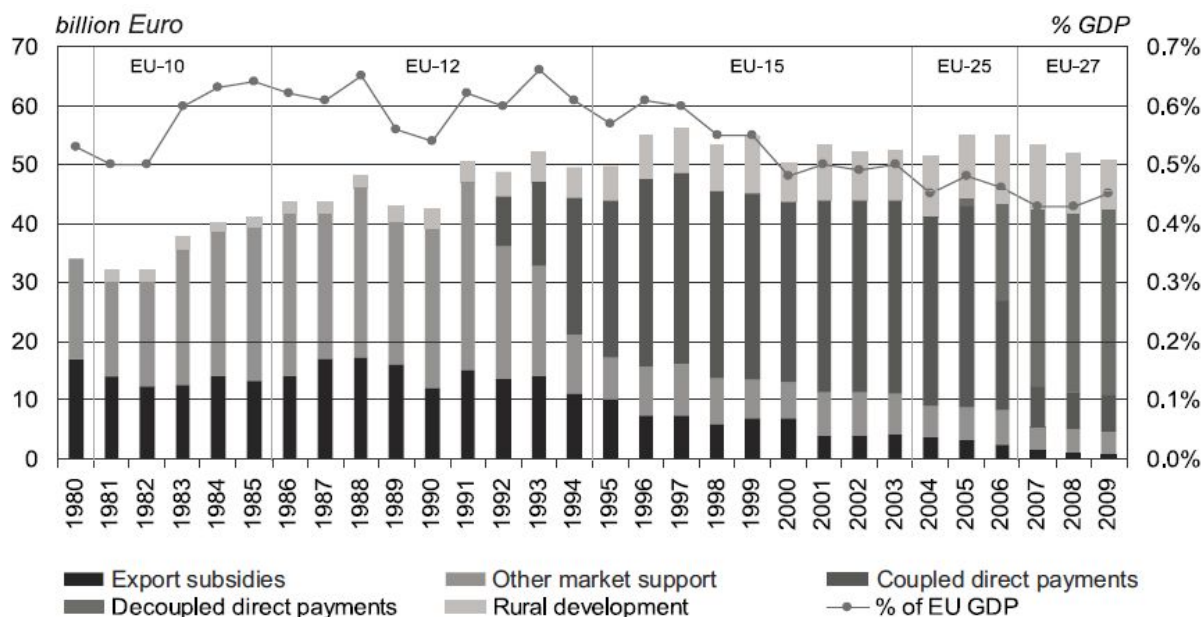


Figure 1. CAP Expenditure and CAP Reform Path (in 2007 constant prices) (Source: Matthews, 2010)

As regards the member states and their stance towards the CAP, the most important country in the EU is since the very start of European integration France. Although the number of French farmers dropped significantly since the beginning of the CAP, they are able to perform strong pressure on the French government to lobby for their interests in Brussels. One of the reasons for this strong position could be the fact that up until recently the country was the second largest exporter in the world, the second reason could be that the French farmers are well organized (McCormick and Olsen, 2014).

Apart from France that heavily resisted the attempt to further reform the agricultural sector and cut subsidies, there are several other states that defend the status quo. Those are logically states with large agricultural sectors, such as Spain, Greece or Portugal. New member states with large agricultural sectors, such as Poland or Romania, are in favor of large amount of resources allocated for the CAP, but have been treated unequally after their accession into the EU.

France was historically quite successful in creating and leading coalitions of states that would help her to reach its goals, for example in the period before the Fishler reform in 2003 (Alfredson and Cungu, 2008). During the last round of negotiations since 2010, a group of states where agriculture plays a minor role, including the Czech Republic, once again tried to cut down the resources allocated on common agricultural policy. This requirement met with a strong resistance from France and other agricultural countries and the share of the CAP on the EU budget will thus diminish only marginally.

As we will deal with the trade relations of the EU with developing countries in the next section we have to mention that the CAP is currently perceived not only as regards its internal impacts, but also external ones. The CAP should be part of the EU's Policy Coherence for Development commitments and thus its impact on development in developing countries all around the world should be taken into account (Matthews, 2010: 12). The idea is that the CAP should be formed in such a way, so it would benefit to development in developing countries. Many authors argue that in practice EU agricultural subsidies are on contrary distorting world markets and thus have negative impact on developing countries (Fritz, 2011).

We might conclude this section stating that the CAP was in last two decades largely dynamic policy where lot of internal and external factors are in play. The external pressure pushed the EU to stop practicing the most distortive measures such as the export subsidies. Yet the CAP, even after several reforms, remains highly protectionist. Every CAP reform raises a wave of debates between the member states and further progress would be subject to fierce discussion between the member states.

4 Liberalization of agricultural trade and the EU

Agriculture has traditionally stood outside the general framework of trade liberalization. Up until the Uruguay Round of GATT it could be characterized by exceptionalism. One of the reasons why agriculture was practically left out the talks was the fact that it is connected to the issues of food security and is thus quite sensitive.

We have noted earlier that the Uruguay Round of GATT had large impact on the reform of the rules of common agricultural policy within the EU. On the international level, since the Uruguay Round Agreement on Agriculture (URAA) was reached, agriculture became an important part of trade liberalization talks. This is true in the current Doha Round, in which the agriculture belongs to the most discussed issues and is a matter of disputes between the member countries of the WTO.

Two of the most important issues that are being discussed in the current Doha Round are market access and domestic support. Although most of discussions in the talks are being held over the domestic support that seem to be in the centre of attention, most of the economists dealing with agricultural trade liberalization have concluded that vast majority, up to 90 per cent, of the economic costs of agricultural distortions can be find in the market access barriers (Laborde and Martin, 2013). This is an important fact vis-a-vis the reality that the EU is currently quite protectionist to its market.

As we can see in Figure 2, the share of agriculture in the total world merchandise trade was decreasing steadily between 1988-2009. The exception would be mainly the period between 2007-2009, yet this should be attributed rather to rising prices of agricultural commodities than to encreased production. This can be seen in Figure 3 that shows Food Price Index and rapid food price rise after 2007. Rising food prices made agriculture once again more important in many parts of the world and brought attention both of the political representation on various levels and of the media.

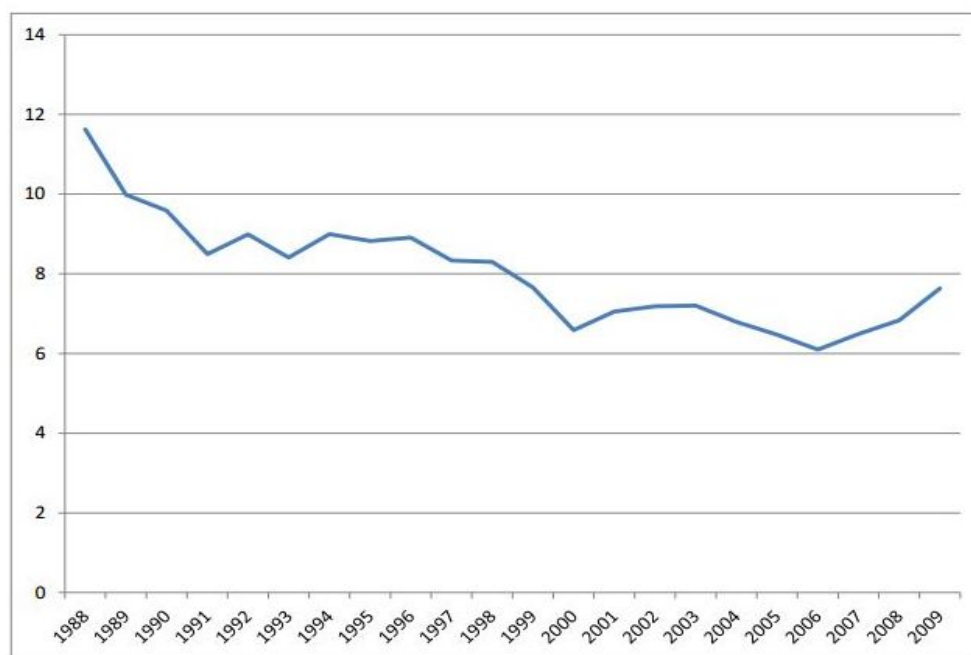


Figure 2. Share of Agriculture in the Total World Merchandise Trade 1988-2009 (in %)
(Source: Laborde and Martin, 2013)



Figure 3. Food Price Index 1990-2011 (2000 = 100) (Source: Fritz, 2011)

As of 2012, the EU was the largest exporter of agricultural products in the world, with the exports reaching almost 100 billion EUR. Yet the EU share in the global agricultural trade tends to diminish, similarly to the position of the United States. If in 2002 the EU share in global agricultural exports was 20.5 per cent, in 2012 it went down to 16.1 per cent (Food Drink Europe, 2014). This could be attributed to the fast rising exports in some countries in the developing world, such as Brazil, China, Indonesia, Malaysia or India.

The current rise of production and export from some developing countries heavily changes the picture of global agricultural trade and also the balance of power within the agricultural trade liberalization talks. Within the current Doha Round, we can identify four different groups of countries with very disparate interests (Garzon, 2007).

First would be the so called Cairns Group, group of mostly large developing countries – with the exception of Canada or Australia - that have natural advantages in food production and are large agricultural exporters. This group includes for example Brazil, Thailand, Indonesia or Argentina and its primary interest is liberalization of agricultural trade so they would be able to fully capitalize their advantages in agricultural production through market access.

Second group is largely heterogeneous group of developing countries, including the least developed countries (LDCs). Within this group of countries the interests differ based on a number of factors. First is the fact if the country is a net importer or exporter of agricultural products, with the second evidently potentially gaining more from trade liberalization. The second is the problem of preferential market access that some of these countries enjoy. This is mostly the case of LDCs that currently gain for example from EU *Everything but Arms* initiative that opens the EU markets for them. In a case of liberalization and tariff cuts these countries could be affected from extra competition from agricultural exporters that currently have tougher position (Koning and Pinstrup-Andersen, 2007).

The third important player is the United States. U.S. agriculture is very export oriented what is a reason why United States is between the countries that support market opening. On the other hand, the United States use large domestic supports for their farmers. That means that in the area of domestic support cuts demanded by other states they stand side by side with the EU and defend the continuation of existing categories of domestic support (Garzon, 2007).

European Union forms the last groups of states. Although at the EU level we might see diverging positions of the member states towards the CAP, during the international negotiations the EU presents a common position and speaks with one voice. Although often marked as „Champion of Multilateralism“ (Hill, 2011) currently the EU could be perceived as the largest „brake“ to the advance in agricultural trade liberalization. Being non-competitive in the production of some agricultural products the EU is in favor of protecting its own market through tariffs what diminishes the scope for agreement with large agricultural producers.

During the Doha Round negotiations we have witnessed an important change in the logic of negotiations. The previous Uruguay Round was basically about the position of the United States and key European economies, such as France and Germany. Once they reached the consensus the developing countries just followed the suit. This is hardly true in the current round, as the new key players such as the Cairns Group are much more active and put on the table their own vision of how to proceed with agricultural liberalization (Laborde and Martin, 2013). The role of the United States and European Union thus remains crucial for the successful end of the negotiations, but the other actors are currently much more emancipated. The fate of overall trade liberalization in merchandise and services depends on agricultural liberalization where they see the largest possible gains for themselves.

5 Conclusion

Although agriculture forms still smaller part of international trade, its special nature, importance to countries that are large exporters of agricultural product and possible gains from liberalization of this sector make it an essential part of the current trade liberalization talks. Within the framework of WTO, we can identify several groups of countries with very diverse and incompatible interests and goals. These differences are one of the important reasons why the negotiations in the Doha Round of WTO take such a long time and why its possible conclusion is questionable.

The European Union as both large exporter and importer of agricultural products plays a major role in these negotiations. Although other states have gained a stronger position within the global trade in agriculture, the fate of the liberalization talks depends heavily on the EU position. The EU, together with the United States tends to protect their agricultural sectors. Within the EU, France still seems to be the most important player and its protectionist position heavily affects how the common agricultural policy works both internally and externally.

As for now, it seems that there will be no final deal in the Doha Round without an agreement reached on the agricultural liberalization. It still remains unclear if the European Union will once again reform its agricultural policy in order to reach consensus on the overall trade liberalization in merchandise and services where its important interests lie.

6 Acknowledgement

This article was published thanks to grant of Internal Grant Agency of Faculty of Regional Development and International Studies, Mendel University in Brno – 3/2014 Role of the European Union in international ambience and its relations with developing countries concerning solution of their problems connected to development.

References

- [1] Alfredson, T. and A. Cungu. 2008. *Negotiation Theory and Practice: A Review of Literature*. FAO, EasyPol 179. [online]. [2014-05-27]. Available from: http://www.fao.org/docs/up/easypol/550/4-5_negotiation_background_paper_179en.pdf.
- [2] Breuning, M., 2007. *Foreign Policy Analysis: A Comparative Introduction*. New York: Palgrave Macmillan.

- [3] Food Drink Europe, 2014. *Data & Trends of the European Food and Drink Industry 2013-2014*. [online]. [2014-06-25]. Available from: http://www.fooddrinkeurope.eu/uploads/publications_documents/Data__Trends_of_the_European_Food_and_Drink_Industry_2013-20141.pdf.
- [4] Fritz, T., 2011. *Globalizing Hunger: Food Security and the EU's Common Agricultural Policy (CAP)*. Ecologistas en Acción. [online]. [2014-05-27]. Available from: http://www.tni.org/files/download/CAPpaper-draft_0.pdf.
- [5] Garzon, I., 2003. *A Changing Global Context in Agricultural Policy*. Brussels: Notre Europe.
- [6] Hill, C., 2011. *International Relations and the European Union*. Oxford: Oxford University Press.
- [7] Hudson, V., 2007. *Foreign Policy Analysis*. Lanham: Rowman and Littlefield.
- [8] Koning, N. and P. Pinstup-Andersen, 2007. *Agricultural Trade Liberalization and the Least Developed Countries*. Dordrecht: Springer.
- [9] Laborde, D. and W. Martin, 2013. *Agricultural Trade: What Matters in the Doha Round? New Member States of the EU: Current Trends in Regional Disparities*. IFPRI Discussion Paper 01251. [online]. [2014-05-27]. Available from: <http://www.sre.wu-wien.ac.at/ersa/ersaconfs/ersa06/papers/148.pdf>.
- [10] Matthews, A., 2010. *How Might the EU's Common Agricultural Policy Affect Trade*. ICTSD Issue Paper No. 29. [online]. [2014-05-27]. Available from: <http://www.ictsd.org/themes/agriculture/research/how-might-the-eu%E2%80%99s-common-agricultural-policy-affect-trade-and>.
- [11] McCormick, J. and M. Olsen, 2014. *The European Union: Politics and Policies*. New York: Westview Press.
- [12] Putnam, R. 1988. Diplomacy and Domestic Politics: The Logic of Two-Level Games. *International Organization*, vol. 42, issue 3, pp. 427-460.

CAUSES OF WASTE IN PUBLIC PROCUREMENT

Martina Hružová

*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: hruzova.martina@centrum.cz*

Abstract

The aim of this article is to analyze some of the causes that can lead to a waste of public procurement. These causes are divided into four groups, which depict places in the procurement process, which can lead to a waste of public funds. The first group consists of public sector and corruption - a conflict of interest, incompetence, corruption perception index and the Global Competitiveness Report. The second group includes a set of specifications and the type of procurement - specific division of public contracts open to competition vs. negotiations. The third is the competition of firms and the number of bids - the most tender, cartel, bid rigging, competitive effect. The fourth group is the control of the entire procurement process - preliminary, interim and follow-up. Given the amount of public funds spent through procurement, it is necessary to examine whether these public funds are not wasted and identify the causes of this waste. Application of the knowledge into practice depends on the political will of relevant actors.

Keywords

Procurement, Control, Corruption, Competition.

JEL Classification

H57, H59.

1 Introduction

Public procurement is an institute, which is part of allocating public funds expended in the Czech Republic every year depending on the economic and political situation averaged 500 to 600 billion CZK. In recent years, records of public contracts dynamic development, especially in the legislation (Law on Public Procurement was already seventeen times amended), but also as socially and politically highly discussed topic.

Public funds are limited, so the contracting authorities faced permanent and controversial question of how best to allocate these funds. The practice show large reserves of public expenditure through procurement.

The aim of this article is to highlight some of the causes of wastage throughout procurement process and propose some solutions. The first part focuses on the performance of public sector corruption, which are explored through a variety of indicators. The second part of the theory defines the public procurement issues and emphasizes principles of economy, efficiency and effectiveness throughout the procurement process. The third part deals with competition between suppliers of public contracts, the number of tenders to contractors tendering for public contracts and also the existence of collusive cartels and bid rigging. The fourth section examines the control of the entire procurement process.

2 Functioning of the public sector and corruption

A well-functioning public sector and reduce the potential for corruption are prerequisites to reduce waste in public procurement. The question is how to evaluate and measure the public sector and corruption. A suitable indicator evaluating the public sector can study by the World Economic Forum (WEF) - *Global Competitiveness Report* (GCR) - this report gives the WEF since 2004, and annually evaluates countries in the world based on the *index global competitiveness* (global competitiveness Index - GCI). GCI¹ is composed of 12 pillars which assesses the situation in a particular country: the

¹ For more information, GCI methodology for calculating and evaluating the various pillars of the http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2013-14.pdf

quality of institutions, infrastructure, health and primary education, higher education, goods market efficiency, labor market efficiency, financial market development, technological advances, market size, business sophistication and innovation.

To evaluate the public sector will be elected *pillar - the quality of institutions and values*. This pillar is made up of these indicators - the protection of intellectual property and assets for putting public funds, trust in politicians, judicial independence, favoritism decisions made by government officials, the waste of public resources, the burden of government regulation, the effectiveness of the legal framework in settling disputes, transparency in government policies, costs of terrorism, the costs of crime and violence, organized crime, police forces reliability, ethical corporate behavior, degree audit reporting standards, the effectiveness of boards of directors and protection of minority shareholders. Each of these indicators is assessed through WEF Executive Opinion Survey. On a scale of 1-7, where 1 is worst and 7 the best assessment of the indicator. Table 1 gives the arithmetic average rating of indicators of institutional pillars and indicators for each year.

Even more challenging than evaluating the public sector is to measure or assess the level of *corruption*. According to Transparency International (TI) Corruption can be defined as the abuse of entrusted powers for the purpose of obtaining unearned personal (private) benefit. The expression level of corruption is elected generally known (and criticized because of personality assessment) *Corruption Perception Index* (corruption Perception Index - CPI)², compiled by the international society TI, which captures subjective ratings of perceived corruption experts - entrepreneurs and macroeconomic analysts. The index range is from 0 corruption and 10 highest corruption rates.

The World Bank (WB) report in their annual report, "Aggregate indicators of governance" indicator *control of corruption* (CC)³ - reflects the perception of the extent to which public power in individual states exercised for private gain. In addition to the perceived corruption experts also captures corruption as perceived by the general public if the CC indicator value for a country such as 75 percentile means that 75% of the country is worse in this evaluation, and 25% of countries fared better.

The following table shows the values of all of the above indicators. It turns out that when the CPI all indicators for the Czech Republic always slightly worse and can also be seen a certain correlation between these indicators. The relevant political actors should these indicators and the WEF report, TI and WB continuously monitor and evaluate objectively.

Table 1. The values of the first indicators of CPI, the efficiency of the public sector by GCR (institutional pillar) and CC indicators in the Czech Republic (2008-2013)

	2008	2009	2010	2011	2012	2013
GCR	4.01	4.07	3.96	3.77	3.77	3.76
CPI	5.2	4.9	4.6	4.4	4.9	4.8
CC	65	67	65	66	64	-

Source: World Economic Forum, Transparency International, World Bank, own processing

2.1 Relationship procurement and corruption

Pavel (2013, pp. 84-90) lists several studies that quantitatively analyze the relationship between the market and public procurement corruption. For example, Tanzi - Davoodi (1997), the regression model found that there is a directly proportional relationship between the level of corruption expressed CPI and the volume of public investment (implemented procurement). So to put it simply - the larger volume of public procurement, the greater the scope for corruption.

As more states Pavel (2013, p. 86) working authors Burguet - Che (2004) considered the main cause of corruption in public procurement handling of responsible persons with qualitative criteria.

² more information on the methodology for calculating the CPI <http://www.transparency.cz/indexy/>

³ more information on the methodology for calculating CC <http://info.worldbank.org/governance/wgi/index.aspx> home

Therefore sets out proposals for a form of evaluation criteria which would suppress the effect of corruption to a minimum.

For an interesting considers Pavel (2013, p. 86) and study Kline - Buntz (1979), which dealt with the issue of procurement expertise implemented various external entities in the public sector. The main problem I see in that the number of public sector activities are outsourced. To be considered as a "black box" that without a specific goal leads only to corruption.

Civic associations Revival (2012), os states that corruption in public procurement can be determined using the formula Klitgaards⁴ to identify corruption (customizing):

Corruption = monopoly power (decision of one person or a small group of people about a public contract) + *freedom in decision-making* (handling in the procurement process or contract tailored) - *accountability (transparency)*.

2.2 Conflict of interest

A major problem associated with corruption and public procurement is a conflict of interest - This is the definition of conflict of interest is no longer valid Conflict of Interest Act No. 238/1992 Coll., On some measures related to the protection of the public interest and incompatibility of certain functions "conflict of public interest interest means a personal meeting or omissions of public officials that threatens confidence in his impartiality or which public officials abusing their position to obtain unfair advantage for themselves or another natural or legal person. "This definition, however, in the current Act č.159 / 2006 Sb., a conflict of interest, as amended, has been found, which is a major shortcoming of the law. In relation to procurement, it is necessary to register and identify conflicts of interest with the contracting entity, such as an affidavit. The specific procedure to establish an internal regulation authority and to ensure their strict compliance.

2.3 Incompetence

Official *incompetence* and other persons in the application of Act No. 137/2006 Coll., On Public Procurement, as amended (the Act), is one of the causes of waste in public procurement. The incompetence is partly due to the complexity of the PPA and the administrative demands of the procurement process. For contracting authorities, the Ministry for Regional Development (MMR) as the central government, which is responsible for the preparation of the PPA, the one who provides methodological assistance. Likewise, the competent Authority for the Protection of Competition (OPC), which also provides methodological assistance to authorities, but also overwhelmed by stimuli that does not manage to solve a specific proceedings unduly stretch and expensive.

An interesting project is the Ministry of Industry and Trade and the Chamber of administrators of public procurement entitled "*Forum Tenders well*"⁵. This forum wants to promote in particular the following principles:

- Leaving the thesis of the lowest bid price as a single evaluation criterion in the procurement procedure
- Return to the criteria of quality,
- Application of the principle of the inadmissibility unreasonably low offer price.

It can be concluded that the reduction of waste in public procurement is necessary that the authorities were professionally competent (training, other training), clearly describe the job and the demands on their performance, define personal responsibility for individual actions in each stage of the procurement, while refine and streamline the entire procurement process.

⁴ Robert Klitgaard is a University Professor at Claremont Graduate University in the USA, which led in 2005 - 2009. Klitgaard advised numerous governments on economic strategy and institutional reforms. It is considered the world's leading expert on the issue of corruption.

⁵ more information on <http://www.fvzk.cz/>

As a practical example of the expertise leads to a reduction of waste in public procurement include the introduction of pricing standards, for example in the works, as is the case in Germany and Austria. However, it is necessary to have professional staff that will be capable of such standards to create. This would have eliminated the overpricing of construction contracts - for example, several times more expensive bike paths and highways than in neighboring countries around the Czech Republic.

3 Theoretical definition of public procurement, efficiency, effectiveness and efficiency in public procurement

The whole process of procurement applications can be divided into three main phases - pre-contractual, contractual and postkontraktační. In each of these phases may occur and leads to wastage of public funds. According Ochraňa (2011, p.12), it is important before issuing public contracts, ie in the pre-stage to authorities changed the bidding approach to the allocation of resources to the inquiry approach to resource allocation. This means in practice that those who decide on public budgets, public expenditure, public procurement, whether at government or government should have empirically obtained information that citizens really demanding. This change in the outlook for the pre-contracting behavior is contingent on the will of the relevant political actors.

3.1 Public procurement, the types of contracting and procurement procedures, kinds and types of procurement and life cycle procurement

According to the PPA contract - contract based on the contract between the entity and one or more suppliers, the object of which is paid provision of supplies or services or the execution of works. Every public contract should be carefully tested and verified already in the pipeline if it fulfills the principles of the 3 E (economy, efficiency, effectivity) economy, efficiency, and effectiveness⁶.

PPA defines these three types of public procurers public, subsidized and sector contracting entity. Furthermore, procurement divided according to their assumed value above threshold procurement⁷, limit public contract (at least 2 million CZK without VAT on goods and services, and at least 6 million CZK without VAT on works) and small-scale contract (up to 2 million CZK without VAT on goods and services, and up to 6 million CZK without VAT on works).

Basic stages of the life cycle of procurement:

- First defining needs / demand definition
- Second preparation of the tender
- Third vendor selection
- Fourth agreement and implementation of the subject contract
- 5th handover of public procurement

Type of procurement (goods, services, works) determines the nature of the terms and also affects the type of procurement procedure. A tender procedure regulates the process of contracting authorities in public procurement. Currently, the PPA defines six types of procurement procedures, which Pavel (2013, p 95) divided into two large groups:

First open (competitive) competition - open procedure, restricted procedure and the simplified sub-limit management - these types of tendering procedures, an entity clearly defines the subject of the public contract, decision criteria (price, economic profitability) and individual firms submit their bids. No subsequent negotiations on the form offers individual firms. The contract price is fixed.

Second negotiation - negotiated procedure with publication, the negotiated procedure without publication, competitive dialogue - are contracting authority defines only the basic parameters of the

⁶ Economy, efficiency and effectiveness is defined in the Act No. 320/2001 Coll. on financial control in public administration, as amended. Can be used as standard PRINCE 2, developed for the management of public projects in the UK, see <http://en.wikipedia.org/wiki/PRINCE2>.

⁷ The values of the various types of public contracts above the limit set out in the Government Regulation No. 77/2008 Coll., As amended.

subject of the company and then coming up with menus, on which, but also with the client once and can modify these offers - and the contract price. Negotiated methods are used for more complex projects with a higher degree of uncertainty in the precise definition of performance.

Given the complexity and diversity of projects of public contracts can not clearly determine whether they are preferable to open the proceedings or negotiations. Procurement procedures should match the type of contract - its intensity and correct specification. As riskier in terms of transparency seems to contracts awarded outside the PPA, ie small-scale contracts.

3.2 Efficiency, effectiveness, efficiency and transparency in public procurement

Preparation of procurement is a crucial moment for ensuring an open competitive environment and meet targets "3 E" in public procurement. It is necessary at each stage of the procurement process to reduce risks: the award is not in accordance with the procurement plan or the plan is missing, there is illegal cutting of the contract specifications are not properly justified, given the needs of the contracting authority, the technical specifications are insufficient due to the client's needs and do not evaluation of the quality of delivery of the subject matter, etc.

Půček (2012) states that these and other risks can be limited primarily transparency - all throughout the procurement process urgently publish. It is necessary to standardize documents and procedures as procurement and evaluation of tenders.

Some of these problems has responded so-called "transparent" amendment to the Act of 2012: Reduce levels of small-scale cancellation of the possibility to reduce the number of suppliers within the restricted procedures, the introduction of the obligation to justify procurement, automatic cancellation of procurement procedures with only one offer (which may be problematic for selected highly specialized types of procurement), publishing contracts, amendments and final / paid prices.

Protection (2012, p 154, 155) states that "The methodology of evaluation of public procurement with regard to the criterion 3E" issued by the Ministry for Regional Development (MMR) clearly requires the authorities to define technical terms so that they are in accordance with the principles of "3E". Protection (2012) further states that although the PPA does not require to set goals procurement, but it would be appropriate that the authority is set such targets. These objectives procurement should be measurable, specific, time-bound, relevant and achievable - known as the SMART method. Thus, the targets set will enable more precisely determine the evaluation criteria of public procurement with regard to the principles of "3E".

It is possible to conclude that if the authority is to practice demand-oriented approach to the allocation of public resources, publish, follow the methodology of MMR, the principles of "3E", set goals and develop procurement standards in public procurement, it is possible to greatly reduce the waste of public funds.

4 Rival firms and the number of bids

Competition of foreign words dictionary defines as competition, rivalry or speech competition. When procurement is just competition and competitive environment is very important. As an example of the importance of a competitive environment and a sufficient number of tenders in public procurement says Pavel (2013, pp. 88, 89) so-called "competitive effect".

Competitive effect - in all cases was identified the existence of a competitive effect, thus indirectly proportional relationship between the number of submitted bids tendered a price. This means that with each additional range is average to drop prices tendered.

The following figure shows the average and median number of bids in procurement procedures across the EU. Pavel (2013, 87) states that the data may be partially obscured by the fact that some States have a number of submitted bids, while others only count for score. Nevertheless, judging from the figure that the average value of the indicator number of tenders indicated in the figure is not affected by the size of the state.

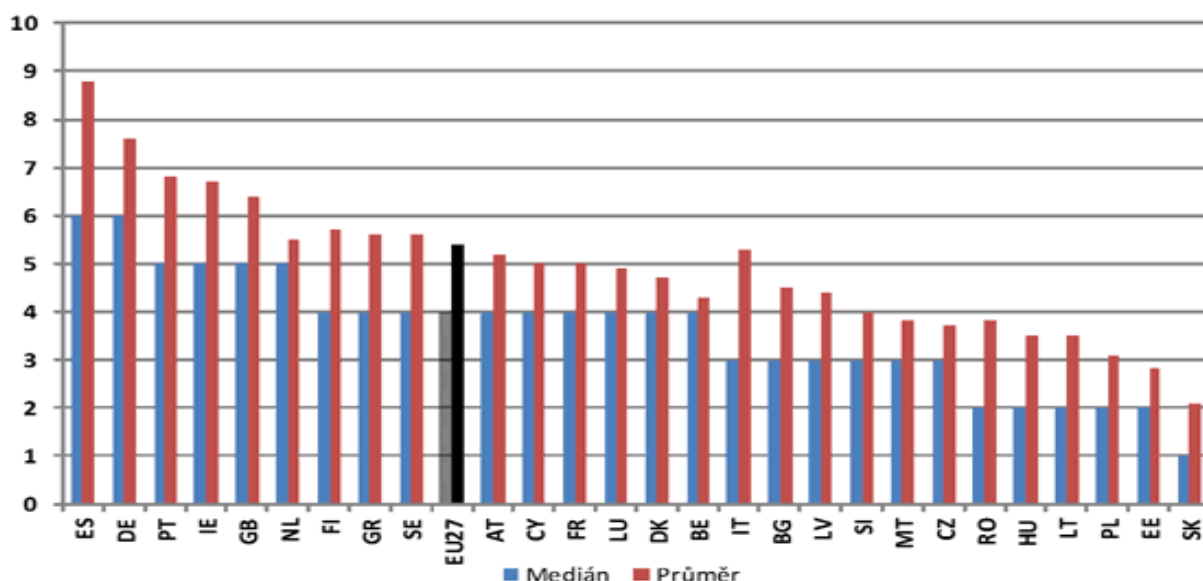


Figure 1. Average and median number of offers in the EU countries (2006-2010) (Source: Pavel (2013, s. 87) and European Commission (2011) Public procurement in Europe: Cost and Effectiveness. Brussels, European Commission)

If we compare the situation in the Czech Republic in the average number of bids with other EU Member States is doing with an average of 3.7 sick. And even in comparison with the EU average of 5.3 and in the context of the above statements that the value is not affected by the size of the state.

It can be concluded that the low number of bids in tender procedures in the Czech Republic, show that the level of competition on the supply side is very small and thus the competitive effect is small. This has resulted in higher prices tendered and cartels and bid rigging.

4.1 Collusive cartel and bid rigging

One of the other causes of waste in public procurement is a cartel, namely collusion and bid-rigging cartel (prohibited agreements). Definitions and differences in these terms:

Cartel - according to the dictionary of foreign words is an agreement of association or cooperation between independent enterprises.

Collusive cartel - it is a horizontal agreement among the participants of tenders for the allocation of the market (Varian 1995).

Bid rigging - by the OPC, it is forbidden by the interaction between job offers for the contract. Candidates before submitting their tenders agree not to act independently and compete, but shall mutually matching or some of them competing at all participate. The aim is to achieve more favorable conditions for the winner of the tender procedure. This is a particularly dangerous conduct on the market, which leads to increased prices and reduced quality of performance. Bid rigging usually includes elements of both price-fixing and market-sharing agreements, which are the two most important types of infringements of competition law. These agreements are then devastating impact on public budgets.

Ondráčka et al. (2005, pp. 17-20) states that the aim of these agreements is that any company that is involved in the cartel, stood steadily and confidently minimally adequate income (rents). It also states that the collusive cartel (i bid rigging) can in practice these several forms - price fixing, manipulation of public competitions (winner of the forward contract is agreed upon among the members of the cartel, others are so-called "bush" market division (territorial allocation of public contracts, the other from another cartel "district" mandatory offer in a tender for a public contract higher prices), cost (winner of the tender is obliged to pay its participants, who are members of the cartel, the costs associated with participation. these additional costs already included firms in their

price offers) loot (winner compensates unsuccessful cartel members by giving them in the form of subcontracting redistributed fraction of the rent).

The result is the growth of tendered prices and the waste of public resources. Detection of the above abuses Office addresses.

The following table gives statistics to illustrate the administrative proceedings referred Office. Both of these values in the table that is in practice very difficult to detect the above-mentioned shortcomings.

Table 2. The number of initiated administrative proceedings (selected areas) to Office (2009-2013)

	2009	2010	2011	2012	2013
Prohibited agreements	2	1	3	5	4
Abuse of dominant position	1	0	1	1	1

Source: Annual Report of the Office (2013).

In summary, it is necessary that in the Czech Republic increased the credibility of competitions through detecting abuses, such as collusive cartel, bid rigging, and thereby increase the willingness of companies to participate in tenders and subsequently increase the number of bids in each procurement procedures.

5 Check the entire procurement process

Ochrana (2008, pp. 119 and 124) defines *control of public procurement* as a formal monitoring process and content issues surrounding the award, evaluation, selection and implementation of public procurement.

Types of controls procurement:

- In terms of subject control of public contracts - Documented legal check (performed by the Contracting Authority and the Office), Financial Accounting inspection (performed by the sponsor and the Supreme Audit Office (SAO)) and check the results (provided by sponsor and SAO).
- In terms of form controls public contracts - internal inspection (performed by the customer) and external control (OPC performs a SAO).
- In terms of time - a preliminary check (done by the customer), a regular (performed by the sponsor, OPC), follow-up (done by the sponsor, Office, SAO).

When checking public contracts to monitor whether they are in accordance with the Public Procurement Act, Act No. 563/1991 Coll., On accounting, as amended (Zou) and Act No. 320/2001 Coll., Financial Control, as amended regulations (ZOF).

It will also be used by the distribution of forms of control of public procurement, ie internal and external control.

5.1 Internal control

Internal control is carried out by the contracting authority (in the role of head of the public authority) if the subject ZOF. Under this law, the contracting authority has the obligation to establish and maintain the internal control system in the form of preliminary, interim and ex-post controls.

In preliminary control - client monitors the accuracy of the specifications and its compliance with the PPA. They also examine the economic purpose of a public contract in accordance with ZOF.

Continuous control - the implementation of a public contracting authority controls the implementation of the contract with the supplier. Sponsor during evaluates all the criteria of the public contract.

Follow up - in this case the sponsor checks all documentation and results of the contract. Checking compliance with the principles of "3E" should take place not only in the subsequent, but also prior review.

For internal inspection is recommended to apply the system of Chinese walls - this means in practice is that the responsibilities and competences of the main tasks in the public procurement organization entity should be divided between strictly separate entities. Separate such as the stage of defining the needs and conditions of the public contract, a stage of the competition organization and vendor selection and monitoring phase of execution and settlement agreement.

5.2 External control

As stated above, external control is performed by the Office and the SAO. The Office shall exercise supervision over compliance with the PPA, particularly the observance of § 6 of the PPA, which states that the contracting authority is obliged by the PPA process adhere to the principles of transparency, equal treatment and non-discrimination. Chronologically, the Office carries out a continuous follow-up. Office examines the legality of acts of authority under the Act in ways that are listed in § 112 AWD - grant interim measures decision about whether authorities awarding public contracts and design contest proceeded in accordance with the PPA imposes corrective measures, controls the actions of the contracting authority procurement under a special law. The Office also discusses administrative offenses under this Act and impose sanctions for their commission. The Office therefore examines only the legal aspect of compliance with the PPA does not deal with economic content procurement and compliance with the principles of "3E", it is the responsibility of the SAO.

The annual report of the Office for the year 2013 indicated that the most common mistakes entities can be identified:

- determination of non-transparent and non-discriminatory terms of reference defining the subject of the public contract, including technical specifications,
- inconsistency in the definition of evaluation and unfairness set of qualifications in relation to the complexity, the nature and scope of public procurement,
- errors in the assessment and evaluation of bids (ie lack of transparency in the report on the assessment and evaluation, particularly insufficient description of the evaluation and the evaluation, maladministration in the assessment of abnormally low tender price)
- placing undue demands on the production of documents from suppliers,
- Incorrect determination of the estimated value of public contracts and the associated wrong choice of procurement procedure,
- The use of the negotiated procedure without publication without the conditions for its use,
- Incorrect assessment of the fulfillment of the conditions for the successful tenderer.

The following table shows the number of first-instance administrative proceedings initiated in the area of public procurement in the years 2009 - 2013. Figures in the table show a sharp increase in these proceedings, which can be interpreted in different ways. This can be attributed to the greater activity of the Office, also more active and procurers and suppliers. The increase could cause the complexity and the amendment to the PPA, etc. The fact is that the activity of the Office is in control over compliance with the PPA for the last few years more than doubled.

Table 3. Number of first instance administrative proceedings initiated in the field of public Office (2009-2013)

2009	2010	2011	2012	2013
309	425	530	650	668

Source: Annual Report of the Office 2013.

The scope of the SAO is governed by Act 166/1993 Coll., On the Supreme Audit Office, as amended (BNC). Protection (2008, p 103) states that the SAO performs three types of controls that derive from ZNK - Documented legal, accounting and financial performance. § 3 ZNK, inter alia, that the SAO has control government procurement. SAO therefore examine whether the public contract in accordance in particular with Zou and ZOF, examines the factual and formal correctness

of the procurement and assess whether they are consistent with the principles of "3E". It also examines whether the contracting authority carries out preliminary and ongoing monitoring, results of the documentation and if these checks draw some conclusions and correct. Chronologically, the SAO performs follow-up.

SAO Annual Report for 2013 describes, among other things, that the control of public procurement is an important priority for control of the SAO, and is thus different extents of a series of control actions. SAO's annual report for 2013, for example, notes that analysis of data from the information system procurement found that in the years 2009-2012 Ministry awarded a public contract in the amount of CZK 52.2 billion and almost 38% of them in the form of negotiated procedure without publication.

The most important systemic deficiencies in the performance of activities related to public procurement in 2013 included, for example:

- Errors in the preparation and implementation of ICT projects, reducing the impact of the competitive environment and dependence on a single supplier,
- the transfer of certain state activities to external legal, consulting and advisory bodies leading to diseconomies
- purchases of materials without written tenders and contracts entered into with the result of significant price differences
- ineffectiveness of existing measures and mechanisms to streamline the construction of transport infrastructure,
- failure of program funding, which does not ensure a tight financial framework or with evaluable objectives and effects of the investment policy of the state,
- lack of performance management and control of certain programs co-financed by the EU and lagging behind in their use.

It can be concluded that the purpose of all the supervisory activities (authority, SAO, Office) is to ensure fair, transparent and non-discriminatory competition in accordance with the principles of "3E" which ultimately brings savings of public finances.

6 Conclusion

The aim of this article was to identify and highlight the critical points in the procurement process, which can lead to a waste of public funds. It requires that the political leaders monitor and evaluate indicators developed by the World Bank, the World Economic Forum and Transparency International, which evaluates the performance of the public sector (GCR, institutional pillar) and indicators of corruption (Corruption Perception Index, Control of Corruption). Also important is the expertise, competence and specific definition of personal responsibility among authorities and clearly define the responsibilities and demands on their performance. Simplification and clarification of the procurement process. Contracting authorities should practice demand-oriented approach to the allocation of public resources, publish, follow the methodology of MMR, adhere to the principles of "3E" at each stage of the procurement process, procurement, set goals and develop procurement standards in public procurement.

To increase the credibility of competitions through detecting collusive cartels, bid rigging, and thus increase the willingness of companies to participate in tenders, then also increase the number of bids in each procurement procedures.

The aim of all these measures is to ensure fair, transparent and non-discriminatory competition in accordance with the principles of "3E" which will ultimately save public finances.

References

- [1] Act No. 320/2001 Coll., Financial control, as amended.

- [2] Act No. 166/1993 Coll., On the Supreme Audit Office, as amended.
- [3] Act No.159/2006 Coll., A conflict of interest, as amended.
- [4] Act No. 563/1991 Coll., On accounting, as amended.
- [5] Act No. 137/2006 Coll., On Public Procurement, as amended.
- [6] Forum procurement quality. *Fvzk.cz. Official website of the Forum procurement quality* [online]. [2014-06-25]. Available from: <http://www.fvzk.cz/>.
- [7] Government Regulation No. 77/2008 Coll., as amended.
- [8] Office for Protection of Competition. Annual Report of the Office 2013 [online]. [2014-06-23]. Available from: <http://www.uohs.cz/cs/informacni-centrum/vyrocnizpravy.html>.
- [9] Ochraňa, F., 2011. *Public expenditure programs, public works projects and contract (their creation, evaluation and control)*. Prague: Wolters Kluwer ČR.
- [10] Ochraňa, F., 2008. *Entering, evaluation and control of public procurement (economic analysis)*. Prague: Ekopress, s. r. o.
- [11] Ondráčka, D., et al. Transparency International 2005. *Procurement in the Czech Republic: Corruption and transparency?*. [online]. [2014-06-22]. Available from: http://www.transparency.cz/doc/vz_studie_text.pdf.
- [12] Pavel, J., 2013. *Procurement and efficiency*. Prague: Ekopress.
- [13] Půček, M. and F. Protection, 2012. *Achieving savings and reduction of waste in the public sector*. Prague: Wolters Kluwer ČR.
- [14] The recovery os 2012. *Corruption risks in public procurement: How to face them?*. [online]. [2014-06-20]. Available from: www.bezkorupce.cz/wp-content/uploads/2011/09/metodika_FINAL.pdf.
- [15] The Supreme Audit Office. *SAO Annual Report 2013* [online]. [2014-06-24]. Available from: <http://www.nku.cz/assets/publikace/vyrocnizprava-nku-2013.pdf>.
- [16] Transparency International. *Transparency.cz: The official website of Transparency International* [online]. [2014-06-23]. Available from: <http://www.transparency.cz/indexy/>.
- [17] Wikipedia. *Wikipedia.org: Official website Wikipedia* [online]. [2014-06-25]. Available from: <http://en.wikipedia.org/wiki/PRINCE2>.
- [18] World Bank 2013. *Worldwide governance indicator* [online]. [2014-06-21]. Available from: <http://info.worldbank.org/governance/wgi/index.aspx#countryReports>.
- [19] World Economic Forum 2014. *Global Competitiveness Reports 2008-2013* [online]. [2014-06-22]. Available from: <http://www.weforum.org/issues/global-competitiveness>.

THE EMPLOYMENT OF GOVERNMENT BOND SPREADS IN PREDICTION OF ECONOMIC ACTIVITY IN EU-15

Jana Hvozdenká

*Masaryk University, Faculty of Economics and Administration, Lipova 41a, 602 00 Brno, Czech Republic
email: 174974@mail.muni.cz*

Abstract

The yield curve – specifically the spread between long term and short term interest rates is a valuable forecasting tool. It is simple to use and significantly outperforms other financial and macroeconomic indicators in predicting recessions two to six quarters ahead. The steepness of the yield curve should be an excellent indicator of a possible future economic activity. A rise in the short rate tends to flatten the yield curve as well as to slow real growth the near term. This paper aims to analyse the dependence between slope of the yield curve and an economic activity of EU-15 between the years 2000 and 2013. The slope of the yield curve can be measured as the yield spread between sovereign 10-year bonds and sovereign 3-month bonds. The natural and probably the most popular measure of economic growth is by GDP growth, taken quarterly. The results showed that the best predictive lag of spread is a lag of four and five quarters. The theory says that it should be lag of four quarters. The results presented also confirm that 10-year and 3-month yield spread has significant predictive power for real GDP growth after financial crisis. These findings can be beneficial for investors and provide further evidence of the potential usefulness of the yield curve spreads as indicators of the future economic activity.

Keywords

GDP Prediction, Yield Curve, Slope, Spread.

JEL Classification

E43, E44, E47, G01.

1 Introduction

The yield curve simply plots the yield of the bond against its time to maturity. Many market observers carefully track the yield curve's shape, which is typically upward sloping and convex. However when the yield curve becomes flat or slopes downward (the spread between sovereign 10-year and 3-month bond is negative) it may signal GDP decrease (recession).

The yield curve – specifically the spread between long term and short term interest rates is a valuable forecasting tool. It is simple to use and significantly outperforms other financial and macroeconomic indicators in predicting recessions two to six quarters ahead.

Widespread use of the yield curve makes assessing its accuracy a worthwhile exercise for economists. But policymakers, too, need an accurate and timely predictor of future economic growth.

With sophisticated macroeconometric models and highly paid professional forecasters, is there any place for a simple indicator like the yield curve? Aside from the knowledge gained about the curve itself, there are several reasons to answer that question affirmatively. Simple predictions may serve as a check on more complex models, perhaps highlighting when assumptions or relationships need rethinking. Agreement between predictions increases confidence in the results, while disagreement signals the need for a second look. A simple, popular indicator also provides some insight into market sentiment. Of course, it's always a good idea to check whether the expensive and complicated forecasts actually do perform better. After first reviewing some basics about the yield curve and the reasons it might predict future growth, we look at the actual relationship (Haubrich and Dombrosky, 1996).

This paper builds on a wide range of previous researches, but differs in some ways. Bernard and Gerlach (1998) in their paper showed empirically on eight countries that the slope of the yield curve is a good predictor of the real economic activity. Berk and van Bergeijk (2001) examined 12 euro-area countries over the period of 1970-1998 and found that the term spread contains only limited information about future output growth. Their work is based on the previous theoretical researches of Estrella and Hardouvelis (1991), Estrella and Mishkin (1996). There was proven the evidence that

the slope of the yield curve and the future GDP activity are related together. However it is necessary to say that this rule was true until the end of 20th century and it mostly disappeared at the beginning of 21st century and appeared again during the financial crisis (from 2008) and later on (De Pace, 2011; Giacomini and Rossi, 2005; Chinn and Kucko, 2010). Most of the studies are focused on the relationship of the yield curve and GDP activity of United States of America.

The aim of this paper is to show if the yield spread possesses the predictive power of future economic activity in Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, the Netherlands, Portugal, Spain, Sweden and United Kingdom and to examine which time lag of the spread is the best for prediction of the future GDP.

Despite various researches, there is not any comprehensive theory that would prove the correlation between the yield spread and economic development of the country yet. Often we come across the statements that have only theoretical basis without generally valid empirical evidence. Economic models are largely based on the argument that the yield curve tends to be flatter in the situation of the tight monetary policy and the economic slowdown typically occurs with a slight time lag.

Almost perfect tool containing the relevant future data provides the yield spread of government bonds. The simplest interpretation of the yield spread is through monetary policy of the country. Based on this criterion - relatively low spread reflects the restrictive and tight monetary policy and vice versa - high spread reflects loose monetary policy. We can find the theoretical justification for using of the spread in expectations hypothesis. It assumes that long term rate of return is the average of the current and expected future short term yields. The investor's decision to invest in short term or long term asset is completely irrelevant (Mishkin, 1990).

Dependence of the yield spread and GDP can be derived from their connection to the monetary policy of the state. As bond yields react to monetary policy as well as monetary policy is able to respond to the output of the economy, the yield curve assumes overlapping of policy measures and responses. The yield curve had the ability to reflect future production either directly or indirectly. Indirectly it comes to predicting of the future interest rate and the future monetary policy. It may also reflect the future production directly because of the 10-year yields may depend on estimates of the output of the economy in 10-years.

A question arises – how many months, quarters, years of future economic activity can be predicted by the yield spread? Based on the study of Bonser-Neal and Morley (1997) as well as Chinn and Kucko (2010) spread has the greatest ability in predicting one-year horizon (four quarters ahead). As it was mentioned above, to prove if the spread has the best predictive power in one-year horizon is one of the aims of this paper.

2 Methodology and data

There are many ways of using the yield curve to predict the future real activity. One common method uses inversions (when short term rates are higher than long term rates) as recession indicators. Obtaining predictions from the yield curve requires much preliminary work. There is the principle which needs to be hold: keep the process as simple as possible.

A yield curve may be flat, up-sloping, down-sloping or humped. The standard solution uses a spread (difference between two rates). The problem is to choose the spread between the right terms. The most used spread is between 10-year and 3-month bonds. The problem is that there are rarely bonds which mature exactly in 10 years (or 3 months). In that case the best solution is to use the yield curve, which shows the yield of each maturity. Creating and calculating of the yield curve is a rather difficult task because there are many ways how to do it and every country uses different model of constructing.

The yield curves are constructed by Bloomberg, therefore the data for spreads were gained from Bloomberg. For the spreads 10-year government bond rates minus 3-month sovereign bond rates were chosen (Estrella and Hardouvelis, 1991; Estrella and Mishkin, 1996). Quarterly data were used for the spreads because the data for the economic activity are taken on quarterly basis as well. The data

for real GDP can be found at Eurostat, OECD statistics or Bloomberg. The data of real GDP obtained and used in this paper are from OECD statistics.

The selected countries are countries of EU-15 - Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, the Netherlands, Portugal, Spain, Sweden and United Kingdom.

There is no previous research which would prove or reject the hypothesis of real GDP and bond spread dependence and its change because of financial crisis in European countries.

As a measure of real growth four-quarter percent change in real GDP was used (thus the percent change of the quarter against the last year's same quarter was calculated, e.g. the change from 1Q2004 and 1Q2003 real GDP was used). GDP is standard measure of aggregate economic activity and the four-quarter horizon answers the frequently asked question – what happens the next year?

The sample period starts from 1Q2000 and ends on 4Q2013. This time range covers the period before financial crisis, period of financial crisis and period after financial crisis. The basic model is designed to predict real GDP growth/decrease two to six quarters into the future based on the current yield spread (Bonser-Neal and Morley, 1997).

This was accomplished by running of a series of regressions using real GDP activity and the spread between 10-year and 3-month bond yields lagged two to six quarters (e.g. if the spread was lagged by 4 quarters, the interest rate spread used for 3Q2001 is actually from 3Q2000).

The last step is to find out which spread lag is the best for which country and to prove the assumption that the lag of four quarters is the best one.

To generate the GDP predictions the regression using the whole sample was run, and later on two divided samples of real GDP and spreads of each selected country (the sample is divided in 4Q2007/1Q2008, because this year was the previous year of financial crisis and should show some changes in prediction of the yield curve spread) were run.

The following equation was estimated for each country:

$$\text{Real GDP}_{t+n} = \alpha + \beta * \text{spread}_t + \varepsilon_t \quad (1)$$

where:

Real GDP_{t+n} is a prediction of the future real GDP in time t + n

n is the lag of spread, value of the lag can be 2, 3, 4, 5 or 6

spread_t is spread between 10-year and 3-month state bonds in time t

ε_t is a white noise

3 Results and discussion

Does the yield curve accurately predict the future GDP?

First we can look at the data. Figure 1 shows the growth of real GDP and the lagged spread (4 quarters) between 10-year and 3-month bond yields in Sweden, Figure 2 shows the GDP activity and lagged spread (5 quarters) in Finland (similar figures can be constructed for the rest of the countries, these two are for example). A decline in the growth or real GDP is usually preceded by a decrease in the yield spread and narrowing yield spread often signals a decrease in real GDP growth. A negative spread usually precedes recessions, but not always. It is clearly visible that the dependency between real GDP and lagged spread is more visible from the year 2008 than before.

When we constructed a scatterplots with each point representing a particular combination of real GDP growth and the lagged yield spread of Sweden and Finland, it showed that the relationship between the two variables is mostly positive. It means that positive real GDP growth is associated with a positive lagged yield spread and vice versa. Plotting the data gives a strong impression that the yield spread predicts future real activity.

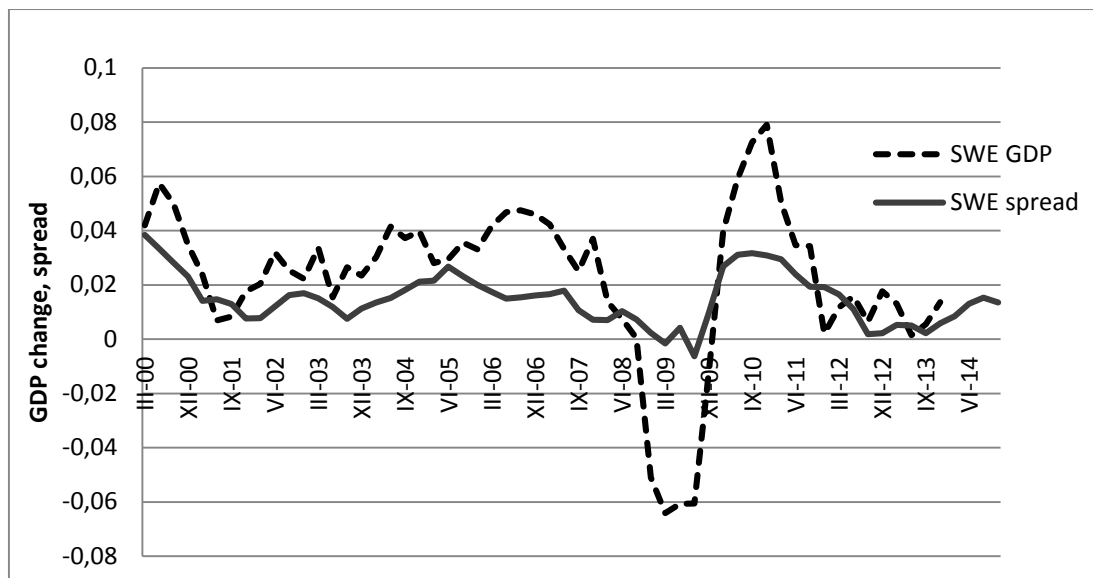


Figure 1. Real GDP and spread in Sweden (spread lagged four quarters) (Source: author's illustration)

The recession that began in 2009 was preceded by many quarters of decreasing spread and at the end the spread was very close to zero and negative. The same situation repeated in 2011 and 2012.

The prediction of the future GDP for 2014 is also quite clear - Sweden should remain in positive GDP growth situation because of upward sloping spread, GDP in Finland should decrease in the first two quarters of 2014 because of slight decline of spread and after that real GDP should increase.

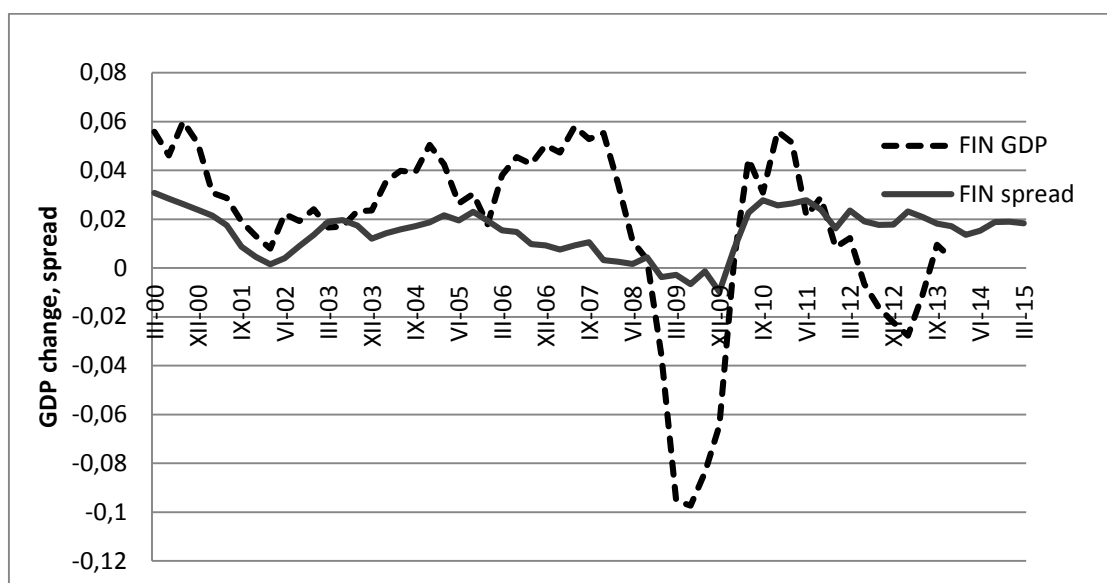


Figure 2. Real GDP and spread in Finland (spread lagged five quarters) (Source: author's illustration)

To generate the GDP predictions a regression using the whole sample to generate each predicted data point was run.

3.1 Results of regression – whole sample

The whole sample of dataset contains the real GDP from 1Q2000 to 4Q2013. A regression of the whole sample was run and we got the results as seen in Table 1.

We can say that models for Austria, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, Sweden and United Kingdom are statistically significant, because the

p-values are under 1%(***) or 5% (**) or 10% (*). However the R^2 are not very high for most of them. These models could be used as predictive models, but they would not explain very big proportion of the sample. The best results we got for Sweden ($R^2=59\%$), Greece (43%) and Spain (39%) The R^2 coefficients (coefficients of determination) show us how many percent of the sample can be explained by these models.

The models for Belgium and Luxembourg cannot be used as a predictive due to its high p-value (0.2751 resp. 0.127164) and very low R^2 (2.2% resp. 4.4%).

The best lags of spreads for this period are lag of four and five quarters. It means that we are able to predict the future economic activity four or five quarters ahead.

Table 1. Results of all countries and whole sample

1Q00 – 4Q13	Constant	Spread	P – value (F – test)	R^2
Austria (n=4)	0.00376391	0.868225	0.0021 ***	0.161442
Belgium (n=4)	0.00888723	0.276652	0.2751	0.022019
Denmark (n=4)	-0,011269	1,37123	0,001213 ***	0,183941
Finland (n=5)	-0.0091471	1.99476	0.0001 ***	0.246272
France (n=5)	0.00423946	0.497894	0.0567 *	0.065624
Germany (n=5)	-0.0055923	1.28245	0.0010 ***	0.183195
Greece (n=2)	0.0510213	-0.612543	3.14e-08 ***	0.435642
Ireland (n=2)	0.0322573	-0.376691	0.0846 *	0.054076
Italy (n=2)	0.0146107	-0.744785	0.0047 ***	0.138549
Luxembourg (n=4)	0,0207602	0,795089	0,127164	0,044171
Netherlands (n=6)	0.00267421	0.459403	0.0828 *	0.054672
Portugal (n=2)	0.0143848	-0.512342	0.0067 ***	0.128443
Spain (n=2)	0.0386834	-1.17033	2.58e-07 ***	0.391003
Sweden (n=4)	-0,0160664	2,64595	1,03e-11 ***	0,592457
United Kingdom (n=4)	0,00175741	0,734386	0,074889 **	0,059737

Source: author's own calculation.

For example we can say that future real GDP of Sweden will be:

$$\text{Real GDP Sweden}_{t+4} = -0.0160664 + 2.64595 * \text{spread}_{\text{Sweden } t} \quad (2)$$

By this model we can predict future real gross domestic product for Sweden four quarters ahead.

We can test the hypothesis that the behaviour of the spread and gross domestic product has changed during the financial crisis, therefore the sample was divided into two samples in order to prove this hypothesis.

3.2 Results of regression – divided samples

The research continued as follows – the whole sample was divided into two samples. The first one is from 1Q2000 to 4Q2007, the second one is from 1Q2008 to 4Q2013 in order to show if there is any change of behaviour and dependency between the variables before or after the financial crisis. Regressions of the first sample and the second sample were run. The results for the time span of 1Q2000 – 4Q2007 (first sample) are possible to see in Table 2, the results for the period of 1Q2008 – 4Q2013 (second sample) are in Table 3.

Table 2. Results of all countries and sample of 1Q2000 – 4Q2007

1Q00 – 4Q07	Constant	Spread	P – value (F – test)	R ²
Austria (n=6)	0.0307787	-0.455781	0.1763	0.060084
Belgium (n=3)	0.00940078	0.789470	0.0171 **	0.175160
Denmark (n=4)	0,00896117	0,686048	0,054216 *	0,118022
Finland (n=6)	0.0402452	-0.361997	0.4042	0.023303
France (n=3)	0.0132341	0.512490	0.0610 *	0.112158
Germany (n=2)	0.0258136	-0.714181	0.1058	0.084827
Greece (n=4)	0,0824349	-0,944996	0,000900 ***	0,311635
Ireland (n=4)	0,0362481	1,06149	0,033029 **	0,142717
Italy (n=6)	0.0193113	-0.365716	0.2460	0.044581
Luxembourg (n=4)	0,0414236	0,727023	0,050328 *	0,121733
Netherlands (n=6)	0.0140177	0.452712	0.0405 **	0.132546
Portugal (n=6)	0.0268181	-0.793569	0.0684 *	0.106410
Spain (n=2)	0.0409743	-0.608141	0.0004 ***	0.341136
Sweden (n=3)	0.0127549	1.24421	0.0005 ***	0.339790
United Kingdom (n=3)	0.0217436	0.513701	0.0118 **	0.193272

Source: author's own calculation.

In the first period the best results for Germany and Spain were gained with lag of spreads by two quarters, for Belgium, France, Sweden and United Kingdom by three quarters, for Denmark, Greece, Ireland, Luxembourg by four quarters, for Austria, Finland, Italy, Netherlands, Portugal by six quarters. We can say that the best lags for this period were lags three, four and six quarters.

We can see that only models for Belgium, Denmark, France, Greece, Ireland, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom can be used as predictive, because its p-value is under 10% (*), resp. 5% or 1%. The R² are not very high. We got the best results for Spain, Sweden and Greece, however the results are worse than in the models for the whole sample period.

Models for Austria, Finland, Germany and Italy cannot be used as a predictive model because of their high p-values and very low R².

In the second period the best results for Greece and Spain were gained with lag of spreads by two quarters, Ireland and Luxembourg by three quarters, Belgium and United Kingdom by four quarters, Austria, Denmark, Finland, France, Germany, Italy, the Netherlands and Portugal by five quarters. We can say that the best lag for this period was lag of five quarters.

All models except of models for the Netherlands, Portugal and Spain are statistically significant and therefore can be used as predictive models. The R² are much higher compared to the previous period, therefore we can say that the model works better in the second time span (1Q2008 – 4Q2013).

R² of Austria, Denmark, Finland, France, Germany, Greece, Ireland and Sweden is higher than 35% which is good result compared to the previous period.

Table 3. Results of all countries and sample of 1Q2008 – 4Q2013

1Q08 – 4Q13	Constant	Spread	P – value (F – test)	R ²
Austria (n=5)	-0.013038	1.23360	0.0003 ***	0.461509
Belgium (n=4)	-0,01357	0,748380	0,037962 **	0,198028
Denmark (n=5)	-0.034622	2.21931	0.0008 ***	0.405540
Finland (n=5)	-0.040066	2.60163	7.06e-05 ***	0.519705
France (n=5)	-0.021866	1.19091	0.0003 ***	0.450592
Germany (n=5)	-0.029323	2.33538	5.21e-05 ***	0.532403
Greece (n=2)	-0.004677	-0.327937	0.0016 ***	0.372018
Ireland (n=3)	-0.039228	0.640673	0.0004 ***	0.441337
Italy (n=5)	-0.030901	0.777472	0.0265 **	0.204601
Luxembourg (n=3)	-0.048691	5.06959	0.0032 ***	0.332778
Netherlands (n=5)	-0.014606	0.566874	0.2135	0.069415
Portugal (n=5)	-0.017514	0.232028	0.3346	0.042371
Spain (n=2)	-0.0030989	-0.238178	0.3600	0.038210
Sweden (n=4)	-0,02898	2,95430	4,75e-07 ***	0,726575
United Kingdom (n=4)	-0,04280	1,76924	0,009571 ***	0,290996

Source: author's own calculation.

The best predictive models are as follows:

$$\begin{aligned}
 \text{Real GDP}_{\text{Austria } t+5} &= -0.013038 + 1.23360 * \text{spread}_{\text{Austria } t} \\
 \text{Real GDP}_{\text{Belgium } t+4} &= -0.01357 + 0.748380 * \text{spread}_{\text{Belgium } t} \\
 \text{Real GDP}_{\text{Denmark } t+5} &= -0.034622 + 2.21931 * \text{spread}_{\text{Denmark } t} \\
 \text{Real GDP}_{\text{Finland } t+5} &= -0.040066 + 2.60163 * \text{spread}_{\text{Finland } t} \\
 \text{Real GDP}_{\text{France } t+5} &= -0.021866 + 1.19091 * \text{spread}_{\text{France } t} \\
 \text{Real GDP}_{\text{Germany } t+5} &= -0.029323 + 2.33538 * \text{spread}_{\text{Germany } t} \\
 \text{Real GDP}_{\text{Greece } t+2} &= 0.0510213 - 0.612543 * \text{spread}_{\text{Greece } t} \\
 \text{Real GDP}_{\text{Ireland } t+3} &= -0.039228 + 0.640673 * \text{spread}_{\text{Ireland } t} \\
 \text{Real GDP}_{\text{Italy } t+2} &= 0.0146107 - 0.744785 * \text{spread}_{\text{Italy } t} \\
 \text{Real GDP}_{\text{Luxembourg } t+3} &= -0.048691 + 5.06959 * \text{spread}_{\text{Luxembourg } t} \\
 \text{Real GDP}_{\text{Netherlands } t+6} &= 0.00267421 + 0.459403 * \text{spread}_{\text{Netherlands } t} \\
 \text{Real GDP}_{\text{Portugal } t+2} &= 0.0143848 - 0.512342 * \text{spread}_{\text{Portugal } t} \\
 \text{Real GDP}_{\text{Spain } t+2} &= 0.0386834 - 1.17033 * \text{spread}_{\text{Spain } t} \\
 \text{Real GDP}_{\text{Sweden } t+4} &= -0,02898 + 2,95430 * \text{spread}_{\text{Sweden } t} \\
 \text{Real GDP}_{\text{United Kingdom } t+4} &= -0,04280 + 1,76924 * \text{spread}_{\text{United Kingdom } t}
 \end{aligned}$$

For example if there would be a change of 1% up in the spread of the France then the GDP would increase about 1.169% $(-0.021866 + 1.19091 \times 1\%)$.

However we can use the models for predicting of the GDP, we cannot summarize any new theoretical finding about which lag of spread (measured in quarters) is the best for predicting of the future GDP activity. We can see that the best lag of spread always differs in all countries and even in every observed period. The most common lag (and possibly the most suitable for predicting of the GDP) is lag of spreads four or five quarters. The lag of four quarters occurred 13 times in the observed samples, the lag of five quarters occurred 12 times in the observed samples.

4 Conclusion

Does the yield curve accurately predict the real economic growth? Answering this seemingly simple question requires a surprising amount of preliminary work. The 10-year, 3-month spread has

substantial predictive power and should provide good forecast of real growth two to six quarters into the future. We showed that the best predictive lag of spreads is a lag of four and five quarters in order to get the best results for predictive models. However the results differ in the each selected country and time period. The results presented above confirm that 10-year and 3-month yield spread has a significant predictive power for real GDP growth and the behaviour of the models changed during and after the financial crisis and the models have better predictive ability than models from the period before financial crisis.

The simple yield curve growth forecast should not serve as a replacement for the predictions of companies, who deal with predicting of many economic indicators, it however does provide enough information to serve as a useful check on the more sophisticated forecasts.

Future research could be extended to a wider examination of the best lags of spreads in more countries, such as EU28. It would be interesting to see if there is any rule which would prove the hypothesis that lag of four and five quarters is the best for predicting future GDP growth in the all countries of European Union (in USA it was proved that the best lag of spread is a lag of 4 quarters).

5 Acknowledgement

Support of Masaryk University within the project MUNI/A/0786/2013 – “*Analysis and Prediction of Financial and Investment Products Performance*” is gratefully acknowledged.

References

- [1] Berk J. and P. van BERGEIJIK, 2001. On the Information Content of the Yield Curve: Lessons for the Eurosystem? *Kredit und Kapital*, pp. 28-47.
- [2] Bernard, H. J. and S. Gerlach, 1998. *Does the Term Structure Predict Recessions? The International Evidence*. In: CEPR Discussion Papers 1892.
- [3] Bonser-Neal, C. and T. R. Morley, 1997. *Does the Yield Spread Predict Real Economic Activity? A Multicountry Analysis*. In: Economic Review: Federal Reserve Bank of Kansas City, No. 3.
- [4] Chinn, M. and K. Kucko, 2010. *The predictive power of the yield curve across countries and time*. NBER Working Paper Series, 16398.
- [5] De Pace, P., 2011. GDP Growth Predictions through the Yield Spread: Time – Variation and structural Breaks. In: Euro Area Business Cycle Network.
- [6] Estrella, A. and G. A. Hardouvelis, 1991. The Term Structure as a Predictor of Real Economic Activity. *Journal of Finance*, Vol. 46, No. 2, pp. 555-576.
- [7] Estrella, A. and F. S. Mishkin, 1996. The Yield Curve as a Predictor of U.S. Recessions. *Current Issues in Economics and Finance*, Federal Reserve Bank of New York, Vol. 2, No. 7.
- [8] Giacomini, R. and B. Rossi, 2005. *How stable is the Forecasting Performance of the Yield Curve for Output Growth*. Duke University and University of California, Los Angeles, pp. 783 - 795 .
- [9] Haubrich, J. and A. Dombrosky, 1996. Predicting Real Growth Using the Yield Curve. *Economic Review: Federal Reserve Bank of Cleveland*, Vol. 32, No. 1, pp. 26-35.
- [10] Mishkin, F., 1990. *Yield curve*. NBER Working Papers Series, No. 3550.

THE COMPARATION OF IMPACT FDI ON ECONOMIC DEVELOPMENT OF THE REGION IN THE CZECH REPUBLIC AND THE SLOVAK REPUBLIC

Monika Chobotová

*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: chobotova@opf.slu.cz*

Abstract

The issue of Foreign Direct Investment (FDI) has become a natural part of the market economy in today's globalized world. Foreign investments help to develop the economy because they affect the growth of labour productivity and provide the new financial capital. FDI provides live new technological know-how and thus contributes to increasing knowledge of economy. Their entry into the selected region is to reduce regional disparities. The aim of this document was to make comparison of the impact of FDI on economic development regions in the Czech and Slovak Republic. And furthermore, to assess the impact of foreign direct investment, correlation coefficient was used, which was investigated by means of interdependence between FDI and the GDP, FDI and the unemployment rate between FDI and a number of businesses.

Keywords

Foreign Direct Investment, Region Development, GDP.

JEL Classification

R3, C4, F21.

1 Introduction

The importance and foreign investment increases with advancing globalization. Foreign investments are considered an important indicator of economic development in the national economy. Foreign direct investment (FDI) is a driving force of growth for every developing economy. It brings new capital, technology and know-how. This investment comes either in form of a Greenfield project where a new plant is built and therefore a new company formed. Or as the form of foreign capital inflow to an existing domestic company. In both cases, this company is typically characterized by higher productivity and competitiveness (Javorcik and Arnold 2005).

Governments in transition and the developing countries often compete to attract foreign investors by offering them various advantages. The Czech Republic is no exception. In 1998 its government approved a system of subsidies for foreign investors that were supposed to increase the competitiveness of Czech industry.

The following three sections examine how foreign investment has influenced the performance of the Czech economy. The first section looks at the performance of enterprises receiving foreign investment; the second at the effect those enterprises have had on domestic firms, in particular, on productivity and market dynamics, and the third at the overall impact of foreign investment on the economy as a whole.

Country's ability to attract interesting investment projects is influenced by many factors, among which we can mention those such as political and economic stability of the country, market size, tax burden, the legislation in force, the infrastructure, the knowledge structure of the population. In summary, we can conclude that the value of this indicator affects the business environment, because the higher the confidence in the environment, the higher the share of foreign direct investments in the country. In the Czech Republic, this issue is governed by Act No.192/2012 Coll.

The investment has specific impacts in the sector, region or country, in the context of economic policy but is also essential to analyze the impact of macroeconomic character. As the main aim of this document we have set to make comparison the impact of FDI on economic development regions in the Czech and Slovak Republic. After summarizing the relevant theoretical background it is followed by empirical part, where there are comparisons of the impact of FDI on economic development regions

in the Czech Republic and the Slovak Republic. In the last part of this document it presents the results of correlation analysis, which deals in detail with the studied factors.

2 Theoretical background

The issue of foreign direct investment can be found in a number of theories. It is one of the basic localization theories from the perspective of regional development. For the first systematically conceived the theory of localization is considered von Thünen theory of localization of agricultural activity, which is considered a major factor in agricultural production localization distance of the sales market and the associated transportation costs (Damborský and Wokoun, 2010). The publication (Smith, 1966) merged theory with the theory of minimum cost maximum profit in a single model. According to the author, the optimal location of the business where there are the greatest differences between costs and revenues. According to (Weber, 1929) who is the creator of the classic theory of industrial location is the best place to locate a company with the lowest cost. The scope of foreign direct investment can be seen at the level of individual regions. The region has a number of factors that are dynamically changing. Locational factors are specific characteristics of the places that affect economic activity in the region. Locational factors are divided into several types. Professional publications are frequently encountered with the classification of soft (non-measurable psycho-sociological factors) and hard factors (measurable). In English literature we can find different terminology that does not have this structure. The work of (Wong, 1998) is based on the division of factors into two groups, where the first is the localization assumptions such as transport infrastructure, and the second group consists of the so-called intangible factors, such as the amenities, quality of life, the image of the region). Reason of the location of FDI vary and often change over time. There are also several company-level studies of the Czech Republic.

3 Literature review

The survey results, which will be presented in this article is based on available studies dealing with the issue of foreign direct investment and the results of its own treatment of the issue being addressed within the study grant program, SGS 20/2014.

The evaluation of the impact of investment incentives in the Czech Republic in the last two years, engaged in extensive studies. Study „*Analysis of investment incentives*„ in the Czech Republic, which was prepared in 2007, Faculty of Economics, University of Economics under the leadership of Jiří Schwarz.

A study by (CzechInvest and Deloitte, 2010) is dealt with the evaluation of the impact of investments utilizing incentives. Some effects of FDI and investment incentives can be measured only with difficulty. Yet it is striking how different these studies provide an assessment study by Deloitte showed that approximately about three-quarters of new jobs and revenue to the state budget created by the suppliers from which investor's incentives to encourage purchase. This study evaluates the provision of investment incentives in the Czech Republic positively. Directly or indirectly originated by the study by projects supported IP 1998-2008 to 308 thousand jobs. Results of both studies are significantly different. The study calls into question the importance of IP as an effective tool for creating new jobs and reducing the adverse impact on regional differences. It questioned the importance of positive spill-over effects caused by the impact of supported projects further into the economy (Regional Development Agency, 2014).

The first study calls into question the impact of IP on reducing undesirable differences between regions in the country. Based on a comparison of current knowledge we have in this post, we have decided the issue of foreign direct investment to pay closer attention and to compare the impact of FDI on the regions of the Czech Republic and the Slovak Republic. Development of foreign direct investment is due to better inter-comparability of the indicators monitored by the volume of FDI per capita of the region (in thousand CZK/person). The distribution of FDI can be observed in the whole

country, but also at the level of regions and districts. Evaluation of the impact will be monitored for a period of time from 2000 to 2011. Analysis to development will be based on data obtained from the Czech Statistical Office (CSO), the Czech National Bank (CNB), the agency CzechInvest, The National Bank of Slovakia, Slovak Statistical Office (SSO) and SARIO.

This paper is focused on exploring the interdependence between FDI and the level of regional GDP and between FDI and unemployment and between FDI and the number of businesses using the correlation coefficient.

4 Development of foreign direct investment in the Czech and Slovak Republic

In the Czech Republic since 1998 to 2013 given or pledged a total of 709 investment incentives for projects in total investment 625.36 billion CZK. The Slovak began extensive inflow of foreign investments until after 2000. Besides the completion of the first reforms this date corresponds to the setting up of Slovak Agency for Investment and Trade Development (SARIO) and the provision of investment incentives.

In terms of territory with the highest share of foreign direct investment in the Czech Republic following countries: Netherlands (27.4%), Germany (14.9%) and Austria (13.2%). Among the countries whose total amount invested capital exceeds CZK 100 billion, can also include Luxembourg, France and Switzerland. Among the countries of the European Union derives 88.6% of total FDI (31st December 2010) and about 93.8% are investments from Europe. Among non-European countries and derives only (6.2%) of foreign capital and major investors are the United States and Japan (CNB, 2014).

The Slovak has the highest share of FDI Netherlands (26%), Austria (16%) and Italy (8%).

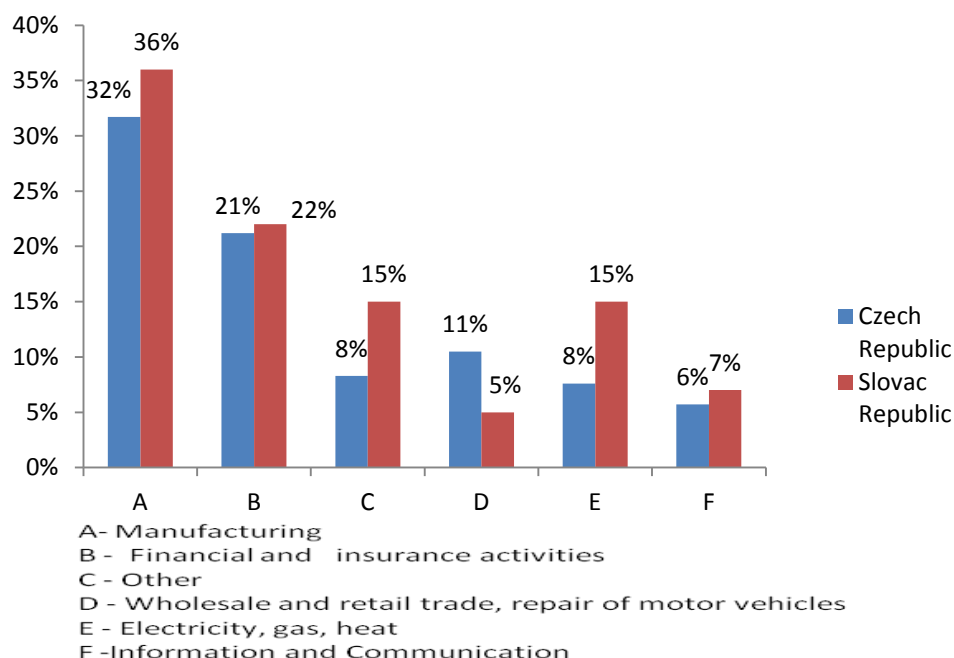


Figure 1. Foreign direct investment in the Czech and Slovak Republic - sectoral structure
 (Source: own processing data according to CNB and NBS (2013))

In the sector structure of FDI in the Czech Republic, the largest share of foreign capital accounted for by the services sector (52.8%) of the total capital invested, compared to the manufacturing industry achieved (31.7%). In the service has the largest share of financial intermediation, except

insurance and pension funding (21.2%), followed by manufacturing and repair of motor vehicles (10.5%) and noteworthy investment in real estate activities (8.5%). The most share of foreign investment were in manufacturing (36%) (automotive, chemical, electronics industry, engineering industry, rubber, pulp) and to the financial sector (22%). In electricity, water, gas and steam (15%) share comprises area information and communications (7%), retail and wholesale, and the remaining (5%) to other sectors (15%). The highest investments in the manufacturing sector are in the automotive industry. By the end of the reference year 2011, investors have invested 3.2 billion. EUR. The automotive industry in Slovakia is considered workhorse of the economy, which contributes significantly to the GDP. The Slovak Republic has three automakers.

From a regional perspective is dominated by foreign direct investment per capita in the region is the city of Prague. There is established a number of investors who operate in other regions. In other regions we can conclude that the situation is more uniform see fig. 1. Central Bohemian region has the second highest value (196 thousand. CZK). Very important values have also structurally weak regions like Moravia (141 thousand. CZK) and the Usti Region (105 thousand. CZK). Conversely, a very low level of FDI inflow recorded Olomouc (49 thousand. CZK) and region Karlovy Vary (65 thousand. CZK).

The Bratislava region is located up (60%) of FDI. Followed by a Trnava Region (9%), share (6%) have Košice and Žilina, (4%) share a region of Trenčin, (3%) have Nitra region and the least foreign investment went to Banská Bystrica (2%) and Prešov region (1%).

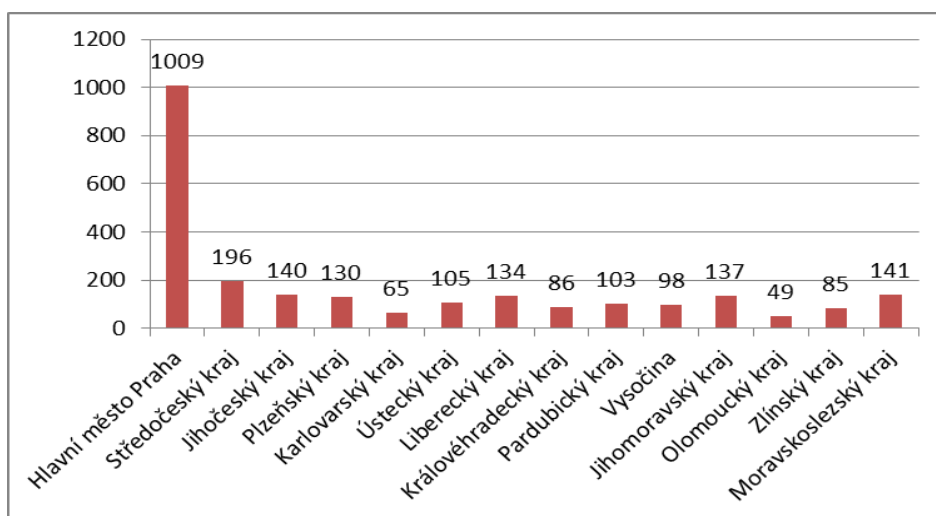


Figure 2. The inflow of FDI per capita in the Czech region of 31 12th 2000 to 2011 (in thousands CZK)
 (Source: own processing data according to CNB (2013))

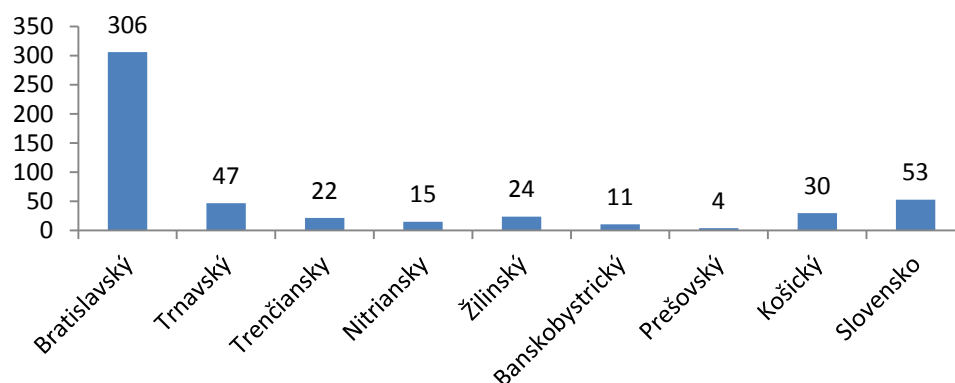


Figure 3. The inflow of FDI per capita in the Slovak region of 31 12th 2000-2011 (EUR)
 (Source: own processing data according to NBS (2013))

5 Analysis of the impact of FDI on economic development in the Czech Republic and Slovakia

These indicators were selected for investigating the impact of FDI on development of the region's gross domestic product per capita, unemployment rate and the number of enterprises for the period 2001-2011.

In time series analysis, before running the causality test the variables must be tested for stationary. We used unit root test for testing stationary. Time series tests were performed in the program EViews 7. The test program carried out using verification, thus checking the authenticity of the null hypothesis H_0 . We accept the hypothesis if the probability exceeds 0.05. For this purpose, in this current study we use the conventional ADF tests, the Phillips–Perron test following (Phillips and Perron, 1988) and the Dickey–Fuller generalized least square (DF-GLS) de-trending test proposed by Elliot et al. (1996). The resulting tests confirmed the no stationary of time series in the unemployment rate and the number of businesses. The time series of GDP per capita and FDI per capacity were stationary time series to the second differentiation. The time series of number of businesses was stationary to the first differentiation.

The correlation analysis was used to determine the dependence of two variables FDI / GDP. The value of the correlation coefficient indicates direct correlation between studied values. The coefficient expresses the degree of dependence, the higher the absolute value of the coefficient, the greater the dependence between variables. The first was using correlation analysis for investigated relationship between FDI and GDP per capita converted to one. Results of correlation analysis, all regions were close to one, which means that there is a direct relationship between these factors. Olomouc in the Czech Republic showed the lowest value (0.483). The same results were obtained even in the Slovak regions. Correlation analysis, we confirmed the direct interdependence between FDI and GDP in each region at level NUTS 3. The correlation analysis has demonstrated a direct correlation between FDI and the number of businesses in all regions in the Czech Republic and the Slovak Republic. The lowest value reached Trnava region (0.577). The correlation analysis confirmed the dependency between said inflow of FDI and unemployment in the Slovakia regions. The result was an indirect dependency, which means that with the growth of FDI inflows create new jobs and the unemployment rate is reduced. This means that the growth of one variable will increase the value of the second variable. The same result as in the Slovak region showed only five regions in the Czech Republic. The other nine regions showed a low direct correlation between FDI and unemployment. However, the maximum value is only (0.31) of the Hradec Kralove region.

Table 1. The results of the correlation analysis of the impact of FDI on the selected factors in the Czech Republic and the Slovakia

Czech Republic NUTS III	GDP/FDI	Unemployment rate / FDI	Number businesses/ FDI
Prague	0.967	-0.199	0.943
Central Bohemia region	0.941	-0.275	0.926
South Bohemia region	0.939	0.170	0.99
Pilsen region	0.787	0.294	0.953
Karlovy Vary region	0.938	0.140	0.823
Ustecky region	0.705	-0.697	0.603
Liberec region	0.934	0.181	0.932
Hradec Kralove region	0.971	0.310	0.823
The Pardubice region	0.7876	0.053	0.902
Region Vysocina	0.705	-0.074	0.819
South Moravian region	0.771	0.063	0.845
Olomouc region	0.483	0.161	0.617
Zlin region	0.833	0.081	0.79
Moravian Silesian region	0.972	-0.854	0.95

Source: own processing.

Table 2. The results of the correlation analysis of the impact of FDI on the selected factors in the Slovakia

Slovakia NUTS III	GDP/FDI	Unemployment rate / FDI	Number businesses/ FDI
Bratislava region	0.975	-0.683	0.948
Trnava region	0.707	-0.791	0.577
Trenčín region	0.947	-0.597	0.966
Nitria region	0.974	-0.861	0.969
Zilina region	0.988	-0.721	0.955
Banska Bystrica region	0.912	-0.836	0.940
Prešov region	0.827	-0.342	0.882
Košice region	0.941	-0.713	0.789

Source: own processing.

In the regression analysis, we have examined the quality of the relationship, ie the impact of FDI inflows on economic growth regions. The variable representing the dependent variable is GDP per

capita. To detection addiction factors we were created regression line and equation, which have the following shape:

$$Y_t = \alpha + X_t \quad (1)$$

Where X_t is FDI per capita is the independent variable in the time and Y_t (GDP per capita) is the dependent variable. Helping regression functions, we obtain a specific line, which follows fig. 4. Figure presents the regression line confirmed the high impact of FDI on economic development in the Czech Republic and the Slovak Republic.

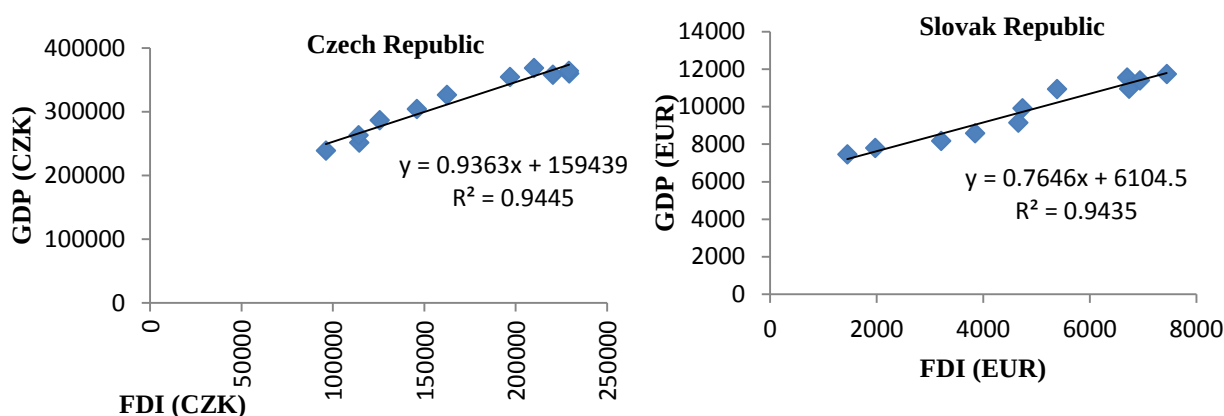


Figure 4. Regression line impact of FDI on GDP (Source: own processing)

The regression line confirmed the high impact of FDI on the number of businesses in the region in the Czech Republic and the Slovakia. The result represented a linear dependence, indicating that the growth of FDI inflows will be new businesses in the region.

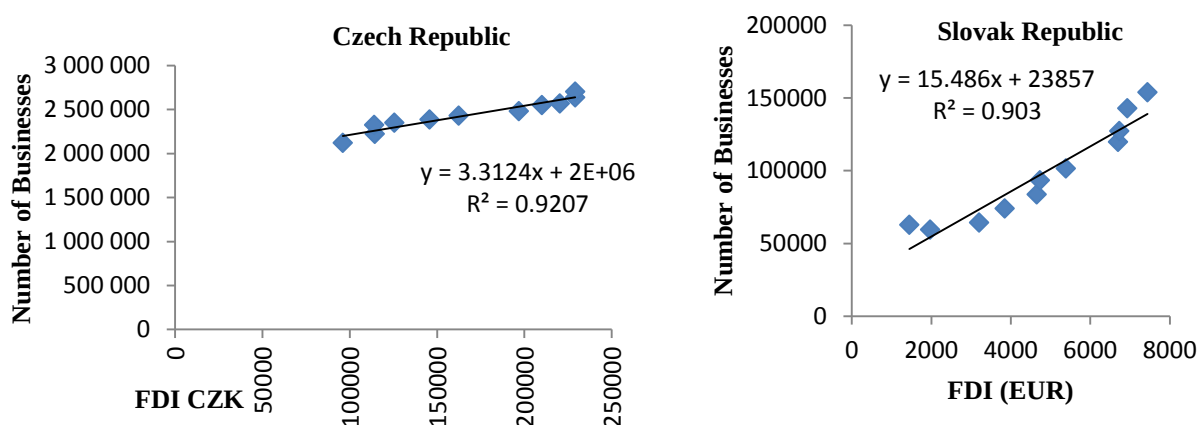


Figure 5. Regression line impact of FDI on number of businesses (Source: own processing)

On the basis regression line we can confirm that the GDP influences the unemployment rate. In analyzing the impact of the influx on registered unemployment rate is dependent variable rate of unemployment. The coefficient of correlation between regions in the Slovak Republic expresses a negative value, which shows low indirect dependencies. This means that during the growth of FDI will decrease the unemployment rate. The result of regression analysis is a straight line regression with a low decreasing tendency. This statement demonstrates the following fig. 6.

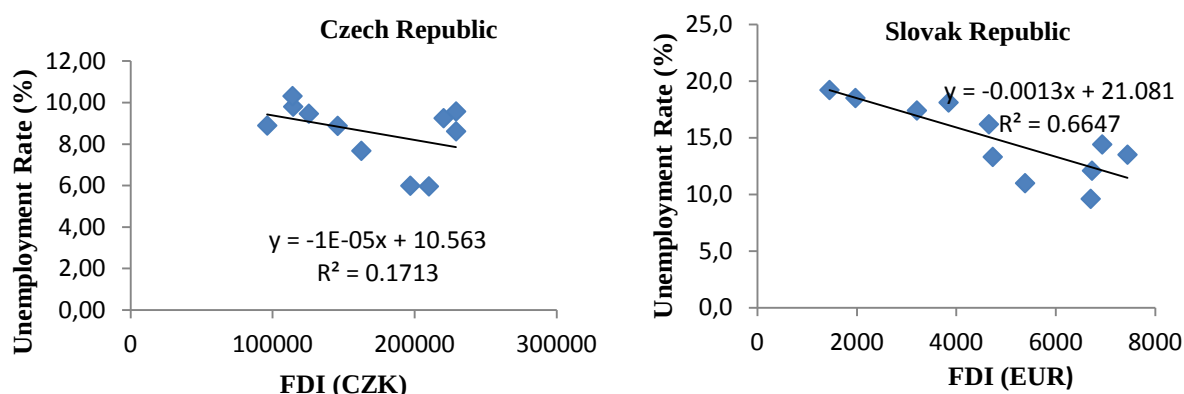


Figure 6. Regression line impact of FDI on unemployment rate (Source: own processing)

6 Conclusion

The Foreign Direct Investments contributes to regional development. The fastest economic development in the period under review was precisely in those regions which have seen the largest volume of FDI. The results of the analysis show that FDI positively influence regional development. Both states are the dominant region in the Czech Republic and Prague in Slovakia, Bratislava Region, mainly for the benefit of favourable geographical location, quality infrastructure, skilled workforce, the presence of various scientific and research institutions and able to purchase high-demand population. On the other hand, the lowest values were reached Olomouc in the Czech Republic. Slovakia lags Banska Bystrica region and least developed region is the region of Presov.

The analysis of the effect of FDI on economic performance showed that the volume of FDI and GDP size interact. This fact was observed in both states. Foreign investments have a clearly positive effect on labour productivity growth in Czech and Slovak economy. Enterprises owned by foreign capital have higher productivity per worker than for domestic companies. In the case of the volume of FDI and the unemployment rate has not demonstrated the existence of a correlation or relationship with any other country. It can be said that the growth rate of FDI does not correspond with the rate of growth of unemployment. Unconfirmed existence of this relationship seems to be rather surprising, especially when it is noted that the development of FDI GDP is significantly influenced the contrary. In the case of indicators of FDI and the number of businesses in both countries was confirmed by a very strong dependence. The correlation analysis confirmed indirectly on doing between FDI and unemployment rates in all regions of the Slovak Republic. In the Czech Republic, the results were the same in all regions. The correlation coefficients showed positive values for certain regions. This positive correlation may be due to a time delay. The FDI affects the rate of unemployment with a delay time $t + 1$. This post is obviously a basis for examining the impact of foreign direct investment. It will be better to examine other factors that operate on different variables for better clarification and confirmation of the results. The question is what impact foreign investment for long-term development of the economy. Each investment will bring a new capital into the economy with the exception of some privatization investment which will also create the new jobs. These effects, however, are one-off and may in the longer term dissipate. In the worst case, this can even damage domestic companies, increasing unemployment or displace domestic exporters. To avoid negative effects, it is necessary to monitor in addition to the volume as well as their quality and create the best possible conditions conducive to a positive technological and knowledge transfer.

7 Acknowledgement

This document was supported by the student grant project program SGS 20/2014.

References

- [1] Damborský, M. and R. Wokoun, 2010. Locational Factors of Small and Medium Enterprises in Terms of the Economy of the Czech Republic. *E+M Economy and Management*, vol. 13, issue 2, pp. 32-43.
- [2] Javorcik B. S. and J. M. Arnold, 2014. *Gifted Kids or Pushy Parents? Foreign Direct Investment and Plant Productivity in Indonesia* [online]. [2014-06-12]. Available from: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.177.2995&rep=rep1&type=pdf>.
- [3] Czechinvest. *Investment incentives*. [online]. [2014-06-05]. Available from: <http://www.czechinvest.org/data/files/brozura-k-novele-zakona-3297-cz.pdf>.
- [4] Czechinvest. *Granted investment incentives*. [online]. [2014-04-07]. Available from: <http://www.czechinvest.org/data/files/1993-1-pol-2012-public-62-cz.xls>.
- [5] Czechinvest and Deloitte. *Analysis of the Impact of Incentives on the Czech Republic* [online]. [2014-04-14]. Available from: <http://www.czechinvest.org/data/files/analyza-dopadu-pobidek-na-cr-2050-cz.pdf>.
- [6] Czech Statistic Office, 2014. [online]. [2014-06-29]. Available from: <http://czso.cz>.
- [7] CNB. *Direct Foreign Investment 2001 - 2011*. [online] [2014-06-12]. Available from: http://www.cnb.cz/cs/statistika/platebni_bilance_stat/publikace_pb/pzi/index.html.
- [8] Regional Development Agency. [online]. [2014-06-28]. Available from: http://arr.cz/downloads/strategicke_dokumenty/analza%20potebnosti%20a%20monosti%20za%20veden%20investinch%20pobdek%20moravskoslezskho%20kraje.pdf.
- [9] Schwarz, J. et al., 2007. *Analysis of Investment Incentives in the Czech Republic*, [online]. [2014-06-07]. Available from: [file:///C:/Users/Admin/Downloads/priloha001%20\(1\).pdf](file:///C:/Users/Admin/Downloads/priloha001%20(1).pdf).
- [10] Smith, D. M., 1966. A Theoretical Framework for Geographical Studies of Industrial Location. *Economic Geography*, vol. 42, issue 2, pp. 95-113.
- [11] Weber, A., 1929. *Alfred Weber's Theory of the Location of Industries*. The University of Chicago Press.
- [12] Wong, C., 1998. Determining Factors for Local Economic Development: The Perception of Practitioners in the North West Eastern Region of the UK. *Regional Studies*, vol. 32, issue 8, pp. 707-720.

ECONOMIC GROWTH IN THE EU COUNTRIES: DO INSTITUTIONAL SETTINGS AND MACROECONOMIC POLICIES MATTER?

Ladislava Issever Grochová

*Mendel University in Brno, Faculty of Business and Economics, Zemedelska 1, 613 00 Brno, Czech Republic
email: ladislava.grochova@mendelu.cz*

Abstract

A controversy among academics about whether macroeconomic policies matter for economic growth leads to broad discussions. In this paper we focus on the argumentation of Acemoglu et al. (2005) who state that macroeconomic policies explain economic growth since they can be understood as proxies for institutions. The object of the paper is then to support the idea that macroeconomic policies, in particular, fiscal policy in our case influences the economic growth in particular institutional settings in the EU. In detail, regressions augmented with the interactions between fiscal policy tools and institutional settings are used to verify whether the policy influences economic growth directly or whether institutions are the driving forces giving the direction to fiscal policy. Moreover, employing the panel data allows for the explanation of both cross-country differences in economic growth as well as of the evolution of economic growth over time in these countries. We conclude that institutional settings together with fiscal policy matter and are more influential to economic growth than fiscal policy itself.

Keywords

Economic Growth, European Union, Fiscal Policy, Institutions.

JEL Classification

E02, E62, O11, O17.

1 Introduction

There is a widespread discussion on whether macroeconomic policies enhance economic growth or whether the relevant driver is institutional framework that is just proxied by macroeconomic policies acts. Traditionally in endogenous growth models, macroeconomic policies are considered to promote economic growth as they directly influence the level and growth of economic output. In endogenous growth models, fiscal policy plays a role in the economic growth process. Since the seminal contributions of Barro (1990), King and Rebelo (1990) and Lucas (1990), other studies have deepened the analysis identifying conditions under which fiscal tools influence economic growth (see, for example, Mendoza et al., 1997). Empirical studies, however, are inconsistent when assigning the effect of fiscal policies on economic growth (the list of these contributions can be found in Zagler and Dürnecker, 2003; or Kneller, Bleaney and Gemmell, 1999). Recently, by contrast, the role of macroeconomic policies in economic growth has receded into the background as the major role is attributed to institutions. Acemoglu et al. (2005) explain that this shift is a natural consequence of the fact that macroeconomic policies are mere proxies for institutions. Thus, the attention should be paid right to the institutions rather than to overstate the role of policies.

In fact, this is shown by practice. In the EU, for example, macroeconomic policies are framed in rules as Stability and Growth Pact, Treaty on the Functioning of the European Union, Treaty on Stability, Coordination and Governance where policies are guided by institutional settings. Moreover, after the hit of economic crisis causing diverse economic obstacles at national levels and hence problems in the EU economic development, the demand for strengthened institutional architecture that would guarantee better policy coordination has even increased. This all claims in favour of Acemoglu et al. (2005) conclusions that institutions are key determinants of economic growth and macroeconomic policies is only a set of acts framed by institutional setting. As we are interested in the impact of policies on economic growth at a national level in the EU we focus on fiscal policy that is entirely conducted by national authorities in contrast to common monetary policy in the Euro-area countries conducted by European Central Bank.

A large number of empirical papers study either the impact of fiscal policy (see Bassanini and Scarpetta, 2001; Zagler et al., 2003) or the impact of various institutions as the rule of law, property rights protection, political stability, corruption (see Acemoglu and Verdier, 2000; Butkiewicz and Yanikkaya, 2006; Dollar and Kraay, 2000; Grochová and Otáhal, 2013; Kouba and Grochová, 2012; Valeriani and Peluso, 2011) on economic growth. Yet, the empirical clarification of the link between fiscal policies and institutions in context of economic growth is not widespread and these determinants are often freely interchanged.

Hence, the paper aims at the explanation of the link between fiscal policy and institutions in the context of economic growth and at empirical verification of their role in enhancing economic growth in the EU countries. The analysis of a possible inverse relationship is behind the scope of this contribution.

The rest of the paper is organized as follows. In the next section applied methodology is described, section 3 presents empirical results and the last section summarizes the paper and concludes.

2 Methodology

Addressing the aforementioned goal of the paper, an empirical analysis is based on dataset covering EU28 countries for the period 1993–2011, from three sources. All variables, except for institutional data, is obtained from Eurostat, while institutional data is downloaded from World Bank and Kuncic (2014).

The analysis is grounded on Cobb-Douglas technology comprising real GDP per capita as an output that is produced by inputs – capital stock and labour. In order to examine the effects of fiscal policy on long term economic growth, Bleaney et al. (2001) recommend to disaggregate the total volume of expenditures into two categories as some categories of government expenditures so called growth-enhancing expenditures (e. g. infrastructure, education or health expenditures) are expected to support growth in contrast to unproductive or purely consumptive expenditures. Because of this rational only productive expenditures are included in the analysis. Moreover, all government expenditures need to be financed either by taxing private sector activities or issuing debt. This is the reason why both determinants are included in our model, as well. In particular, only non-distortionary taxes (consumption taxes enhancing economic growth as they do not reduce the returns to investment) are considered (for detailed discussion see Bleaney et al., 2001).

Following Acemoglu et al. (2003) ideas World Bank governance indicators (namely government effectiveness, regulatory quality, rule of law) and recently published dataset by Kuncic (2014, comprising legal institutional quality, political institutional quality, and economic institutional quality that capture institutional settings) are included to control for the effects of institutions on economic growth. For the purpose of the model estimation the variables are used in logarithms and are of annual frequency. The non-logarithmized variables are described in more detail in table 1.

The multivariate panel regression model is applied in the paper to examine the impact of fiscal policy and institutions on economic growth in the EU countries. Considering stationarity issues (see table 2), our regression model takes the following equation form:

$$\Delta \ln rGDP_{it} = \alpha + \beta_1 \ln K_{it} + \beta_2 \Delta \ln L_{it} + \beta_3 \ln Debt_{it} + \beta_4 \ln Inst_{it} + \beta_5 \Delta \ln Fiscal_{it} + \beta_6 \ln Inst_{it} * \Delta \ln Fiscal_{it} + \varepsilon_{it} \quad (1)$$

$$\varepsilon_{it} = \mu_i + u_{it}$$

where $\ln Fiscal_{it}$ and $\ln Inst_{it}$ stand for particular fiscal policy and institutional variables in country i and time period t , $\ln Inst_{it} * \Delta \ln Fiscal_{it}$ is an interaction term (for a complete list of both fiscal policy and institutional variables and other variables included in the equation see table 1, for the purpose of taking the logarithms, values of institutional variables are increased by 1 unit to eliminate cases with

negative signs) resulting in 12 model specifications (due to combinations of fiscal and institutional variables), μ_i is country specific effect and u_{it} is white noise. Interaction term is included right to verify whether there is conditionality between fiscal policy and institutional settings. Improved institutional settings should reinforce the effects of fiscal policy, while an insignificant result is expected in the reverse order. Lagged dependent variable is used as an instrument to deal with endogeneity of the independent variables $lnGov$ and $lnITR$, respectively.

Table 1. Description of variables and descriptive statistics

Variable	Description	Source
rGDP	real GDP per capita (EUR, ref. year 2005)	Eurostat
K	gross capital formation (mil. EUR, ref. year 2005)	Eurostat
L	active population (thousands)	Eurostat
Debt	central government debt to GDP ratio	Eurostat
Gov	productive government expenditures (mil. EUR, ref. year 2005)	Eurostat
ITR	implicit tax rate on consumption (percent)	Eurostat
GE	government effectiveness	World Bank
RQ	regulatory quality	World Bank
ROL	rule of law	World Bank
Legal	legal institutional quality	Kuncic (2014)
Political	political institutional quality	Kuncic (2014)
Economic	economic institutional quality	Kuncic (2014)

Source: Eurostat, World Bank, Kuncic (2014).

3 Results

Table 2 lays out some descriptive statistics for the dataset. It can be seen that the per capita GDP in the EU countries is, on average, 20,639 EUR per capita, that is around median of 188,000 million EUR per country and per annum. The output is produced with median capital of 38,500 million EUR and median labour of 4,700,000. Median 38,000 million EUR of government expenditures are financed by an average 21.4% implicit tax rate on consumption and by reaching median central government debt of 97,000 million EUR attacking alarming 52% of GDP.

Table 2. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Median	Min	Max
rGDP	658	20639	13389	20771	1008	71099
K	668	332886	649123	38485	671	2600000
L	615	32595	62871	4656	154	243352
Debt	450	53.761	29.695	51.8	3.700	175.100
Gov	668	351824	685461	37938	873	2500000
ITR	425	21.412	4.387	19.9	12.500	34.200
GE	476	1.149	0.673	1.075	-0.620	2.360
RQ	476	1.169	0.464	1.180	-0.160	2.080
ROL	476	1.069	0.640	1.105	-0.610	2.000
Legal	490	0.756	0.123	0.768	0.341	0.968
Political	498	0.753	0.104	0.754	0.172	0.928
Economic	498	0.684	0.137	0.716	0.106	0.933

Source: own calculations.

In order to prevent from spurious regression, stationarity of time-series was tested with Im, Pesaran and Shin test (2003). Dependent variable as well as labour and fiscal policy variables result to be I(1) processes so they are used in differences, while the remaining variables are stationary and enter the model in levels (see Table 3).

Table 3. Im, Pesaran and Shin unit root test

Variable	Levels		Differences	
	statistics	p-value	Statistics	p-value
lnrGDP	-1.519	0.064	-3.955	0.000
lnK	-3.276	0.001	-11.146	0.000
lnL	3.607	1.000	-7.124	0.000
lnDebt	-1.270	0.102	-10.276	0.000
lnGov	-0.697	0.243	-13.522	0.000
lnITR	-1.270	0.102	-10.276	0.000
lnGE	0.806	0.790	-12.130	0.000
lnRQ	-0.601	0.274	-9.900	0.000
lnROL	-1.574	0.058	-11.031	0.000
lnLegal	-6.021	0.000	-18.189	0.000
lnPolitical	-3.553	0.000	-18.312	0.000
lnEconomic	-9.855	0.000	-9.862	0.000

Source: own calculations.

Initially, fixed effects estimator for each model specification was used. Because of a remarkable correlation between fiscal policy variables and error terms two-stage instrumental variables estimator is applied taking the lag of dependent variable as an instrument.

Tables 4 and 5 show the resultant coefficients of the regression model specifications based on the equation 1. The reported coefficients illustrate the effect of fiscal policy upon economic growth in the EU countries. As expected, both fiscal variables as well as all institutional variables demonstrate to have significant positive effect on economic growth (from 0.24 to 0.35 and from 0.34 to 1.66, respectively). Positive sign of fiscal policy can be attributed to either direct effect of fiscal policy itself or being a proxy for institutions, or indirect effect via institutional improvement enhancing fiscal policy and thus economic growth. The mechanism of the indirect effect of fiscal variables can be uncovered by means of interactions. An improvement in architecture of institutions (by one unit in the reported table) can increase the impact of fiscal policy, and vice versa. As can be seen, only the first direction is significant (and positive from 0.26 to 0.96) which implies that it is right institutional framework that matters. Even if the direct effect of fiscal policy is confirmed, this can be due to the fact that fiscal policy is a mere proxy for institutions as claim also Acemoglu et al. (2005). But there is no doubt related to the fact that an improvement of institutions makes more efficient fiscal policy since better institutional framework represents a better guide for fiscal policy conduction and thus economic growth. This conclusion is robust because it is not sensible to model specifications and is valid for both economic enhancing fiscal tools and for all included types of institutions. Regarding remaining variables, all have expected signs at at least 5% of significance level for model specifications with Kuncic's (2014) institutional variables. The model specifications with World Bank institutional variables are slightly less significant.

Table 4. 2SLS IV estimation (dependent variable: differenced logarithm of real GDP per capita, fiscal: general public services expenditures, i.e. productive expenditures)

Institution:	Govern. Effectiv.	Regulatory Quality	Rule of Law	Legal Institutional Quality	Political Institutional Quality	Economic Institutional Quality
β_1	0.030 (0.012)*	0.047 (0.011)***	0.053 (0.012)***	0.063 (0.012)***	0.050 (0.013)***	0.034 (0.014)*
β_2	0.083 (0.227)	0.158 (0.228)	-0.135 (0.231)	0.594 (0.212)*	0.708 (0.322) ⁺	0.725 (0.324) ⁺
β_3	-0.025 (0.008)**	-0.027 (0.007)***	-0.030 (0.008)***	-0.036 (0.009)***	-0.036 (0.010)***	-0.042 (0.009)***
β_4	-0.028 (0.049)	0.073 (0.098)	-0.072 (0.060)	1.664 (0.337)***	1.098 (0.460)*	0.343 (0.128)*
β_5	0.352 (0.076)***	0.269 (0.068)***	0.251 (0.078)**	0.260 (0.072)***	0.276 (0.077)***	0.236 (0.075)**
β_6	0.004 (0.005)	-0.010 (0.010)	0.006 (0.007)	0.154 (0.034)***	0.105 (0.045)*	0.041 (0.021) ⁺
α	-0.204 (0.136)	-0.361 (0.119)**	-0.419 (0.138)**	-0.542 (0.137)***	-0.381 (0.163)*	-0.159 0.16
lnInst = 1:						
$\beta_5 + \beta_6$	0.956 (0.561) ⁺	0.842 (0.322)*	0.957 (0.670)	0.414 (0.151)***	0.381 (0.101)***	0.277 (0.115)*
$\Delta \ln \text{Fiscal} = 1$:						
$\beta_4 + \beta_6$	-0.024 (0.561)	0.063 (0.322)	-0.066 (0.670)	1.818 (1.509)	1.203 (1.089)	0.384 (0.315)
N	348	363	342	310	310	310
R-sq	0.717	0.722	0.717	0.701	0.706	0.701
adj. R-sq	0.692	0.698	0.692	0.668	0.674	0.668
BIC	-1346.8	-1396.6	-1337.5	-1195.3	-1172	-1169.4
Wald chi2	54.17	49.36	16.22	17.75	13.14	12.63

Source: own calculations (standard errors in parentheses, ⁺ p<0.1, * p<0.05, ** p<0.01, *** p<0.001).

Table 5. 2SLS IV estimation (dependent variable: differenced logarithm of real GDP per capita, fiscal: taxation on domestic goods and services, i.e. non-distortionary taxation)

Institution:	Govern. Effectiv.	Regulatory Quality	Rule of Law	Legal Institutional Quality	Political Institutional Quality	Economic Institutional Quality
β_1	0.054 (0.013)***	0.058 (0.013)***	0.076 (0.014)***	0.062 (0.017)***	0.041 (0.017)*	0.047 (0.018)**
β_2	0.120 (0.242)	0.160 (0.237)	-0.156 (0.235)	0.757 (0.335) ⁺	0.780 (0.338) ⁺	0.814 (0.338)*
β_3	-0.036 (0.008)***	-0.039 (0.008)***	-0.037 (0.009)***	-0.062 (0.011)***	-0.0634 (0.011)***	-0.064 (0.011)***
β_4	-0.077 (0.146)	0.097 (0.178)	0.027 (0.099)	0.816 (0.375)*	0.969 (0.501) ⁺	0.366 (0.172)**
β_5	0.214 (0.048)***	0.190 (0.046)***	0.192 (0.047)***	0.271 (0.055)***	0.237 (0.056)***	0.226 (0.054)***
β_6	0.028 (0.049)	-0.045 (0.063)	-0.023 (0.032)	0.221 (0.123)	0.161 (0.159)	0.031 (0.130)
α	-0.403 (0.152)**	-0.427 (0.149)**	-0.623 (0.158)***	-0.424 (0.204) ⁺	-0.137 (0.193)	-0.249 (0.202)
lnInst = 1:						
$\beta_5 + \beta_6$	0.942 (0.502) ⁺	0.846 (0.302)*	0.969 (0.651)	0.492 (0.159)***	0.398 (0.103)**	0.257 (0.113)*
$\Delta \ln \text{Fiscal} = 1$:						
$\beta_4 + \beta_6$	-0.049 (0.502)	0.053 (0.302)	0.003 (0.651)	0.137 (0.159)	0.130 (0.103)	0.197 (0.113)
N	309	322	303	268	268	268
R-sq	0.704	0.71	0.705	0.765	0.769	0.764
adj. R-sq	0.672	0.678	0.672	0.739	0.743	0.737
BIC	-1183.2	-1236	-1195.9	-1012.8	-1006.5	-1007.1
F	12.68	14.41	19.16	14.61	13.38	13.48

Source: own calculations (standard errors in parentheses, ⁺ p<0.1, * p<0.05, ** p<0.01, *** p<0.001).

4 Conclusion

The paper explores the link between fiscal policy and institutions in the context of economic growth and their role in enhancing economic growth in the EU countries. The analysis is based on the hypothesis of Acemoglu et al. (2005) that the trigger of economic growth are sound institutions and fiscal policy has only a marginal role as it is guided by institutions. Fairly new dataset of institutional data published by Kuncic (2014) is used for our purpose. The hypothesis is tested applying multivariate panel regression, using two-stage instrumental variable estimator to deal with endogeneity problem.

The results provide a unique evidence of a robust and significant negative effect of institutional settings on economic growth directly guiding also fiscal policy to enhance economic growth in the EU countries. Moreover, similar results in terms of their significance and magnitude to Abbas and Christensen (2007), Kneller et al. (1999) or Ulaşan (2012) are achieved in standardly estimated variables as capital, labour or indebtedness.

To conclude the paper contributes to the existing literature confirming empirically Acemoglu et al. (2005) hypothesis that an important determinant of economic growth are sound institutions that guide other economic activities towards more intense economic growth.

5 Acknowledgement

This research was financially supported by the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement No. 290647.

References

- [1] Acemoglu, D., S. Johnson and J. A. Robinson, 2005. Institutions as the Fundamental Cause of Long-Run Growth. In: P. Aghion and S. Durlauf, eds. *Handbook of Economic Growth*. Amsterdam: Elsevier, pp. 386-472.
- [2] Acemoglu, D. and T. Verdier, 2000. The Choice Between Market Failures and Corruption. *The American Economic Review*, vol. 90, issue 1, pp. 194-211.
- [3] Ali Abbas, S. M. and J. E. Christensen, 2008. *The Role of Domestic Debt Markets in Economic Growth: An Empirical Investigation for Low-income Countries and Emerging Markets*. IMF Working Paper WP/07/127.
- [4] Barro, R. J., 1990. Government Spending in a Simple Model of Endogenous Growth. *Journal of Political Economy*, vol. 98, issue 5, pp. S103-S125.
- [5] Bassanini, A. and S. Scarpetta, 2001. *The driving forces of economic growth: panel data evidence for the OECD countries*. OECD Economic Studies No. 33, 2001/II.
- [6] Bleaney, M., N. Gemmell and R. Kneller, 2001. Testing the Endogenous Growth Model: Public Expenditure, Taxation, and Growth over the Long Run. *Canadian Journal of Economics*, vol. 34, pp. 36-57.
- [7] Butkiewicz, J. L. and H. Yanikkaya, 2006. Institutional Quality and Economic Growth: Maintenance of the Rule of Law or Democratic Institutions, or Both? *Economic Modelling*, vol. 23, issue 4, pp. 648-661.
- [8] Dollar, D. and A. Kraay, 2000. *Property Rights, Political Rights, and the Development of Poor Countries in the Post-Colonial Period*. World Bank Working Papers.
- [9] Eurostat. *Eurostat Database*. [online]. [2014-06-20]. Available from: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database.
- [10] Grochová, L. and T. Otáhal, 2013. How Does Corruption in Central and Eastern Europe Hurt Economic Growth? Granger Test of Causality. *Ekonomický časopis*, vol. 61, issue 6, pp. 563-577.
- [11] Im, K. S., M. H. Pesaran and Y. Shin, 2003. Testing for Unit Roots in Heterogeneous Panels. *Journal of Econometrics*, vol. 115, pp. 53-74.
- [12] King, R. and S. Rebelo, 1990. Public policy and economic growth: Developing neoclassical implications. *Journal of Political Economy*, vol. 98, issue 1, pp. 126-151.
- [13] Kneller, R., M. F. Bleaney and N. Gemmell, 1999. Fiscal policy and growth: evidence from OECD countries. *Journal of Public Economics*, vol. 74, issue 2, pp. 171-190.
- [14] Kouba, L. and L. Grochová, 2012. Financial Crisis, Elite Political Instability and Economic Growth in Central and Eastern European Countries. In: D. Stavarek and P. Vodova, eds.

Proceedings of the 13th International Conference on Finance and Banking, Karviná: SU OPF, pp. 184-195.

- [15] Kuncic, A., 2014. Institutional Quality Dataset. *Journal of Institutional Economics*, vol. 10, issue 1, pp. 135-161.
- [16] Lucas, R., 1990. Supply-side economics: an analytical review. *Oxford Economic Papers*, vol. 42, issue 2, pp. 293-316.
- [17] Mendoza, E. G., G. M. Milesi-Ferretti and P. Asea, 1997. On the Ineffectiveness of Tax Policy in Altering Long Run Growth: Harbergers Superneutrality Conjecture. *Journal of Public Economics*, vol. 66, pp. 99-126.
- [18] Ulaşan, B., 2012. *Openness to International Trade and Economic Growth: A Cross-Country Empirical Investigation*. Kiel Institute for the World Economy: Economics Discussion Papers No. 2012-25.
- [19] Valeriani, E. and S. Peluso, 2011. The Impact Of Institutional Quality On Economic Growth And Development: An Empirical Study. *Journal of Knowledge Management, Economics and Information Technology*, vol. 1, issue 6, pp. 25.
- [20] World Bank. *World Bank Open Data*. [online]. [2014-06-20]. Available from: <http://data.worldbank.org>.
- [21] Zagler, M. and G. Dürnecker, 2003. Fiscal policy and economic growth. *Journal of Economic Survey*, vol. 17, issue 3, pp. 397-418.

ESTIMATING THE SIZE OF THE SHADOW ECONOMY OF THE CZECH REPUBLIC

Ondřej Jajkowicz

*VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: ondrej.jajkowicz@vsb.cz*

Abstract

About thirty years ago, economists specify the phenomenon of the shadow economy. Exploring the shadow economy has been accompanied by efforts to its precise definition, accurate measurement and interpretation of the consequences of this phenomenon. The main problem from the perspective of economic policy due to the existence of the shadow economy is its effect on the process of creating appropriate economic policies. The high level of the shadow economy is reflected in the unreliability of macroeconomic aggregates. The implementation of economic policy decisions based on these distorted macroeconomic data, are mostly ineffective. This article aims to estimate the size of the shadow economy in the Czech Republic between 1993 and 2013 using the monetary approach. Available empirical results point to a growing trend in the size of the shadow economy in the Czech Republic since 1993 to 2013, when its size in 2013 was estimated at 16% of GDP.

Keywords

Currency, Shadow Economy, Shadow, Estimation, Demand, Czech Republic.

JEL Classification

E26, K42, O17.

1 Introduction

More than three decades ago economists specified a phenomenon which they gave many names, among them "shadow economy". The period of investigation of the shadow economy has been accompanied by a number of attempts to define more precise, more accurate capture, accurate measurement, explanation of its consequences for the economy and the search for appropriate policies and measures for its elimination. In the eighties of the 20th century a variety of discussion within the OECD countries on the causes and consequences of the growing number of informal economy activities took place. In recent years, attention has turned to the shadow economy because of rising unemployment and the related problem of financing public expenditure. Public discussion regarding undeclared work, tax evasion and all other activities of the shadow economy is growing. But precisely define, detect and measure the informal economy is a very difficult task. The complexity of measuring the size of the shadow economy comes out of her character, the actors in this part of the economy doing everything possible to not be discovered. One of the fundamental problem in the field of exploration of the shadow economy is also a lack of generally applicable and accepted definition. View of the shadow economy varies depending on whether it is examined in an environment of market economy, transition economies, or centrally controlled economy. Also, the definitions of the shadow economy by individual authors are very heterogeneous. According to Schneider (2011) for the shadow economy are considered economic activities and income, which aim to avoid government regulation, taxation or any capture.

Despite the importance of the shadow economy, there has not been a deeper analysis of this phenomenon in the Czech Republic. In the period of transition from a centrally planned economy to a market economy has undergone Czech Republic systematic transformation been accompanied by the adoption of new economic, social and political relations in society. Individuals and companies were faced with a major challenge to adapt to the new economic, political, legal and social environment, which in many cases meant respecting strict new rules and restrictions imposed by the government. Also, the government itself has undergone a transformation, the creation of new institutions necessary for effective public sector management and the creation of favorable conditions for the development of the private sector in a market economy. It can be assumed that all of the above, including the development of private enterprise, the gradual rise in unemployment, the introduction

of the standard tax system of the market economy (introduction of value added tax, excise tax, department of social insurance premiums from income tax) had an influence on the development of the shadow economy in the Czech Republic.

This article aims to estimate the size of the shadow economy in the Czech Republic. Despite the complexity of measuring the size of the shadow economy, there are methods available for this purpose. The most widely used methods include methods based on the use of monetary units. These methods are generally based on the assumption that cash (currency) is the only means of payment used in the shadow economy, because it does not leave a trace. On the same assumption is also based currency demand approach selected to estimate the size of the shadow economy in the Czech Republic in this article.

2 General causes and consequences of the shadow economy

The growth of the shadow economy is caused by many different factors. Among the most important and most frequently cited is mainly increasing the tax burden and the amount of compulsory social security contributions, the high degree of regulation of the formal economy, especially the labor market, forced reduction of weekly working hours, early retirement, reduction civic honor and loyalty towards public institutions combined with declining tax morality (Schneider, 2011).

In the context of the shadow economy can be seen, both positive and negative effects. It is necessary to monitor whether the positive effects outweigh the negative ones, or vice versa. Proponents of the shadow economy argue that the shadow economy acts as a source of economic growth and increases the flexibility of the economic system. Shadow economy in this sense acts as a natural mechanism to adapt the formal economy of any faults arising from the economic system. The shadow economy also helps ensure the existence of certain groups of population. The advantages lie in increased employment, which has a multiplier effect on the economy. It also provides additional resources for the formal economy through the spending of income earned from the shadow activities. The shadow economy contributes to the growth dynamics of the economy and leads to the promotion of socio-economic system (Fassmann, 2007).

The major negative effects include loss of tax revenue, weakening the legislation, non-compliance with labor regulations, undermining the credibility of institutions, a source of corruption and so on. Disadvantages lie in limiting the formal economy at the expense of the shadow economy. Another negative effect is connected with the economic competition. Entities operating in the shadow economy pay less tax than subjects in the formal economy. Most, however, do not pay taxes at all. This gives them a competitive advantage and unfair competition develops. Another problem is the difficulty of determining the right economic policy. The shadow economy cannot be fully captured by official statistics (Fassmann, 2007).

3 Measuring the shadow economy

Measuring the shadow economy is not a simple task. You may ask how it is possible to estimate or measure something that is hidden? In the literature there are various methods to estimate the shadow economy. Some methods are considered more accurate than others. In general, the methods used to estimate the shadow economy can be divided into direct methods and indirect methods.

3.1 Direct methods

Direct methods are focused on the direct detection of the operators active in the "shadow", rather than indirect signs of the shadow economy. Among the direct methods belong surveys and tax auditing (Eilat, Zinnes, 2000). Direct methods, however, suffer from a relatively large number of deficiencies. Surveys suffer from a lack of confidence, which can lead surveyed entities to provide false information. This is especially true in such a sensitive area, which is participating in the shadow economy. For this reason, surveys capture only the lower level of the actual size of the informal

economy. Accuracy of results is heavily dependent primarily on the willingness of respondents to cooperate and to confess their participation in shadow activities. In addition, surveys are relatively expensive.

In the case of tax audits is captured only the visible part of the shadow economy. Fassmann (2007) states that the method of tax audits even fails to make a picture of the actual tax evasion, or a representative sample of persons who commit tax evasion. At present, these methods are not able to provide estimates of the shadow economy evolution over time. The only advantage of direct methods remains their ability to inform on the existence of shadow economy activities (Schneider, Enste, 2000).

3.2 Indirect methods

Indirect methods are often referred to as the "indicator approach" because they are mostly macroeconomic character and to estimate the size shadow economy using various macroeconomic indicators, which provide information about the development of shadow economy over time.

The first method used to measure the size of the shadow economy is the difference between the total national expenditure and income. In many countries, it has been shown that the GDP calculated using the expenditure exceeds the level of GDP calculated by the income approach. The resulting difference between the two units is considered to estimate the size of the shadow economy (Feige, 1990).

Another macroeconomic indicator used to estimate the size of the shadow economy is the difference between official and actual labor force of the country. The decline in labor force participation in the formal economy is considered to be an indicator of increased activity in the informal economy, provided that the total labor force participation is constant, *ceteris paribus* (Öğünç, Yilmaz, 2000). Is expected to an increasing number of shadow economy activities (increasing employment in the informal economy), if the ratio of people employed in the formal economy to the population decreases and the ratio of labor force to population remains constant. The main problem of this method remains the fact that in its final analysis serves only to estimate of the shadow economy and undeclared work (Eilat, Zines, 2000). The indirect methods further include the monetary method, approach in terms of electricity consumption and modeling approach.

Another method of estimating the size of the shadow economy is a method of electricity consumption. The difference between the change in total energy consumption and official GDP estimate is the basis for this method. The method is based on the observation that in the short run elasticity of the ratio of electricity consumption and GDP is close to one. Based on these findings, it is evident that the growth of total electricity consumption growth reflects the total GDP. Any difference between total GDP and officially measured GDP is the estimated size of the shadow economy (Schneider, Enste, 2000).

Model approach to measuring the size of shadow economy includes multifactor combined methods. Modeling approach considers the shadow economy as an unobserved variable that is affected by a variety of causes (tax load regulation and high transaction costs, etc.). The resulting model examines a range of exogenous and endogenous variables that lead to growth and existence of shadow economy in time and in this process derives the size shadow economy over time. In 2010, Schneider applied this approach. Through its model estimated the size of shadow economy for 162 countries. It is called a MIMIC model (full title "The dynamic multiple-indicators multiple-model Causes").

The last group consists of monetary methods. These methods include access from the perspective of the demand for currency and Guttman method. Currency demand approach is used to estimate the size shadow economy in this article. The method is described in detail in the next chapter.

4 Currency demand approach

Currency demand approach was and is a widely used method to estimate the size of the shadow economy. This approach was first used by Cagan (1958), who examined the correlation between the demand for currency and tax burdens in the USA in 1919 - 1955. Cagan's approach was later developed by Tanzi (1983), that in order to determine the size of the shadow economy estimated currency demand function in the USA between years 1929-1980. The original function of the demand for currency can be written as follows (Cagan, 1958):

$$C_O = A(1 + \Theta)^\alpha Y_0^\beta \exp(-\gamma i) \quad (1)$$

Where C_O is the observed currency; Θ is a variable that gives incentives to make hidden transactions. This is the key variable of all currency models and it can be approximated using government consumption normalized by GDP, tax rates (direct and indirect taxes), tax revenues to GDP or total tax revenues $(\Theta)^\alpha$; Y_0 is the scale variable (for example the registered GDP); i measures opportunity cost of holding cash (the interest rate or rate of inflation); α , β , γ and A are parameters.

The observed currency (C_O) in original function (1), is equal to total currency (C_T), which includes both, the currency used for transactions in the shadow economy (C_S) and currency used in the formal economy (C_F) (Ahumada, Alvaredo, Canavese, 2006):

$$C_O = C_T = C_F + C_S \quad (2)$$

Further, let the observed income (Y_O) be equal to the registered or legal income (Y_L). Then the total income (Y_T) can be expressed as follows:

$$Y_T = Y_O + Y_S = Y_L + Y_S \quad (3)$$

Where (Y_S) is income from activities carried out in the shadow economy. It follows that an econometric estimation of (1) will result in biased coefficient estimators given that the observed currency includes (C_S) but the observed income excludes (Y_S). However, setting (Θ) to a level closer to its lowest historical value, or zero (i.e. when the incentive to engage in hidden activities is minimum), it is possible to obtain an unbiased estimation of (C_F) since, (Y_O) = (Y_L) (Hernandez, 2009).

A demand for currency is estimated as in (1). Then follow Ahumada et al. (2006), under the assumption that the demands for (C_F) and (C_S) have the same functional form with equal parameters, (Θ) is set equal to zero to get an estimate of the amount of cash demanded under no incentives to hide transactions ($\hat{C}_F$):

$$\hat{C}_F = \hat{A} Y_0^{\hat{\beta}} \exp(-\hat{\gamma} i) \quad (4)$$

At this point, because we know (C_O) from equation (1) and ($\hat{C}_F$) from equation (4) is possible to determine the amount of currency demanded for transactions in the shadow economy ($\hat{C}_S$):

$$\hat{C}_S = C_T - \hat{C}_F \quad (5)$$

The velocity (V_F) of circulation in the registered economy is:

$$V_F = \frac{Y_L}{C_o} \quad (6)$$

In currency demand approach exist Assumption, that velocity for formal transactions is same for shadow economy transactions, so:

$$V_F = \frac{Y_L}{C_o} = \frac{Y_S}{C_S} \quad (7)$$

Assuming the same velocity of circulation in both the formal and shadow economy, the amount of income that results from shadow economy transactions ($\hat{Y}_S$) is equal to:

$$\hat{Y}_S = V_F \cdot \hat{C}_S \quad (8)$$

Within the currency demand approach, there are three fundamental assumptions. The first assumption says that the main cause of the shadow economy is a high tax burden on operators in the formal economy. The second assumption says that people use cash money, instead of formal banking accounts, in their shadow transactions in order to evade paying tax. The third assumption was mentioned above, and it is the same velocity of money (currency) in the shadow and formal economy.

5 Methodology and data

The estimated model, representing the demand for currency in the Czech Republic in this article looks like the following:

$$C_t = \beta_0 + \beta_1 \cdot TAXREVP_t + \beta_2 \cdot GDPPC_t + \beta_3 \cdot IR_t + \varepsilon_t \quad (9)$$

with $\beta_1, \beta_2 > 0; \beta_3 < 0$

where:

C_t - currency in circulation normalized by GDP deflator in national currency (1996Q1-2013Q4 in mil.CZK);

$TAXREVP$ - Total tax revenues per capita in national currency (1996Q1-2013Q4);

$GDPPC$ - GDP per capita in real terms in national currency (1996Q1-2013Q4);

IR - 1 year nominal saving deposit interest rate (1996Q1-2013Q4 in %).

The currency demand model will be estimated using ordinary least squares (OLS) method via the econometric program E-views 7. Expected positive impact on currency demand for GDP and total tax revenues, and a negative effect from the part of interest rate. Given the assumption that the shadow economy transactions take place in cash, means growth in the size of the shadow economy also increase the demand for currency. Given the assumption that the shadow economy transactions take place in cash, it means that if there is a growth in the size of the shadow economy, there is also a growing demand for currency in circulation. Therefore, positive or negative relationship of explanatory variables with respect to the amount of currency in circulation is simultaneously positive or negative relationship to the size of the shadow economy.

The estimation model uses quarterly data from 1996 to 2013. Currency in circulation and the GDP deflator which is used to get the real value of currency in circulation, are drawn from the Central Bank of the Czech Republic quarterly statistical series. Data on GDP in real terms and 1-year nominal interest rate are also drawn from the quarterly statistics of the Czech Central Bank. Data on total tax revenue are taken from OECD statistics. Population data are drawn from the Eurostat

statistics. Before proceeding with the estimation, each series is individually examined under the null hypothesis of a unit root against the alternative of stationarity. For this purpose, an Augmented Dickey-Fuller (ADF) test is used to check for the existence of a unit root in the variables.

The ADF test results of the currency approach variables showed that all levels of those variables exhibit evidence of a unit root. The variables are therefore non-stationary, which could lead to spurious regression. To overcome the non-stationarity of the variables, it was necessary to convert these variables at first difference. Subsequent ADF test for the first difference showed that all variables are stationary.

6 Estimating the size of the shadow economy in the Czech Republic

This part of the article is focused on estimating the size of the shadow economy in the Czech Republic in the years 1996-2013 using the currency demand approach. First, according to equation (9) is estimated the demand for currency in the Czech Republic. After estimating the model and obtaining the coefficients of the relationship resulting from equation 9, we proceed to estimate the size of the shadow economy. Table (1) shows the regression results of the currency demand equation (9).

Table 1. Regression results for the demand for currency in circulation in Czech Republic

Dependent Variable: D(C01)				
Method: Least Squares				
Sample (adjusted): 1996Q2 2013Q4				
Included observations: 71 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPPC)	0.792302	0.177916	4.453239	0.0000
D(TAXREVP)	2.641099	1.154585	2.287488	0.0253
D(IR)	-2530.827	986.1997	-2.566242	0.0125
C	1781.690	785.0081	2.269646	0.0265
R-squared	0.256200	Mean dependent var		3112.443
Adjusted R-squared	0.222896	S.D. dependent var		6636.332
S.E. of regression	5850.159	Akaike info criterion		20.24101
Sum squared resid	2.29E+09	Schwarz criterion		20.36849
Log likelihood	-714.5560	Hannan-Quinn criter.		20.29171
F-statistic	7.692678	Durbin-Watson stat		2.065623
Prob(F-statistic)	0.000172			

Source: Own estimation (E-views 7).

F-statistic value of 7.693 indicates that the entire model is significant. According to D-W statistics with a value of 2.06, there is no autocorrelation of residuals. The estimated coefficients of the all variables have the expected signs. GDPPC coefficient has a positive sign and is highly significant at the 1% level of significance. It means that the growth of GDP per capita leads to an increase in demand for currency and therefore to the growth of the shadow economy. This is consistent with the typical positive effect of income on money demand. TAXREVP has a positive sign and is highly significant at the 5% significance level. This means that the growth of tax revenues (tax burden) leads to an increase in demand for currency, which is then used for transactions in the shadow economy (growth in the size of the shadow economy). IR coefficient has a negative sign, and is highly significant at the 5% significance level. This confirms the negative relationship between interest rate and demand for currency. With the growth of interest rate, the currency becomes more expensive. Ultimately, for transactions in the shadow economy is used less currency and the size of the shadow economy decreases.

Subsequently, residual and stability tests were performed. Primarily was tested heteroscedasticity, serial correlation and normality of residues. Based on the tests results was found:

- *Residuals are not serially correlated;*
- *Residuals are not heteroscedastic, residuals are homoscedastic;*
- *Residuals are normally distributed.*

On the basis of the stability test (CUSUM) was demonstrated stability of the dependent variable. Ramsey Regression Equation Specification Error Test (RESET) test confirmed that the model is correctly specified. Test results are presented in Appendix 1.

The main drawback of the model is low explanatory power of independent variables on dependent variable given by the coefficient of determination (R-squared = 0.26). Given that this model is not used for prediction, it can be (despite such a low value of determination coefficient) relative to the F-statistic and the significance of the coefficients of variables accept. Low coefficient of determination can be explained by the limited scope of the investigation period (1996-2013) and the difficulty to determine all variables affecting the demand for currency.

In order to obtain an estimate of the size of the shadow economy, we compute total demand for currency (C_T) using all the coefficients in equation (10). As the variables in the above model are all differenced to the same degree (I(1)), the level of the dependent variable (C_T) can be calculated by multiplying the coefficients of the differenced variables by the level data (Alkhdour,2011):

$$C_T = 1781.690 + 2.641099 \cdot TAXREVP + 0.792302 \cdot GDPPC - 2530.827 \cdot IR + \varepsilon_t \quad (10)$$

Then, we set the tax variable ($TAXREVP$) equal to zero and re-estimate the equation, keeping all the other coefficients unchanged to obtain formal currency ($\hat{C}_F$).

$$\hat{C}_F = \beta_0 + 0 \cdot TAXREVP + 0.792302 \cdot GDPPC - 2530.827 \cdot IR + \varepsilon_t \quad (11)$$

The difference between (C_T) and ($\hat{C}_F$) gives a currency used in the shadow economy ($\hat{C}_S$). To determine the size of the shadow economy ($\hat{Y}_S$) is necessary to multiply the amount of currency used in the shadow economy by the velocity of money (V_F). The velocity of currency in circulation, (V_F), which is assumed to be equal for both formal and informal money, is calculated by dividing the official GDP in real terms by the official currency in circulation (C_O). The size of the shadow economy using the currency demand approach can be obtained from following equation:

$$\hat{Y}_S = V_F \cdot \hat{C}_S \quad (12)$$

Figure (1) shows the estimated value (percent of official GDP) of the annual shadow economy in Czech Republic during the period 1996-2013. Quarterly values were adjusted on an annual because of higher clarity.

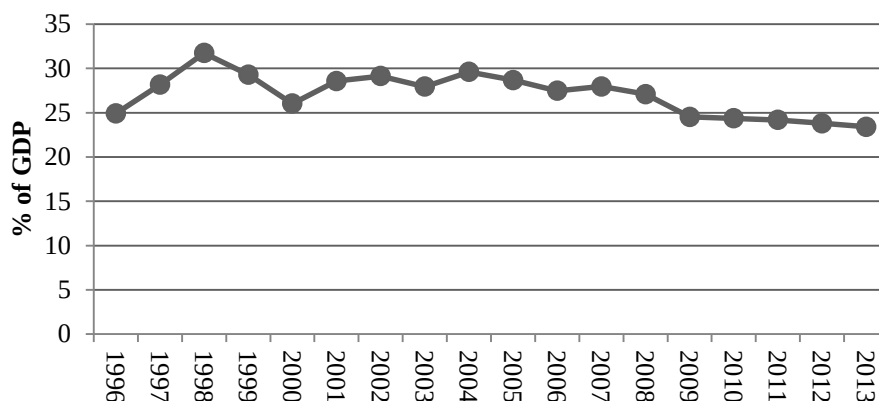


Figure 1. Estimated value of the shadow economy in Czech Republic (1996-2013)

The average estimated size of the shadow economy between 1996 to 2013 using the selected method was 27.05% of GDP. Size of the shadow economy declined from 24.9% of GDP (605 208 millions CZK) in 1996 to 23.4% of GDP (831 031 millions CZK) in 2013. The highest value reached the estimated size of the shadow economy in 1998 (31.75% of GDP). The lowest amount of shadow economy was recorded in 2013. Since 2008, the estimated size of the shadow economy has been steadily declining, mainly because of the decline in the growth rate of total tax revenues of the state budget (economic actors had paid less taxes to the state budget). On the basis of these facts can be confirmed the assumption that various taxes are the cause of the shadow economy, or affect the size of the shadow economy. Of course, the decline in the size of the shadow economy for the entire period also contributed to the development of the banking sector, coupled with a decline in the growth rate of currency in circulation. The development of the banking sector went hand in hand with the development of cashless payments and thus with a decrease in the size of the shadow economy.

To illustrate the informative value of results is found in Appendix 2, a comparison of the estimated size of the of shadow economy in this study with the results found by Friedrich Schneider, using MIMIC method.

7 Conclusion

The shadow economy represents the current problem of all economic systems. People are engaged in the shadow economy for various reasons. Among the most important are government regulation, high taxation and excessive regulation. The aim of this article was to estimate the size of the shadow economy in the Czech Republic since 1996 to 2013, using currency demand method. The estimated value of shadow economy grows constantly during 1996-1998 until it reaches its maximum in 1998 (31.75% of GDP). Then it decreases slowly to around 26% of official GDP in 2000. Since 2000 the observed value of the shadow economy grows until it reaches 29.6% of official GDP in 2004. Since 2004 to 2013 the estimated value of the shadow economy decreases constantly to 23.4% of official GDP in 2013. The empirical results of this article should not be considered as precisely measured size of the shadow economy. The method used, is based on two questionable assumptions, first of them is equal velocity of money in the informal and formal economy. Determine velocity of money is difficult in the formal economy, in the shadow, it is virtually impossible. Also, the assumption of cash, as the only means of transactions in the informal economy, is very questionable.

Estimates of the shadow economy in this study certainly do not cover all the activities of the shadow economy, but the results obtained can be regarded as useful information on the development

trend of the shadow economy in the years 1996 to 2013. These estimates could be used in future research into the relationship between the shadow economy and various economic policy issues in Czech republic. There is a need for further research into the impact of the shadow economy in Czech republic on macroeconomic indicators. In general, the estimated size of the shadow economy is heavily dependent on the selected method and data used. Based on the above facts can be confirmed the high difficulty of precise measurement of size of the shadow economy.

The main opportunity to fight the shadow economy, are electronic payment systems, whose development has contributed to a reduction in the volume of the shadow economy in many countries. Schneider (2010) states, that in the Czech Republic, there are 100 electronic transactions per capita per year. This indicator Czech Republic lags behind the average EU-27. Therefore, a further increase in electronic payments and the associated reduction of currency in circulation is an effective means to fight the shadow economy. Furthermore, the state should avoid excessive regulation of economic activities, which forces companies and citizens to move their activities into the shadow economy. The government should also focus on increasing the attractiveness of working in the official sector, for example by reducing non-wage labor costs. In addition, it is important to increasing the quality of regulation, tax system reform (simplification) and improved statistical methods to capture of shadow economy, promote individual economic freedom of all entities in the economy and support the functioning legal system (strict penalties for breaking the rules, law enforcement, etc.).

8 Acknowledgement

This paper was financially supported within the VŠB - Technical University SGS grant project No. SP2014/145 “The Influence of Structure of Government Spending and Taxes on Selected Sectors and Economic Growth in the Czech Republic“.

References

- [1] Ahumada, H., F. Alvarado and A. Canavese, 2006. *The Demand for Currency Approach and the Size of the Shadow Economy: a Critical Assessment*. Berkeley Program in Law & Economics. Working Paper Series, Paper n. 192. Berkeley: University of California.
- [2] Alkhdour, R., 2011. *Estimating the shadow economy in Jordan: Causes, Consequences, and policy implications*. Dissertation. Colorado: Colorado State University, Fort Collins.
- [3] Cagan, P., 1958. The Demand for Currency Relative to Total Money Supply. *Journal of Political Economy*. National Bureau of Economic Research (NBER).
- [4] CZECH NATIONAL BANK. *ARAD time series system 2014. Monetary and financial statistics*. [online]. [2014-06-30]. Available from: http://www.cnb.cz/docs/ARADY/HTML/index_en.htm.
- [5] Eilat, Y. and C. Zinnes, 2000. *The Evolution of the Shadow Economy in Transition Countries: Consequences for Economic Growth and Donor Assistance*. Harward II Discusion Paper No. 83.
- [6] EUROSTAT. *Statistics*. [online]. [2014-06-30]. Available from: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database.
- [7] Fassmann, M., 2007. *Stínová ekonomika a práce na černo*. Prague: SONDY.
- [8] Feige, L. E., 1990. Defining and Estimating underground and informal economies: The new institutional economics approach. *World Development*, vol. 18, issue 7.
- [9] Hernandez, A. M., 1990. *Estimating the Size of the Hidden Economy in Peru: A Currency Demand Approach*.

- [10] OECD. *Statistics*. [online]. [2014-06-30]. Available from: <http://www.oecd.org/statistics/>.
- [11] Ögünç, F. and G. Yilmaz, 2000. *Estimating the Underground Economy in Turkey*. Discussion paper for the Central Bank of the Republic of Turkey.
- [12] Schneider, F. and D. H. Enste, 2000. Shadow Economies: Size, Causes, and Consequences. *Journal of economic literature*, vol. 38.
- [13] Schneider, F., 2011. *The Shadow Economy in Europe*. ATKEARNEY, VISA 2011. Linz: Johannes Kepler University.
- [14] Schneider, F., 2010. *The Shadow Economy in Czech Republic: How Payment Systems Help Limit the Shadow Economy*. ATKEARNEY, VISA 2010. Linz: Johannes Kepler University.
- [15] Schneider, F., 2011. *Size and Development of the Shadow Economy of 31 European and 5 other OECD Countries from 2003 to 2012: Some New Facts*.
- [16] Schneider, F., 2011. *The Shadow Economy and Shadow Economy Labor Force: What Do We (Not) Know?* IZA Discussion Paper No. 5769.
- [17] Schneider, F., 2013. *The Shadow Economy in Europe, 2013*. ATKEARNEY, VISA 2013. Linz: Johannes Kepler University.
- [18] Tanzi, V., 1983. *The underground economy in the United States: Annual estimates, 1930-1980*. IMF Staff Papers, vol. 80, pp. 283-305.

Appendix 1

Table 2. Residual Diagnostics Tests

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.066678	Prob. F(2,65)	0.9356
Obs*R-squared	0.145368	Prob. Chi-Square(2)	0.9299
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.150895	Prob. F(3,67)	0.9288
Obs*R-squared	0.476492	Prob. Chi-Square(3)	0.9240
Scaled explained SS	2.585150	Prob. Chi-Square(3)	0.4601

Source: own calculation via E-views 7.

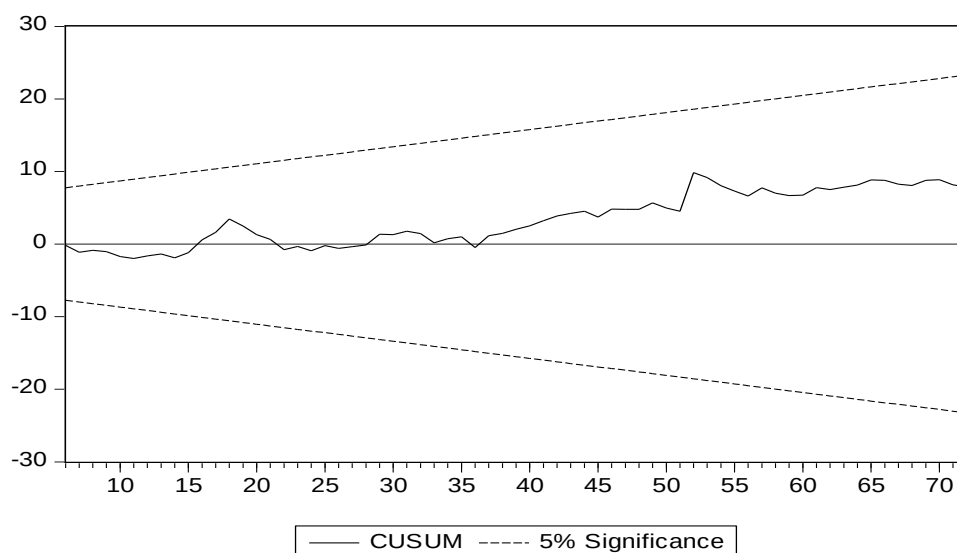


Figure 2. Stability Diagnostics (CUSUM Test) (Source: own calculation via E-views 7)

Table 3. Stability Diagnostics (Ramsey RESET Test)

Ramsey RESET Test			
	Value	df	Probability
t-statistic	0.752896	66	0.4542
F-statistic	0.566852	(1, 66)	0.4542
Likelihood ratio	0.607192	1	0.4358

Source: own calculation via E-views 7.

Appendix 2

Table 4. Comparison of the estimated size of the of shadow economy

Rok	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Schneider ¹	19.3	19.1	18.9	18.8	18.7	18.4	17.8	17.3	17.0	16.6	16.9	16.7	16.4	16.0	16.0
Own CDA ²	24.9	28.2	31.7	29.3	26.0	28.7	29.1	27.5	28.0	27.0	24.5	24.4	24	23.8	23.4

Source: Schneider (2010,2011,2013).

¹ - Estimation of the size of the shadow economy using MIMIC method

² - Estimation of the size of the shadow economy using currency demand approach (CDA)

Note: Data for comparison are available since 1999.

FINANCIAL CRISIS AND ITS IMPACT ON THE FOCUS OF TRAINING - THE CZECH REPUBLIC CASE

Lenka Janíčková¹, Milan Šimek²

¹ VSB-Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: lenka.janickova @ vsb.cz

² VSB-Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: milan.simek @ vsb.cz

Abstract

Training is considered an important tool of employment policy. The aim of the training is to reach higher professional flexibility of the unemployed on the labor market so it can substantially support their employability. The aim of this article is to characterise the changes of the focus of training in the Czech Republic and the Moravian-Silesian Region in the context of the economic crisis from 2008 to 2011. The results show that after a mild decrease of the number of unemployed individuals involved in the training at the beginning of the period, the year 2010 was characterised by a significant increase of individuals using this measure. During the period observed an increase of projects supported by the EU Social Fund was noticeable. Under this programs the companies with sales problems are supported and their employees' training can be financed by the program resources in the case of a temporary reduction of working positions. An increased volume of training with the possibility to choose the training according to the individual's interests was also supported.

Keywords

Training, Active Labor Market Policy, Employability, Labor Office, European Social Fund.

JEL Classification

J08, J24, J64.

1 Introduction

According to Koning (2002), the basic problem of unemployment is the unsuitability or inadequacy of the work potential of certain groups eventually leading to a loss of work habits and even to the resignation to participate in the labor market. Retraining is considered an important instrument of employment policy. Its aim is to achieve a greater professional flexibility of the unemployed in the labor market which significantly contributes to their employability.

Retraining is thus an important tool in the measures taken against unemployment most countries are currently focused on the development and support of the long-term unemployed. If it is not targeted and without effect it may prove to be a double-edged sword. Gaining new qualifications and yet remaining unemployed is a confirmation of the inadequacy of the person to compete in the labor market. This can have very significant negative psychological consequences (Mareš, 2002).

An important prerequisite for the success of any retraining course, as claimed by Horáková (in Sirovátka, Mareš, 2003), is the motivation of the unemployed to enter the selected program. In the case of a specific retraining course for the purpose of which the unemployed have to have an approval of a potential employer, the motive for entry is obtaining a promised new job. The key problem of the retraining system seems to be its content, structure and training methods.

Retraining courses meet several principles of active employment policy. It is the activation of the unemployed and equality of chances in the labor market. The main aim of the retraining courses is to help retrain especially those groups of the unemployed that are for particular reasons disadvantaged on the labor market. Retraining should help them in returning to the labor market and it should also prevent their marginalization. The most important principle implemented by the retraining is to create a balance between the supply and demand for labor, the adaptation of the workforce to current requirements and achievement of total flexibility of the labor market. Studies have shown that short-term training schemes may be insufficient, especially for unskilled persons and due to the demands in terms of content, they may not be appropriate even for older or long-term unemployed persons.

Previous studies also show that retraining courses have a considerable social integration potential, especially for the women after the maternity leave and women in general and also in conjunction with subsidized employment they can provide an opportunity for self-development of young people.

Starting in the middle of 2007, the crisis had grown from a meltdown in the financial housing and financial sectors in the United States to a global downturn and a deep impact on the real economy, particularly on the labor market. Cazes and Verick (2010) reported as a lesson learnt from the previous crises that labor markets tend to recover slowly after similar economic events, with unemployment persisting at above the pre-crisis levels for a number of years. For this reason, it is crucial for policymakers to consider various labor market policy measures that both mitigate the impact of the crisis on workers and help reduce the lag between economic growth and improvements in the labor market. The labor market policy response to a crisis should aim to achieve goals in four main areas: labor demand, match between demand and supply, income support and targeting of vulnerable groups. Drawing on a range of recent surveys concerned with the response to the current global financial crisis, it is apparent that a large number of high-income countries have implemented various policy measures that address the different goals of labor market policies. The most commonly used intervention in high-income countries is training for both those threatened by layoffs and the unemployed (including work experience and apprenticeship initiatives).

The aim of this paper is to identify the changes in the orientation of the courses in the Czech Republic focusing on the Moravian-Silesian Region in the context of the manifestations of the economic crisis on the labor market in 2008-2011.

The paper is logically divided into six parts. The first part of the paper shows the trends in the active employment policy in the period of 2008-2011 in Europe. The second part contains the definition of retraining within the Czech active employment policy. The third section describes the data and the evaluated indicators. The fourth section describes and evaluates the development and changes in retraining in the Czech Republic in the period of 2008-2011 as an instrument of active employment policy. In the fifth section, attention is paid to the changes in the orientation of retraining courses in the Moravian-Silesian region - a region the labor market of which has been strongly affected by the economic crisis. The conclusion contains a summary of the changes concerning the focus, implementation and effectiveness of retraining in the Czech Republic and in the Moravian-Silesian Region in the period monitored.

2 Retraining as a part of an active employment policy in the Czech Republic

Retraining solves the imbalance between the qualification structure of job seekers and the skill requirements of the labor force in the labor market. Retraining means acquiring new qualifications and improving, extending or deepening the existing qualifications, including its updating or renewal. Retraining is regarded as a qualification for the employment of a natural person who has not yet received any qualifications. In determining the content and scope of the retraining the current qualifications, health, skills and experience of the individuals to be retrained to acquire new knowledge and practical skills within the framework of continual professional education (the Employment Act no. 435/2004 Sb.) are considered.

Retraining can be divided into specific and non-specific training - internships. Specific retraining courses are organized at the request of employers, labor market monitoring and they lead the candidate to a particular employment.

Retraining is performed upon an agreement between the Labor Office and the job seeker or candidate for employment if required by the employment on the labor market. The Labour Office pays the costs of the retraining and may make a contribution to cover proven necessary costs associated with retraining. Retraining is provided by the regional branch of the Labour Office depending on the place of residence of the job seeker or job applicant.

Retraining may be performed even at the employer's own company to ensure further employment opportunities of its employees. Retraining of employees is performed upon an agreement between the employer and the employee. The Labour Office may enter into an agreement with the employer concerning retraining of employees in order to gain, increase or extend qualification. If retraining is performed upon an agreement with the Labour Office, the costs of the retraining of the employees and costs associated with it may be fully or partially covered by the Labour Office in question.

3 The data and indicators examined

The data from the "Retraining Statistics" of the Ministry of Labor and Social Affairs for the period 2007-2011 were used to evaluate the focus of retraining in the Czech Republic and the Moravian-Silesian Region. Newer detailed data have not been published yet and therefore the status and development of retraining in 2012 has been examined only to a limited extent.

Attention was focused on the people being retrained, their health status and length of the registration at the Labor Office. The assessment of the age structure resulted in three age groups (15-24 years, 25-49 years and above 50 years). In terms of the level of education of the people in retraining, there were monitored persons with primary and secondary education without the secondary school leaving exam (similar to GCE), persons with secondary school education with the secondary school leaving exam and those with university education. The type of retraining was evaluated too.

Each year, the indicator of the effectiveness of the retraining was also monitored as the share of the reemployed within 12 months after the completion of the retraining course of the number of the persons who have successfully completed the retraining course in %.

In the case of the Moravian-Silesian Region there were also identified the courses with the highest representation of the retrained persons in the considered years.

4 Retraining programs and their focus in the Czech Republic in the period 2008 - 2011

Hora et. al (2009) reported that in the period before 2008 an important effect of the active employment policy had been the decrease (returns) of the registration at the Labor Office immediately after the completion of the program (to less than a half). The positive effect of the retraining (by type) became more evident in longer term (for the first time in about half a year). There occurred a positive impact of non-specific retraining courses and professional retraining courses for both the blue and white collar workers.

According to MLSA (2009), in 2008 the retraining courses were attended by 43,732 job seekers. In comparison with 2007 when 63,417 people took part in retraining courses, the number of the participants in retraining courses was reduced by 31%. The decrease was affected by the high proportion of foreign workers moderating the pressure to increase qualification of the unemployed with difficulties to be placed in the labor market. In particular there were implemented retraining courses which expanded the existing qualification of individuals (38.8%), specific (professional) retraining courses for the blue collars (24.2%) and for the white collars (15%), which were obtained on the basis of the analysis of the results monitoring the labor market, employer requirements and economic interests of job seekers. In most cases they led to a particular employment or to increasing employability. The effectiveness of retraining (reemployment within 12 months from the completion of retraining) was 48.2%. The highest effect in 2008 occurred in the case of the non-specific retraining (61.3%), specific retraining (53.1%) and retraining focused on the extension of the qualification (47.4%). It can be assumed that the high efficiency of non-specific retraining may be due to the fact that most employers conceive the qualification (formal education in the required amount and direction) as the basic criterion for the initial selection of candidates for employment, where the actual acceptance depends on soft skills of the candidate. This pattern of behavior has been identified with the employers across 21 countries in Europe (Balcar, Homolová, Karasek, et al., 2011).

According to MLSA (2010), in 2009 44 354 persons took part in the retraining courses (622 persons more than in 2008). With regard to the obligations of the employment offices to provide retraining according to Public Procurement Act No.137/2006, the implementation of retraining courses was delayed. The largest groups in the retraining courses were persons in the age group of 25-49 years (64.5% of the total number of people in the retraining), mainly ages 30-34 years (14.9%) and 35-39 years (14.4%). The retraining courses were attended mostly by people with lower education without the secondary school leaving exam (57.5% of people in retraining). The group was dominated by persons with vocational training (39.3% of the total number of people in retraining). Another group were secondary school graduates with the secondary school leaving exam (36.8%) with a significant proportion of people with the complete secondary school vocational education with the secondary school leaving exam (24.0%). Persons who participated in retraining projects Human Resources and Employment Operational Program provided for 72.6% of the total number of participants in the retraining. Due to the economic recession and the associated decline in vacancies there had been a change in the focus of the retraining programs. Retraining programs were more associated with vacancies in the respective regions. In terms of focus, there prevailed professional retraining courses for the blue collars (37.1%) and retraining courses expanding existing qualifications (31.8%). Due to a significant decrease in the number of vacancies, in 2008 the effectiveness of the retraining courses decreased from 48.2% to 32.3%. The highest return occurred in the case of the less represented retraining courses focused on entrepreneurship (42.2%) and non-specific retraining courses (41.1%).

In 2010, 72,649 people took part in the retraining courses. There was a significant increase in the number of retrained persons, as shown in Table 1. In connection with the continuing low vacancy rates and expected growth of the economy the retraining courses were more closely connected with vacancies in the respective regions. Retraining courses expanding the existing qualification (35.8%) and professional retraining for the blue collars (28.8%) prevailed. Professional retraining in engineering, transportation, accounting and administration, services, social welfare, healthcare, trade and gastronomy were implemented most frequently. In spite of the ongoing problems with limited vacancies the effectiveness of the retraining courses grew to 43.8% but it still was under the numbers in 2008, when the level of vacancies had been significantly higher, both provided by the Labor Office and the job agencies. The Ministry of Work and Social Affairs (2011) reported that the highest efficiency was achieved by numerically under-represented non-specific retraining courses (57.6%) followed by the retraining courses restoring the qualifications (48.5%) and the courses aimed at preparation for a job.

In 2011, there were 22,088 persons less than in 2010 taking part in retraining courses and the total of 50,561 people participating in the courses. The decrease in the number of participants was affected by the reorganization of the Labor Offices, which had significantly slowed down the process of assigning the participants to the courses in connection with the consolidation of public procurements related to the retraining programs. Another reason was the persistently low number of vacancies. For this reason, among others, retraining courses with practical training and professional retraining for specific labor market were preferred. The Ministry of Work and Social Affairs (2012) notes that the biggest groups in the retraining courses was represented by the persons in the age group of 35-39 years (14.5%), 20-24 (14.0%) and 30-34 (13.7%). Retraining courses were mostly attended by persons with vocational training (35.4%) persons with complete secondary education with the secondary school leaving exam (24.5%) and early school leavers with primary education (17.4%). The effectiveness of the retraining decreased from 43.8% to 40.8% due to continued limited offer of vacancies

Table 1. The structure of the participants of the retraining courses in the Czech Republic in 2007-2011

	2007	2008	2009	2010	2011
Participants in the retraining courses in total	63417	43732	44354	72649	50561
persons with disabilities (OZP) in %	9.7	11.2	8.5	8.2	8.5
Registration longer than six months in %	37.5	34.0	53.6	48.8	46.5
Age structure in %					
up to 24 years	20.9	17.3	16.7	16.2	17.5
25-49 years	61.4	63.1	64.5	63.0	61.9
50 years and over	17.7	19.6	18.8	20.8	20.6
Educational Structure in %					
Primary and secondary (without the secondary school leaving exam)	53.5	54.2	57.5	57.4	55.8
Secondary education with the secondary school leaving exam and higher professional education	41.0	39.9	36.8	36.3	37.2
University education	5.5	5.9	5.7	6.3	7.0
Type of retraining in %					
professional - for the blue collars	21.8	24.2	31.7	28.8	27.6
professional - for the white collars	13.9	15.0	15.6	14.8	16.5
extension of the qualification	46.0	38.8	31.8	35.8	36.3
renewal of qualification	0.1	0.1	0.2	0.1	0.1
non-specific retraining	2.4	1.9	1.9	0.9	0.8
entrepreneurship training	4.0	3.3	3.7	3.4	3.4
other retraining	2.5	2.9	2.4	1.8	3.2
IT course	9.1	13.2	12.2	14.4	12.0
Courses dedicated to persons with physical disabilities - Preparation for work	0.2	0.1	0.1	0.0	0.0
Not identified	0.0	30.5	0.4	0.0	0.1
The effectiveness of the retraining courses	48.2	48.2	32.3	43.8	40.8

Source: MPSV, our own calculation.

According to MLSA (2013), in 2012, only 18,631 people were retrained (about 26,890 persons less than in 2011). The decrease in the number of participants in retraining during 2012 was influenced partly by slowing down of the process of allocation of the participants to the courses in connection with the new wave of announcement of public procurements to the implementation of retraining programs. With regard to the status of vacancies retraining including a practical part and professional retraining for specific employment on the labor market were also preferentially supported. During the year 2012 a new active employment policy instrument, so called selected retraining courses were implemented. In total, 6,568 job seekers were retrained within the framework of the instrument.

Based on the above-mentioned facts, it can be concluded that the lower impact of the training during the crisis had been affected by the high focalisation of these programs to the people with major issues. It can be concluded that in case of any major economic problems the short-term and medium-term effects of retraining effects can be less evident and their potential benefit may become apparent only in the long term (Card et al., 2009).

Analysis of the effects of the active employment policy and ESF projects in times of crisis thus in particular showed that these measures retained a fairly high efficiency, especially when it comes to the measures to support the creation of vacancies in both the private and public sectors. Although the effectiveness of retraining visibly decreased (with respect to a significantly lower number of jobs made available for the Labor Offices).

Sirovátka (2010) states that the deterioration of the results occurred for both job-training programs and the programs offered by ESF. In a sense it was expected because the results of retraining programs may be in a period of economic recession impacted by adverse circumstances (in particular the lack of jobs and increased competition of people with higher levels of human and social capital), which in the case of the supported and protected jobs do not have a significant effect. Because it concerned the work training programs (usually not always oriented to the open labor market), an important role may also be played by the region and the initial profession of the unemployed. The economic recession had been a significant intervention in some traditional professions and even though generally there was no significant decline of large enterprises, the individual micro-regions had been affected unevenly. An analysis of the structure of the retraining programs showed excellent targeting of these programs to the people with the biggest issues in the labor market (people with the longest period of registration at the Labor Office, repeatedly unemployed). There may be also the influence of the so called hidden variable, for example the lack of soft skills the retrained persons do not have when compared to the non-retrained persons, such soft skills can be decisive in the competition for jobs in the open labor market. For several reasons (e.g. the knowledge deficit or relatively short duration of the program) the graduates of the retraining courses usually did not have such a potential for the employer (especially in a period of increased competition in the labor market) to be able to compete with the workers who work in the field of their retraining program for a long time.

In the examined period there was also a number of important measures introduced in the Czech Republic to mitigate the decline in employment and also the rise in unemployment. In particular, they were concerned with preventing layoffs (the Project *Vzdělávejte se*, reduction of working hours and hidden subsidies of companies in the form of non-colliding employment - but it increased the registered unemployment). The anti-crisis strategy of the Czech Republic pursued the objective of maintaining employment rather than tackling unemployment. Two main measures corresponded with this in the Czech Republic – the reduction of working hours (and wages) and the project "*Vzdělávejte se*" ("Get Educated"). This project was aimed at employers who due to the global financial crisis and economic recession had to cut the production at their plants and the number of their employees. Within the framework of the project, the employers could obtain funds for the implementation of training courses for their employees who were threatened by the negative effects of organizational changes in the companies due to the crisis. The employees had thus been given an opportunity to participate in further education, improve their professional knowledge, skills and competencies in the so called general education and employers gained space for more efficient staff situation solutions of the company during the crisis. The project was implemented in 2009-2010.

The development of expert knowledge in companies was in the focus of the project "*Školení je šance*" ("Training is a chance"), which supported continuing professional education of employees provided by employers, creation of corporate educational programs for employees, preparation of corporate trainers and instructors, applying all forms of education of employees according to the specific needs of employers, including training for the specific job description for a specific job position, support of the management systems and development of human resources in enterprises leading to the increased motivation of employees and employers and to the promotion of further corporate education, including providing support, consultancy and application of flexible forms of organization of work. The project was implemented in the period 2009-2011.

The above projects were followed by the project "*Vzdělávejte se pro růst!*" ("Get Educated for growth!"). It was aimed at supporting the employers who have managed to overcome the economic recession and currently pursue their activities in the sectors with expected growth and with a significant share in the creation of the GDP. The project is designed for all types of businesses (small, medium and large) in the areas of engineering, construction, retailing (in this case, only for small and medium-sized enterprises), field social services and waste management. The financial support could be required by employers, provided that they operated in the above-mentioned sectors and either recruited new workers, who needed proper training or retraining or needed to increase their

professional knowledge or skills of the existing employees. Employers in the project received financial contribution for the training and retraining of its employees. At the same time the employers paid wage costs to the employees being educated during the period of their education (during this period, the employer cannot use the employee for another job). This training could be general and in justified cases also specific. The project was implemented in 2011-2014.

Another educational project is the project "Vzdělávání pro stabilitu" ("Education for Stability"). The aim of the project is to support the existing jobs for those employers who are in the context of the economic downturn in the Czech Republic in a temporarily difficult economic situation and they are temporarily unable to assign work to their employees on the agreed scale. Employers are enabled to provide their employees with professional development at the time when they are not able to allocate work to them. In addition to keeping jobs, this leads to achieving the other, equally significant project objectives - improving the qualification of the employees involved and strengthening their employability. The project allows employers to obtain a financial contribution for the professional development of the employees, including a contribution to wage costs incurred to the trained employees for the duration of their participation in the professional development. The project is implemented in the period 2012-2015.

5 Retraining courses and their focus in the Moravian-Silesian Region in the period 2008-2011

In 2008, the total of 8214 candidates and job seekers took part in retraining in the Moravian-Silesian Region. Compared to 2007, there was a slight decrease. In terms of education, there prevailed retraining courses of the persons with primary education and vocational training without the secondary school leaving exam (56.7%). In terms of age there was a focus on the persons in the age group of 25-49 years. The professional retraining for the blue collars (27.5%) and retraining expanding qualification (23.1%) prevailed. The highest number of participants in retraining courses completed IT courses, including IT programming and management of computer networks (2,552), as well as various kinds of welding courses (599), retraining for extension and new driving licenses to drive motor cars and small vehicles (521). The most popular courses were aimed at preparing for entrepreneurship (366 people). A considerable interest (247 participants) was in the instruction courses for masonry, redecoration, carpentry, locksmith, plumber, tinsmith, joiner, cook, waiter, baker, confectioner and hairdresser professions. Various forms of practical training, the so-called "non-specific retraining" for individuals under 25 years of age and the university graduates under 30 years of age (240 persons), accounting courses (218 persons), nursing (184) and administration (171 people) can be also considered successful. The effectiveness of the retraining has been high and reached 73.8%, which is 1.5 times more than the figure for the whole of the Czech Republic (Labour Offices of the Moravian-Silesian Region, 2009). The development of the individual monitored parameters is shown in Table 2.

According to the Analysis of the state and development of the labor market in the Moravian-Silesian Region in 2009 (Labour Offices of the Moravian-Silesian Region, 2010) the retraining courses were attended by a total of 8,499 of job applicants and job seekers. Education and the age structure were similar to those in 2008 and the focus did not change either. Prevailing orientation was to the professional education of the blue collars and extension of qualifications. As in 2008, the largest number of participants in retraining were included in IT courses, programming and management of computer networks (2,069), and 69 welding courses (927 people), retraining for extension and new driving licenses to drive motor cars and small vehicles (647) and preparation for entrepreneurship (584 people). The participant also attended accounting courses (350 participants), administration courses (263), social service workers (225), the courses (223) of masonry, redecorating, carpentry, locksmith, plumber, tinsmith, joiner, cook, waiter, baker, confectioner and hairdresser professions.

The course for employees for business relations with foreign countries in a foreign language (126), and various forms of practical training for individuals under 25 years of age and for university graduates for the period of two years after graduation, but under the age of 30 (121 people). That year, there had been a reduction of the effectiveness of retraining to 56.3%, which means that only about half of the successful graduates of the courses found work within 12 months after completion of the course.

According to the analysis of the Labor Offices in the Moravian-Silesian Region (2011), in 2010, the number of participants in the retraining increased to 12,399 people of similar age and education as in the previous years - see Table 2. The participants of the retraining were again most frequently involved in the IT courses (2,780 persons) followed by retraining to obtain a driving license extension (768) and the different types of welding courses (749). Courses focused on the preparation for entrepreneurship were attended by 581 participants. There was also a great interest in the training for social service workers and caregivers (550 people), retraining focused on accounting, taxes and economics (385), various forms of practical training, the so-called "non-specific retraining" (324 persons), as well as the courses in administration (267).

In 2011 there was a year-on-year decline (by 35.9%) of the retraining courses and there was also a decrease in the number of participants to 7,992. This decrease was caused by lower budget funds earmarked for retraining in 2011 and termination of the ESF project "Poradenství a rekvalifikace" ("Consulting and retraining") (the end of June 2011). It was not possible to cover a wide range of retraining from the newly launched project "Vzdělávejte se pro růst! - rekvalifikace" ("Get Educated for Growth! - Retraining") (from July 2011) and the actual implementation did not immediately follow the end of the previous project. The selection of suppliers in the form of the public procurement had to be announced. In 2011, some contracts ended and new ones were announced, which, together with the reorganization substantially prolonged the process of selecting suppliers. In 2011, the participants of the retraining were enrolled in the largest number in the IT courses including the development and management of web sites and computer networks (1,544 people) in retraining to obtain a driving license extension (735), to welding courses (453), to courses for social service workers and caregivers (410 people), accountancy, taxes and economics (386) and entrepreneurship (262). There was a great interest in various forms of practical training (249 people), instruction courses for trade (153) and courses of administration. That year, the effectiveness of retraining increased up to 77.6%.

Table 2. The structure of the participants of the retraining courses in the Moravian-Silesian Region in the period 2007-2011

	2007	2008	2009	2010	2011
Participants of the retraining in total	10919	8214	8499	12399	7992
persons with disabilities (OZP) in %	7.4	9.2	7.2	6.8	7.5
Registration longer than six months in %	39.3	38.1	55.1	50.3	46.5
Age structure in %					
24 years	23.6	19.0	18.8	18.8	21.3
25-49 years	61.6	61.6	64.7	63.0	60.3
50 and over	14.7	19.4	16.5	18.2	18.4
Educational Structure in %					
Primary and secondary (without the secondary school leaving exam)	56.2	56.7	58.7	57.1	54.1
Secondary education with the secondary school leaving exam and higher professional education	38.2	37.0	34.7	35.6	37.7
University education	5.6	6.3	6.6	7.3	8.2
Type of retraining in %					
professional - for the blue collar	27.0	27.5	30.7	25.4	26.1
professional - for the white collar	16.7	14.5	16.7	17.0	17.1
extension of qualification	30.7	23.1	21.8	23.0	31.2
renewal of qualification	0.4	30.5	1.1	0.9	0.6
non-specific retraining	3.6	3.3	2.2	1.8	3.1
entrepreneurship training	4.5	4.0	5.6	5.4	4.4
other retraining	0.7	0.1	0.3	1.9	2.7
IT course	16.4	27.0	21.5	24.6	14.8
Course dedicated to persons with physical disabilities - Preparation for work	0.0	0.0	0.0	0.0	0.0
Not identified	0.0	0.0	0.0	0.0	0.0
The effectiveness of the retraining %	72.8	73.8	56.3	59.2	77.6

Source: MPSV, our own calculation

In 2012, there was a large decrease in the number of the new retraining courses financed from both national active labor market policies (50.7%) and from the ESF Human Resources and Employment Operational Program (32.7%) while there was also a decline in the number of the course participants approximately by 3,185 (44.4%). This decrease was partially caused by a shift of retraining to the new tool of the selected retraining. Another reason was the expiry of the framework contracts of the project "Vzdělávejte se pro růst! - rekvalifikace" (valid from July 2011 to April 2014), when it was possible to finance only a certain kind of retraining. Last but not least, the reason was also the problem with the introduction of the new information system at the Labour Office of the Czech Republic.

Participants in the courses in 2012 organized by the regional branch of the Labour Office in Ostrava were most often involved in the popular IT and programming courses (815 persons), welding courses (542), courses for obtaining the new and extended driving licenses and the entry training for the drivers to obtain professional competence (404). Furthermore, the participants attended the retraining programs focused on accounting, taxes and economics (390), courses for social care workers and caregivers (245), courses preparing participants for entrepreneurship (231) and also instruction courses for trades (213).

In the period under review there were also implemented courses focused on the employers in the Moravian-Silesian Region - *Vzdělávejte se, Vzdělávejte se pro růst*. Among the regional individual projects, which included training and retraining activities, the projects *Návrat+*, *Start*, *Příprava + a Změna včas* (Returns +, Start, Preparation + and Change in time) were included in the investigated period.

Based on the evaluation of the results, it can be stated that in the period of crisis in the case of the Czech Republic as well as in the Moravian-Silesian Region the retraining courses oriented to the people with lower levels of qualifications or inadequate qualifications focusing more on younger and middle age people prevailed. From the point of view of the type of retraining, professional retraining courses prevailed aimed at the blue collars as well as the retraining courses expanding qualifications. In 2008-2010 IT courses, which were in great demand, assumed a significant position. In 2012, a new tool Selected retraining was implemented. In the region, 928 candidates participated in the new selected retraining courses, consisting mostly of the courses to obtain a driving license and welding courses. After a slight initial interest, when the applicants were getting used to this option, during 2012 there was a gradual increase in applications. The introduction of this new tool has been evaluated very positively thanks to the Labor Office working flexibly to respond to the specific needs of the clients thus supporting even such retraining courses that were not usually available. In 2012 and especially in 2013, many applications for selected retraining courses were rejected by the regional branch of the Labor Office due to the assessment of the employability of the client and the need for the retraining in the the labor market.

6 Conclusion

In the period 2008-2012, the retraining courses represented an important tool for active employment policy in the Czech Republic and the Moravian-Silesian Region. For example, in 2010 the number of retrained people in the Czech Republic had reached its peak (72,649 job seekers and applicants). In connection with the continuing low vacancy rates and expected growth of the economy, the retraining courses were more tightly linked with vacancies in the respective regions. There prevailed the retraining courses expanding the existing qualifications and professional retraining courses for the blue collars. Professional retraining courses in engineering, transport, accounting and administration services, social welfare, health care, services, retail and gastronomy were implemented most frequently. The decrease in the number of participants in the retraining during 2012 was influenced in part by slowing down of the process of allocating participants to the courses in connection with the new wave of announcements of public procurements for the implementation of retraining programs. With regard to the status of vacancies retraining courses with practical and professional retraining for a specific employment in the labor market were also preferentially supported.

Persons in the age group of 25-49 years, ages 30-34 and 35-39 years were significantly represented in the retraining. The retraining courses were attended mostly by people with lower qualifications without the secondary school leaving exam dominated by persons with vocational training. Another group were secondary school graduates with the secondary school leaving exam with a significant proportion of the people with complete secondary professional education with the secondary school leaving exam.

During 2012, a new active employment policy tool was implemented, the so called selected retraining. In total, 6,568 job seekers were retrained within the framework of the program. The effectiveness of retraining decreased because of the significantly lower number of vacancies attainable at the Labor Offices. The most efficient were the numerically under-represented non-specific retraining courses, furthermore retraining renewing qualification with the focus on the preparation for the job. Because of the above-mentioned facts, it can be concluded that the lower effects of the retraining courses during the crisis had been affected by the high focalisation of these programs to the people with the most significant issues. The analyses show that in case of any major

economic problems the short-term and medium-term effects of retraining can be lower and their potential benefit may become apparent only in the long-term horizon.

An important role in maintaining employment was assigned to the project "Vzdělávejte se" ("Get Educated") aimed at the employers who due to the global financial crisis and economic recession had to cut the production at their plants and number of employees. Within the framework of the project, the employers could obtain funds for the implementation of training courses for their employees who were threatened by the negative effects of organizational changes in the company due to the crisis.

Based on the evaluation of the results, it can be stated that in the Moravian-Silesian Region, as well as in the Czech Republic, in the period of crisis the retraining courses focused on the people with lower levels of qualifications or inadequate qualifications prevailed focusing more on younger and middle-aged people. Occupational retraining for the blue collars and retraining courses expanding qualifications were prevalent too. Large number of people were involved in the IT courses and programming and management of computer networks, welding courses, retraining for extension and new driving licenses to drive motor cars and small vehicles and preparation for entrepreneurship.

In the period under review, the effectiveness of retraining in the Region was higher than the average effectiveness in the Czech Republic.

In the implementation of retraining activities viewed as tools of active employment policy their further development should be focused on the specific and expanded programs for target groups and allow for a greater flexibility of implementation. A module approach to further education should be sought and it could be combined with internships for non-qualified and older workers. This group participates in the retraining courses the least and at the same time it is currently one of the most vulnerable ones.

7 Acknowledgement

This paper has been Funded by a grant from Students Grant Project Faculty of Economics, VSB-TU Ostrava SP2014/113 Within the project "Alternative measures of active labor market policy and their application on the chosen groups of unemployment within the Moravian-Silesian Region." This paper was supported by the European Social Fund Within the project CZ.1.07/2.3.00/20.0296.

References

- [1] Balcar, J., Homolová, E., and Karasek, Z. et al., 2011. *Transferable competences across Economic Sectors: Role and Importance for Employment at European level*. Luxembourg: Office of Publication of the European Union. [online]. [2014-06-18]. Available from: <http://ec.europa.eu/social/BlobServlet?docId=7124&langId=en>.
- [2] Card, D., J. Kluve, and A. Weber, 2009. *Active Labor Market Policy Evaluations: A Meta-Analysis*. IZA Discussion Paper No. 4002.
- [3] Cazes, S. and S. Verick, 2010. Labour market policies in times of crisis. In: A. Watt and A. Botsch, eds. *In After the crisis: towards a model sustainable growth*. European Trade Union Institute, AISBL, pp. 66-70.
- [4] Hora O., T. Sirovátka, H. Tomešová-Bartáková and J. Vyhlídal, 2009. *Evaluation of active employment policy programs implemented in 2007 with a focus on re-training (structure, targeting, short-term and medium-term effects on leaving evidence)*. Praha: VÚPSV.

- [5] Horáková, M. and M. Rákoczyová, 2003. Effects of vocational training for disadvantaged groups In T. Sirovátka and P. Mares, eds. *The labor market, unemployment, and social policy*. Brno: Masaryk University, pp. 202-219.
- [6] Koning, J., 2002. Training for the Unemployed in the Netherlands: What do We Know after more than 50 Evaluation Studies? In: K. Schomann and P.J. O'Connell, eds. *Education, Training and Employment Dynamics*. Cheltenham: Edward Elgar Publishing, pp.199-152.
- [7] Mares, P., 2002. *Unemployment as a social problem*. 3rd Ed. Prague: SLON.
- [8] MPSV, 2009. *Analysis of trends in employment and unemployment in 2008*. [online]. [2014-06-08]. Available from: http://portal.mpsv.cz/sz/politikazamest/trh_prace/rok2008/Anal2008.pdf.
- [9] MPSV, 2010. *Analysis of trends in employment and unemployment in 2009*. [online]. [2014-06-08]. Available from: http://portal.mpsv.cz/sz/politikazamest/trh_prace/rok2009/Anal2009.pdf.
- [10] MPSV, 2011. *Analysis of trends in employment and unemployment in 2010*. [online]. [2014-06-08]. Available from: http://portal.mpsv.cz/sz/politikazamest/trh_prace/rok2010/Anal2010.pdf.
- [11] MPSV, 2012. *Analysis of trends in employment and unemployment in 2011*. [online]. [2014-06-08]. Available from: http://portal.mpsv.cz/sz/politikazamest/trh_prace/rok2011/Anal2011.pdf.
- [12] MPSV, 2013. *Analysis of trends in employment and unemployment in 2012*. [online]. [2014-06-08]. Available from: http://portal.mpsv.cz/sz/politikazamest/trh_prace/rok2011/Anal2012.pdf.
- [13] MPSV, 2014a. *Analysis of trends in employment and unemployment in 2013*. [online]. [2014-06-08]. Available from: http://portal.mpsv.cz/sz/politikazamest/trh_prace/rok2013/Anal2013.pdf.
- [14] MPSV, 2014b. *Statistics on retraining*. [online]. [2014-06-08]. Available from: <http://portal.mpsv.cz/sz/stat/rek>.
- [15] Sirovátka, T., 2010. *Threats to the labor market and the role of employment measures in changing conditions*. Summary and discussion findings in a broader context and recommendations. Prague: VÚPSV. [online]. [2014-06-08]. Available from: http://www.mpsv.cz/files/clanky/13132/HC193-10_c.pdf.
- [16] Labour Office of the Czech Republic, Ostrava Regional Office in Ostrava, 2012. *Analysis of the state and labor market developments in the Moravian-Silesian Region in 2011 and outlook for 2012*. [online]. [2014-06-15]. Available from: <https://portal.mpsv.cz/uITr/kp/msk/analyzy/otkraj1211.pdf>.
- [17] Labour Office of the Czech Republic, Ostrava Regional Office, 2013. *Analysis of the state and labor market developments in the Moravian-Silesian Region in 2012 and expected developments in 2013*. [online]. [2014-06-15]. Available from: <https://portal.mpsv.cz/uITr/kp/msk/analyzy/otkraj1211.pdf>.
- [18] The labor offices Moravian-Silesian Region, 2009. *Analysis of the state and labor market developments in the Moravian-Silesian Region in 2008 and expected developments in 2009*. [online]. [2014-06-15]. Available from: <https://portal.mpsv.cz/uITr/kp/msk/analyzy/otkraj1208.pdf>.

- [19] The labor offices Moravian-Silesian Region, 2010. *Analysis of the state and labor market developments in the Moravian-Silesian Region in 2009 and expected developments in 2010*. [online]. [2014-06-15]. Available from: <https://portal.mpsv.cz/uITr/kp/msk/analyzy/otkraj1209.pdf>.
- [20] The labor offices Moravian-Silesian Region, 2011. *Analysis of the state and labor market developments in the Moravian-Silesian Region in 2010 and outlook for 2011*. [online]. [2014-06-15]. Available from: <https://portal.mpsv.cz/uITr/kp/msk/analyzy/otkraj1210.pdf>.

HAS THE ECONOMIC CRISIS CAUSED THE CHANGE OF AGE STRUCTURE OF (UN)EMPLOYED?

Lenka Janíčková¹, Milan Šimek²

¹VSb – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: lenka.janickova@vsb.cz

²VSb – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: milan.simek@vsb.cz

Abstract

The economic crisis has influenced many aspects of casual life and between the most sensible impacts belongs important increase of unemployment rate. This phenomenon has not influenced all age groups equally however. The aim of the article is to evaluate the change of age structure of (un)employed individuals during the economic crisis in the European union member countries and homogeneous sub-groups in the period 2007-2013. The results suggest that the economic crisis has caused increase of unemployment rate in the selected age groups, simultaneously all groups were not influenced equally. Some EU member countries have succeeded in the implementation of the labour policy so they reduced the impact of economic crisis on the most vulnerable age groups.

Keywords

Economic Crisis, Unemployment, Age Structure of Unemployed.

JEL Classification

J21, J22, J20.

1 Introduction

The 2007–2008 financial crisis and subsequent Great Recession have importantly influenced economic performance of all EU member countries. Before the economic crisis started the policymakers tried to create flexible labour market. To achieve this aim the deregulation of employment protection and the activation of unemployed individuals were the commonly used measures.

One of the significant features of the crisis is the rapid increase in unemployment. The labour market of the EU member countries have been not affected equally, the inequality is observed within different age groups as well. Probably the most vulnerable age group are youth. Their weak position on the labour market is mainly based on the lack of skills and experiences. Maguire et al. (2013) point out the steep increase in unemployment of youth generation in the UK. They focus on the NEET (not in education, employment and training) mainly. To tackle this situation the European Commission launched Youth Guarantee programme on the EU level in 2013. The unemployed individuals up to 25 years are supposed to obtain work offer up to 4 months after they finished their education or if were laid off from the previous job. As Maguire et al. (2013) notify the evolution of the youth unemployment should not be surprising as the youth unemployment is usually higher and fluctuate more also in the growing period. The two factors are crucial (i) youths are at the beginning of their career and search for adequate job, so their job turnover is higher, (ii) in the time of economic recession the employers are not willing to lay off experienced workers. European Union Committee (2014) stress out not only the problem of the youth unemployment but the youth long-term unemployment as the consequence as well.

According to Dimian et al. (2013), the important feature of the labour market during the economic crisis is the increase in the unemployment which influences male unemployment more significantly. In the case of the part time job the increasing trend is reported, but during the crisis its dynamics slowed down importantly. In the most countries the temporary contracts are reduced. Hijman (2009) adds that one possible response of employers to the economic downturn is not to renew the contracts of temporary workers in the difficult times. He also shows that the share of part-time workers has

increased in the majority of EU member countries. From the perspective of the education level attained by workers, the most affected are individuals with elementary education. Marelli (2011) also notes that whereas many countries (both in Europe and North America) responded to the crisis by high flexibility, some EU member countries were remarkably resilient during the recession with employment declining less than output, especially due to reduced working hours per employee. He also proves that critical factors which drove labour market outcomes were quite different in West- and East-European regions. The regions characteristic by pre-crisis structural problems were less sensitive to the effect of the crisis.

Based on the different unemployment levels between individual age groups in the member countries and different labour market problems, the EU does not provide single labour market policy, which would be applied on the all member countries. There can be found possibilities of the mutual experience transfer how to tackle different types of an unemployment nevertheless.

The aim of the paper is to analyse unemployment structure of EU member countries. The structure of the paper is following. Chapter 2 describes data and methodology used for the classification of the countries to the more homogenous groups. Chapter 3 presents main trends of age structure of the unemployed individuals in the given group. Main conclusions are presented in Chapter 4.

2 Methodology and data

The EU member countries have been hardly hit by the recent economic crisis. Relevant empirical and theoretical papers have pointed out many factors that can affect performance of the labour market in the economic crisis but the impact of the individual factors on the individual countries varies. As Dimian et al. (2013) state these factors include (i) demographic characteristics, (ii) structural factors, (iii) institutional and policy settings, and (iv) business cycle.

In order to classify EU member countries according their economic performance the Cluster Analysis is used. This method enables classifying of the individual countries into homogeneous groups so the countries in a group are similar in the terms of analysed variables and are different from the other objects in the other groups. The criteria used for the Cluster analysis are change of the unemployment rate between 2007 and 2012 and the change of GDP per capita in PPP between 2007 and 2012. Both variables are confirmed to have significant effect on unemployment and its different types (Hančlová et al., 2012). The calculation of both variables is based on the Eurostat database (Eurostat, 2014a,b).

The evolution of two macroeconomic indicators which are used for the following analysis is displayed in Fig. 1. This figure shows how the level of those indicators changed between 2007 and 2012 (as a difference between 2012 and 2007 level). The same trend of GDP per capita in PPP is reported in the nearly countries. There was decrease in GDP in 2007-2009 with bottom in 2009. The most of the countries experienced the huge fall in rate of growth of GDP, in some countries was reported at the level of 10 – 16% (Estonia, Latvia, Lithuania, Luxembourg, and Slovenia). In the following years the slight increase in GDP was reported. Different evolution was monitored in the case of Greece and Cyprus where the decrease in the GDP continued for the whole observed period; contrarily Latvia and Lithuania experienced the positive rate of GDP growth around 10%.

The unemployment rate behaved in accordance with economic theory – with a decrease in GDP there is reported delayed increase in the unemployment rate. In the case of EU member countries in the most of them the share of unemployed individuals was increasing from 2008. The increase in unemployment rate exceeding 10 percentage points from 2007 to 2012 was recorded in the Ireland, Spain and Greece, in Spain and Greece the unemployment rate exceeded 20% in 2012 and 2013 simultaneously.

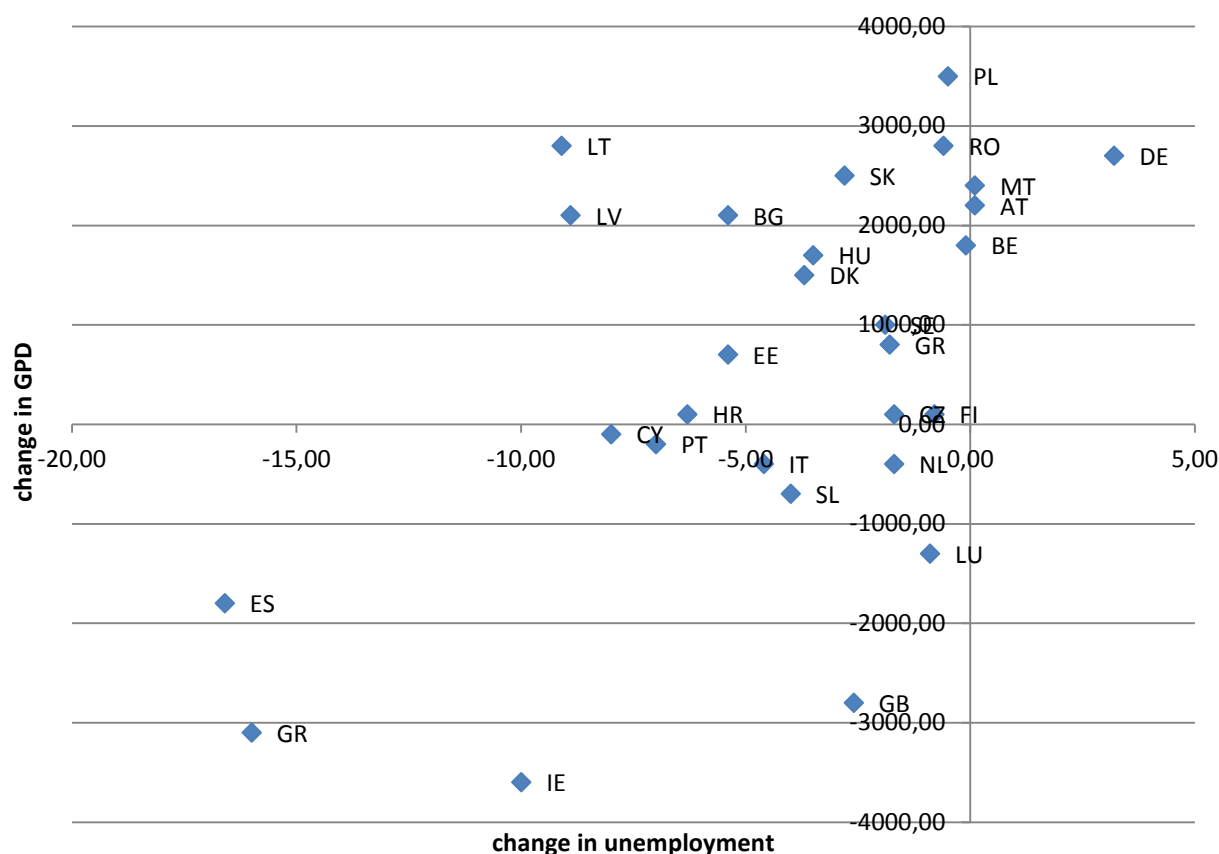


Figure 1. Change in main economic indicators (2007-2012) (Source: Eurostat, own calculation)

In the following step the age structure of the unemployment is analysed. The unemployed individuals are divided into three main categories – up to 24, 25-54, 55 and older. Data source of unemployment rate in all observed categories is Eurostat database (Eurostat, 2014c).

Before we applied cluster analysis the data were tested for the presence of multicollinearity. The Pearson's correlation test (0,567, tested on the 5% significance level) has proved that our data do not suffer for the multicollinearity problem. The criteria for a cluster analysis were chosen as (i) the change of the unemployment rate between 2007 and 2012, and (ii) the change of GDP per capita in PPP between 2007 and 2012.

As our data were not standardized we applied z-score within the cluster analysis to standardize them. The cluster analysis divided the countries to the three main groups (see Table 1). In the following paragraphs the age structure of the unemployment in the individual groups is described.

Table 1. Groups of the countries

1 st group	2 nd group	3 rd group
Malta, Austria, Belgium, Poland,	Italy, Slovenia, Croatia, Portugal,	Greece, Spain, Ireland
Romania, Denmark, Latvia,	Cyprus, Estonia, Sweden, Czech	
Lithuania, Germany, Hungary,	Republic, Finland, Netherland,	
Bulgaria, Slovakia	France, Luxembourg, United	
	Kingdom	

Source: own calculation.

Based on the previous cluster analysis the following part of the chapter will describe unemployment trends of the individual groups of countries and age groups. Generally, the unemployment rate was 14.9% in 2007 and influenced 4.2 million of the workers. Their number increased up to 5.5 million in 2012 and remained stable in 2013. Fig. 2 describes the evolution of the unemployment rate of the age group 15-24. It is obvious that all groups of countries were influenced by the economic recession but the differences between individual groups are quite huge, mainly in the case of the 3rd group of countries. The economic crisis has influenced more than 1.4 million workers from age group 15-24.

The position of the given age group of workers was quite similar in the 2007. In all countries from the 1st group the unemployment rate was 15% in the average and this group was quite homogeneous (standard deviation 24.2). After the economic crisis hit the labour market the group reached the highest unemployment rate and simultaneously partially lost its homogeneity in 2010 (standard variation 84.3). Latvia, Lithuania and Slovakia experienced the unemployment rate over 30% on one side, to the contrary unemployment rate in Austria, Denmark and Germany was about 10%. In the following years there was reported gentle decrease in unemployment rate. Despite the fact that the share of unemployed rate of age group 15-24, the total increase in the number of unemployed individuals was in 2013 lower than in 2007 and the 1st group is the only one which reported slight decrease in unemployment after 2012.

The 2nd group was quite homogeneous in the first years of the crisis (standard deviation varies from 24.73 in 2007 to 46.87 in 2011). The average unemployment rate in 2007 was 14.79%. The only positive outlier was Netherlands (5.9%), on the contrary the unemployment rate in Croatia (24.0%), Italy (20.3%), Sweden (19.3%) and France (19.1%) was significantly higher. In the following years the unemployment rate was increasing up to 2012 where two different trends appeared, and internal heterogeneity measured by standard deviation increased up to 122.75 with the average unemployment rate 26.2%. Whereas the unemployment rate in the half of the countries was still increasing, the second half of the countries reported slight increase in unemployment with the most significant decrease reported in Luxembourg.

The 3rd group is characterised by significant internal heterogeneity. Whereas Ireland reported only 9% unemployment rate, the unemployment rate in the remaining countries was more than double and influenced half of million of individuals. The internal heterogeneity of the group was increasing for the whole period. Whereas this age group reached its unemployment peak in 2012 (30.4%) in average, the unemployment rate in the some countries was increasing for the whole period and in 2013 was over 50% and influenced more than million of the individuals which is more than double compared to 2007.

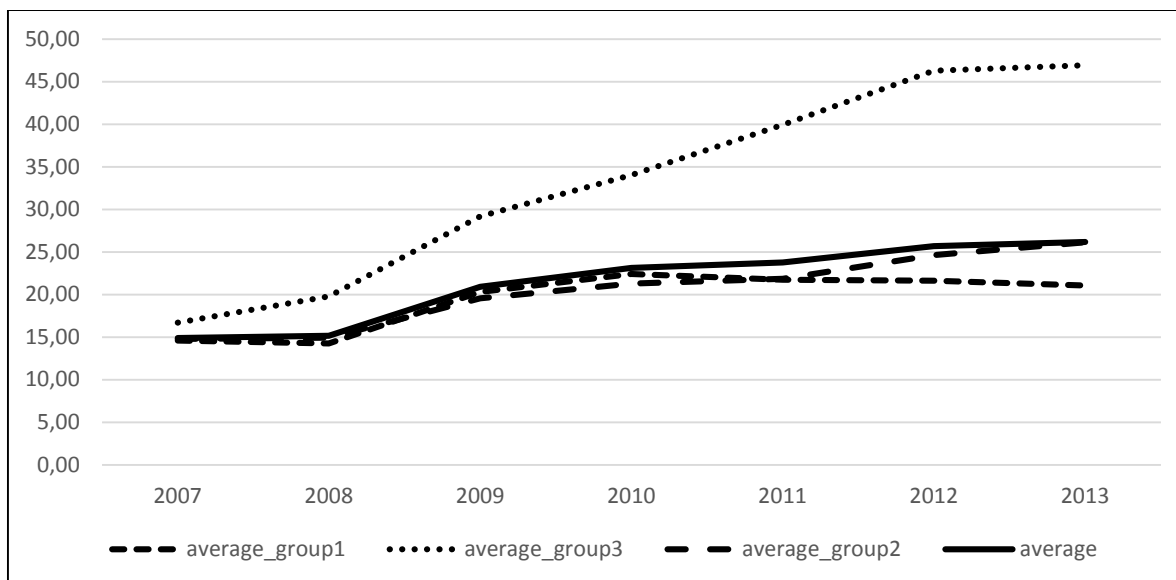


Figure 2. Unemployment rate 15-24 (Source: Eurostat, own calculation)

The impact of the economic crisis on the age group 25-49 was noticeably milder. The unemployment rate was 5.7% in 2007 and influenced 9.7 million of the workers. Their number increased up to 15.6 million in 2012 and remained stable in 2013. The 1st group is quite homogeneous for the whole period, the relatively greatest divergence was reported in 2010 (standard deviation 17.5) and in this year the unemployment rate reached its peak at the level of 9.5%, simultaneously influencing 4.5 million inhabitants of the group. In the following years the countries of the group reported decrease or stable level of unemployment rate, the only exception represents Bulgaria and Poland where the increasing trend continued up to 2013. This positive trend was not reported in the remaining groups however. In the 2nd group the unemployment rate was increasing in the whole period and the group was still quite homogenous (standard deviation in 2007 was 5.1, 9.4 in 2013). The unemployment rate in the individual countries remained under 10% with the exception of Croatia, Portugal, Cyprus and Italy.

The 3rd group is homogeneous as well (standard deviation 5.7 in 2007, 10.3 in 2013). The unemployment rate was quite low in 2007 (5.0% in 2007), slightly decreased in the following year. This positive evolution was broken in 2008 and the share of unemployed individuals was increasing constantly up to 9.4% in 2013. The worst situation was reported in the 3rd group. The unemployment rate was only 6.6% in 2007 (standard deviation 3.8). However the number of unemployed individuals was rapidly increasing in the following years up to 21.7% in 2013. Whereas Ireland reported slight increase between 2012 and 2013, the remaining countries followed unfavourable trend and the heterogeneity of the group sharply increased (standard deviation 46.2 in 2013).

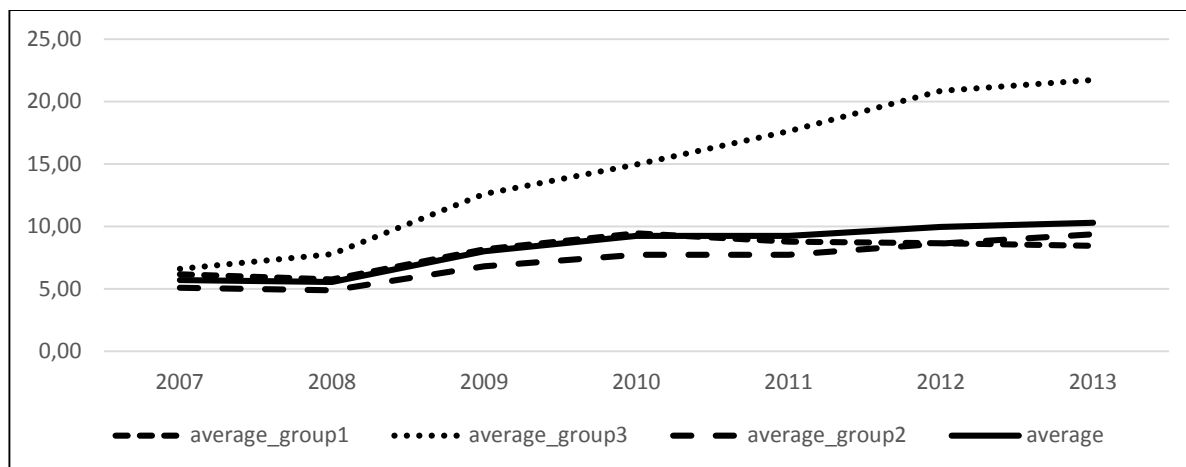


Figure 3. Unemployment rate 25-49 (Source: Eurostat, own calculation)

The impact of the economic crisis on the 3rd age group (50-75) was comparable with the age group 25-49 in the first years of the crisis. In 2007-2008 the unemployment rate was about 5% in all observed countries and the EU average unemployment rate of this group was lower compared to age the group 25-49. In the first group of the countries the unemployment rate was quite low and increased only mildly. In the case of four countries (Bulgaria, Latvia, Lithuania, Slovakia) the unemployment rate exceeded 10% after 2010 but only in the case of Bulgaria and Slovakia this increase continued up to 2013. On the other hand the unemployment rate in Austria and Romania was under 4% for the whole observed period. The group was homogeneous, the biggest heterogeneity appeared in 2010 (standard deviation 15.83).

Similar trends were observed in the case of the 2nd group. The highest unemployment rate of the group was reached in 2013 (7.17%) with the greatest heterogeneity (standard deviation 8.15). Only Portugal, Croatia and Cyprus reported unemployment rate exceeding 10% after 2012. In the majority of the countries from the 2nd group the unemployment rate was increasing for the whole period. The trend of the 3rd group was again different. Whereas in 2007-2008 the unemployment rate was like in other groups, the following years brought rapid increase in the unemployment rate and in the case of Spain exceeded 20% in 2013. The same year was marked by the greatest heterogeneity of the group with standard deviation 20.18.

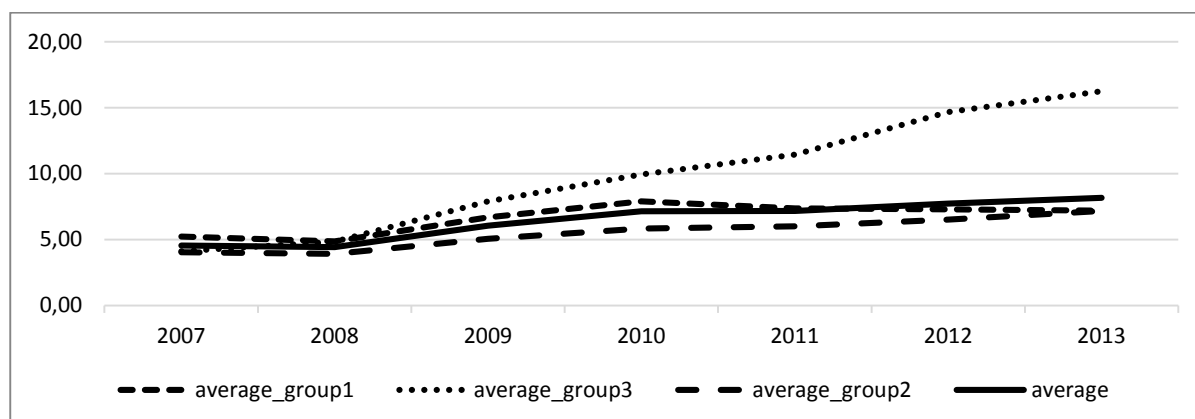


Figure 4. Unemployment rate 50-74 (Source: Eurostat, own calculation)

3 Conclusion

The recent economic crisis has negatively influenced labour market performance all over the world. Its effects have affected a majority of people. On the EU level the unemployment is mainly discussed

in the context of the youth unemployment. Over the last few years the EU has presented and launched labour market tools aimed to this segment of the labour market. The youth unemployment is considered as „especially urgent“ (Barroso, 2014).

The aim of the article is to evaluate the change of age structure of unemployed individuals during the economic crisis in the European Union member countries and homogeneous sub-groups in the period 2007-2013. To receive more reliable results all EU member countries were divided to three more homogeneous groups according their main economic indicators. Regardless of this step the individual countries reported different results of the labour market performance, mainly in the case of the young unemployment (15-24 years).

Different level of the unemployment rate of this age group indicates different economic features of the individual countries and shows that some countries suffer for higher structural young unemployment. Although some countries have active labour market policy aimed on this age group (e.g. Austria) the unemployment rate of this age group remains relatively higher compared to the other age groups. This can be mainly explained by the labour supply shock. Young people have finished their education but on the labour market there are no new working positions for them as the most of the companies reduce the number of their workers or maintain the same number of the working positions. These people do not have option to replace retired workers or occupy new working places and therefore remain unemployment. As the negative impact of unemployment on this age group is confirmed by the results of many empirical and theoretical papers, the governments should give even more effort to struggle against this feature especially in the time of the economic crisis. Appropriate active labour market programs which will help to lower unemployment rate of this age group, support professional skills and working habits of this group should be emphasized. The positive supporting effects of appropriate active labour market policy presents many empirical papers, e.g. Šimek, Janíčková (2014).

Although the age groups 50+ is usually considered as a vulnerable group, the unemployment results can be considered as a proof of the quite successful labour market policy aimed on the given people in some countries (e.g. unemployment rate in Austria was about 3 % for the whole period). This quite positive numbers can be influenced by other factors as well. The age group 50-75 experienced in the nearly all observed countries increase of part-time jobs during the time of the economic crisis. This increase was considerably higher compared to the other age groups. Other important factor influencing the need of the people to stay employed can be pension. Its impact in the case of e.g. Romania can be really huge as the people there receive one of the lowest pensions in the EU and to receive it in the full amount they need to work up to the retirement age. On the other hand some countries (e.g. Czech Republic) reported sharp increase in early retired workers as the number of those workers was more than double in 2011 compared to the previous years.

4 Acknowledgement

This paper has been funded by a grant from Students Grant Project EkF, VŠB-TU Ostrava within the project SP2014/113 “Alternative measures of active labour market policy and their application on the chosen groups of unemployment within Moravian-Silesian Region.”

This paper was supported by the European Social Fund within the project CZ.1.07/2.3.00/20.0296.

References

- [1] Barroso, J. M. D., 2014. *Speech by President Barroso on the review of the Lithuanian Presidency*. European Commission - SPEECH/14/15 14/01/2014. [online]. [2014-06-17]. Available from: http://europa.eu/rapid/press-release_SPEECH-14-15_en.htm.
- [2] Dimian, G. C., B. Ileanu, J. Jablonský and J. Fábry, 2013. Analysis of European Labour Market in the Crisis Context. *Prague Economic Papers*, vol. 1, pp. 50-71.

- [3] European Union Committee, 2014. Youth unemployment in the EU: a scarred generation? 12th Report of Session 2013-14. *HL Paper 164*.
- [4] Eurostat, 2014a. *GDP and main components*. [online]. [2014-06-12]. Available from: <http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do;jsessionid=9ea7d07e30d9ca42a148b12b4126b68ab61a111c1c7b.e34MbxSahmMa40LbNiMbxaNa30Oe0>.
- [5] Eurostat, 2014b. *Unemployment rate, by sex*. [online]. [2014-06-12]. Available from: <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tsdec450&plugin=1>.
- [6] Eurostat, 2014c. *Unemployment rate by age groups*. [online]. [2014-06-15]. Available from: <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tsdec460&plugin=1>.
- [7] Hančlová J., M. Šimek and J. Horák, 2012. Factors influencing the long-term unemployment level and development in the European Union. In: *Mathematical Methods in Economics*. Silesian University, School of Business Administration, pp. 249-254.
- [8] Hijman, R., 2009. The impact of the crisis on employment. *Statistics in focus No. 79/2009*.
- [9] Maguire, S. et al., 2013. Youth unemployment. *Intereconomics*, vol. 48, issue 4, pp. 196-235.
- [10] Marelli, E., R. Patuelli and M. Signorelli, 2011. *Regional Unemployment in the EU Before and After the Global Crisis*. The Rimini Centre for Economic Analysis Working Paper No. 11-39.
- [11] Šimek, M. and L. Janíčková, 2014. Is Active Labour Market Policy Useful? The Case of the Chosen Countries. In: *ICEI 2014*. VŠB – Technical University of Ostrava, Department of European Integration, pp. 667-674.

THE POLITICAL BUDGET CYCLE IN OECD COUNTRIES

Jan Janků

VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: jan.janku@vsb.cz

Abstract

Examination of so called political business cycle, that is, the possibility of a macroeconomic cycle induced by the political cycle, provides little evidence in empirical studies. The empirical evidence of statistically significant increase in economic activity before election is especially a matter of less developed countries. There is a shift in focus to political budget cycle in the developed economies. This paper examines the presence of political budget cycles (PBCs) in the OECD countries using data from all 34 member states over the period 1995- 2012. The dynamic panel linear regression model is used in this article. Three important results emerge: First, there is PBC in the OECD countries. Second, there is a cycle in the fiscal expenditures. Third, there is not cycle in the fiscal revenues.

Keywords

Election, Fiscal Policy, Political Budget Cycle, Public Choice Theory, Rationality.

JEL Classification

D72, E62, E32, C26, H62.

1 Introduction

There are important and attractive questions in public choice. Can electoral motives influence economic performance? Can electoral motives influence fiscal outcome? Are there systematic patterns in the fiscal policy variables (expenditure, revenue, deficits), which are caused by upcoming elections?

The traditional “political business cycle” theories imply that some macroeconomic variables (outcome, unemployment, inflation, etc.) are influenced by politicians before elections. Nevertheless, two important assumptions of this topic are still very controversial. First, a government must be able to affect real economic variables; second, there must be an immediate impact on the economy. For this reason, there is a shift in focus to the “political budget cycle”.

The term “political budget cycle” (PBC) is used to describe a cyclical fluctuation in fiscal policies induced by the timing of elections. The reason for the emergence of these cycles in the fiscal policy is still the same - re-election motives create incentives for incumbent politicians to appear competent just ahead of elections.

It should be noted, that the empirical evidence of statistically significant political business cycles (but it is almost the same for political budget cycles) is especially a matter of less developed countries. For this reason, we will try to verify the political budget cycles in developed economies (in the OECD countries). Also, we will focus on several fiscal instruments as well as “the shape of the PBC”.

This paper examines the presence of political budget cycles (PBCs) in the OECD countries using data from all 34 member states over the period 1995 - 2012. The dynamic panel linear regression model is used in this article. Three important results emerge: First, there is the PBC in the OECD countries. Second, there is a cycle in the fiscal expenditures. Third, there is not cycle in the fiscal revenues. Fourth, politicians can manipulate the fiscal outcome very quickly and effectively.

The paper is organized as follows: Section 2 offers some theoretical considerations and literature. Section 3 presents empirical literature. Section 4 describes the methodology, the data and the empirical model specification. Section 5 reports and discusses the estimation results and investigates their robustness. Section 6 concludes.

2 Theoretical considerations

There is one usual approach to the problem of electoral cycles. The former models of so-called political-business cycle are labeled as a first generation of electoral cycles and the models of political-budget cycles are labeled as subsequent generations. Through this approach, we can divide current electoral cycles to the three generations:

- former models of political business cycle,
- models of political budget cycle based on the adverse selection and the signaling,
- models of political budget cycle based on the moral hazard problem.

The common essence of these models is an assumption that a government has strong incentives to affect a voter's behavior, because it improves its electoral outcome.

The very first theoretical models of the political-business cycle were based on backward-looking (better known adaptive) expectations of voters. Thus, voters evaluate their government on the base of its last actions. The incumbent¹ simply maximizes his expected profit in the upcoming elections and aims to a reelection. These models were based on the trade-off relationship between inflation and unemployment.

The former model of PBC has been published by Nordhaus (1975)². Nordhaus expected an opportunistic behavior of political parties and the adaptive expectations of the voters. The model assumes a pre-election fiscal expansion at the time t (election), e.i. decreasing unemployment and increasing inflation. After-election higher inflation and a shift to the higher Phillips curve³ were expected in the after-election period($t + 1$).

Given to the adaptive expectations of voters and the opportunistic behavior of incumbents is the pre-election boom realized also in the following elections. The same assumptions maintain for example McRae (1977) or Lindbeck (1976).

Hibbs' (1977) model has been described relatively soon. The assumption of the opportunistic behavior of incumbent is left and systematic distinctions in unemployment and inflation are considered. In partisan models, cycles are induced by differences among parties in their ideology and their economic goals. The assumption of the adaptive expectations of voters is maintained and therefore economic policy should be effective in the sense of influencing the real macroeconomic variables. A right-wing party (incumbent) chooses a combination of low inflation and higher unemployment on the Phillips curve, whereas a left-wing party chooses a combination of higher inflation and lower unemployment. A shifting on the Phillips curve is induced by changing left-wing and right-wing governments.

Later, models based on the rational expectations are examined; see Rogoff and Sibert (1988), Rogoff (1990) for the rational-opportunistic models and Alesina (1987), Alesina and Sachs (1986) for the rational-partisan models. If voters have rational expectations, then the government cannot affect real macroeconomic variables in a positive and significant way. There is only higher inflation in the case of expansionary policy. The models based on the rational expectations thus, rather than genuine long-term cyclical fluctuations in outcome and employment, imply short-term electoral cycles, which are depicted in fiscal and monetary instruments of an economic policy. Whereas the models with the adaptive expectations are known as the models of political-business cycle, the models with rational expectations are very close to the models of political-business cycle. These models are described above as models of the second generation.

¹ Incumbent – the present government; Challenger – the opposition party. These terms are commonly used in the PBC literature.

² In fact, there is an earlier mention of the *political-business cycle* in Schumpeter (1939) or Kalecki (1943). However, Kalecki argues in a completely different context: In the slump, either under the pressure of the masses, or even without it, public investment financed by borrowing will be undertaken to prevent large-scale unemployment. But if attempts are made to apply this method in order to maintain high-level of employment reached in the subsequent boom, strong opposition by business leaders is likely to be encountered. Lasting full employment is not at all to capitalists liking.

³ The former model described higher inflation in the pre-election period. However, there is a time-lag in the effects of the stimulation of the aggregate demand. The post-election higher inflation is more reasonable in that case, Lindbeck (1976).

Signaling and adverse selection are important characters of the second generation of PBC. These models emphasize a temporary information asymmetry about a candidate's competence level. Rogoff and Sibert (1988) assume that each incumbent has a competence level (low or high), which is merely known to the politician and not to the electorate. Voters want, of course, to elect the more competent incumbent (or challenger). They form rational expectations regarding the type of the incumbent based on observable current economic (fiscal) policy outcomes.

The electoral cycle arises when the incumbent is high-type (competent politician), because engaging in expansionary fiscal policy is less costly for him than for low-type incumbent. This happens because the high-type incumbent will attempt to signal his type and thereby increase his chances of reelection. There is no signaling when the incumbent's type is low⁴. Generally, cycles in taxes, expenditure or money supply can be defined as “an equilibrium signal process”. Rogoff (1990) claims that the electoral cycle does not have to be visible immediately. The incumbent can also signal his competence level by shifting government expenditure towards easily observed consumption spending and away from government investment.

Shi and Svensson (2003) state that second generation PBCs are attractive for a number of reasons:

- they assume rationality and strategic behavior on the part of politicians and the electorate,
- they focus on the fiscal policy instruments that are directly controlled by the government instead of the effects on the real economy,
- their main prediction (that incumbent governments manipulate fiscal policies prior to elections) is generally supported by empirical tests.

On the other hand, they state fundamental weaknesses of PBC II, which are the main reason for presentation of PBCs of third generation:

- fundamental claim that only more competent politician who distorts the economy in the separating equilibrium of the signaling game will be reelected,
- since only competent types signal by creating a boom before an election, the testable implications are unclear without additional information on the (generally unobservable) type of incumbent.

For these reasons Persson and Tabellini (2000) and Shi and Svensson (2002a) have suggested the models of third generations (PBCs III).

In these models of moral hazard there is (exactly as in adverse selection models) an assumption that each politician has a competence level. However, in contrast to PBCs of second generation, there is an assumption that neither the electorate nor the incumbent can observe the incumbent's competence level contemporaneously. In the real economic environment there is a number of different situations and problems, and incumbent is uncertain about how well he will be able to solve these future problems. Thus, incumbent is uncertain how well he will be able to transform government revenues (taxes, social contributions...) into the public output (there is not any signaling for this reason).

Voters have rational expectations and want to elect the politician (incumbent or challenger) with a higher competence level. A competence level is unobservable so that voters must make their decision on a base of the observable macroeconomic performance of the incumbent government (such as the amount of public goods). The most important assumption is that the incumbent government can exert a hidden effort and stimulates policy instruments. It is unobservable to the public (or observable with delay). In the equilibrium of this moral hazard game, excessive borrowing and increase in the budget deficit before election can be expected.

⁴ The fundamental assumption is that each politician has a quantifiable competence level – for instance the ability to produce public goods without raising taxes (certain “productivity” of incumbent).

Shi and Svensson (2003) argue that in contrast to adverse selection models, all types of the incumbent government will incur excessive pre-election budget deficits in the moral hazard model. It is independent of their competence level. Since all types of the incumbent have the same incentives, one can test these empirical predictions even if the type of the incumbent government is not observable.

3 Literature review

Recent empirical literature on PBCs is shifted from examining former political-business cycles to examining political-business cycles. Franzese (2002) claims that empirical literature on former political business cycle is available. Empirical literature admits certain possibility of electoral cycles, which are depicted in a macroeconomic outcome, but evidence is inconsistent and weak⁵. The evidence is weaker in real economic variables, strongest in nominal variables. The reason is simple. There are two important assumptions in former PBC: first, a government must be able to affect real economic variables; second, there must be an immediate impact on the economy. Both of these assumptions are still very controversial. Drazen (2000) argues that models based on manipulating with monetary policy are convincing neither empirically nor theoretically.

Shi and Svenson (2006) examined panel data from 1975 to 1995. There are 85 developed and developing economies in this panel. They claim that political-business cycles exist in both developing and developed countries (but the cycle is relatively weak in developed countries). The PBC has been found in a government budget balance, in government expenditure and government revenue. Very similar results have been published in Shi and Svenson (2002b). They argue that at the time of elections there is increasing in a budget balance about (in average) 1.3 percentage points in developing countries and about 0.6 percentage points in developed countries. Moreover, results in this study suggest that in the post-election period statistically significant fiscal restriction is reached. Analogical PBCs were founded by Block (2002) or Schuknecht (2000) in less developed countries.

Persson and Tabellini (2002) analyzed almost 40 years from 1960 to 1998 and their sample contained 60 democratic countries. Their study is focused on a constitutional arrangement of analyzed economies and concludes that only in proportional electoral systems welfare spending increases in pre-election period. On the other hand, taxes are decreased in majority electoral systems to a greater extent than in proportional systems. Eventually, expenditures are decreased and taxes are increased (generally “unpopular measures”) in the post-election period in the presidential systems. Thus, they conclude that electoral and governmental system is a key determinant of the nature of PBCs.

Brender and Drazen (2005) examined sample of 106 countries in 1960-2001. They claim (on the base of a dynamic regression model) that the very robust PBC exists in countries marked as “the new democracies”. These countries have an insufficient level of democracy or a very short tradition of democracy. They conclude that the robust PBC in these countries inheres in inexperienced electorate. Inexperienced voters do not recognize a pre-electoral manipulation and it generates strong incentives for politicians (incumbents).

Studies mentioned above were rather focused on less developed countries. However, Tujula and Wolswijk (2007) demonstrate that the PBC is not only a matter of these countries. They have found the PBC in the 22 OECD member countries in 1970-2002. A budget balance increases periodically about 0.3 % of GDP in the election period in these countries. Similarly, Alt and Lassen (2006) have examined the 19 OECD member countries in 1989-1998. These countries have a long-term tradition of democracy. Authors conclude that statistically and economically significant PBCs exist in the some of them. According to this study PBCs exist in the countries with low transparency level of fiscal policy and in the countries politically polarized. Likewise, Alesina et al. (1997) conclude that PBCs

⁵ Partial evidence for former Nordhaus (1975) cycle is described (in the Czech Republic in 1993-2012) by own research, see Janků (2013).

exist in the 13 OECD member countries in 1960-1993. They found the statistically significant PBC in the budget balance, but not in the individual parts (revenue, expenditure)⁶.

4 Data and econometric specification

We use an unbalanced cross-country time-series dataset, comprising 34 developed countries (the OECD members) over the period 1995-2012⁷.

4.1 Data

A dynamic panel model is used. The panel includes a number of economic, socio-economic and political variables. Government fiscal policy data and economic variables are obtained from the OECD database. Data on demographic variables are extracted from the World Bank database. Political data (election dates) are obtained from the Database of Political Institutions (Keefer et al., 2001). Since we study national elections, we focus on PBCs in three fiscal policy instruments under control of the government – budget balance, expenditure, revenue. All four measures are scaled to GDP and expressed as percentages.

It should be noted that given the relatively short time series and the relatively small number of cross-section, the panel data regression is substantial. Panel data regression makes the presented statistic more reliable and robust. Econometrical software used for econometric calculations and tests was EViews 8.

4.2 Econometric specification

The estimated baseline dynamic panel data model to test the predictions of the PBC has been designed by Shi and Svensson (2002b, 2006) and Person and Tabellini (2002). We propose some modifications in this model. The model has the following form:

$$Y_{it} = \sum_{j=1}^l \alpha_j Y_{it-j} + \beta X'_{it} + \gamma growth_{it} + \delta elec_{it} + \mu_i + \varepsilon_{it}, \quad (1)$$

where Y_{it} is a dependent variable, i.e. a fiscal indicator in country i in year t , X'_{it} is a row vector of control variables, $growth_{it}$ is the GDP growth rate, $elec_{it}$ is a dummy electoral variable, μ_i are unobserved country-specific effects and ε_{it} is an error term. As already mentioned a dependent variable Y_{it} is either budget balance (bb), expenditure (exp) or revenue (rev). The vector of control variables can be expressed as $X'_{it} = (nairu_{it} \ idr_{it} \ trade_{it})$. These control variables have been shown to be correlated with fiscal policy outcomes in previous studies.

The variable $nairu_{it}$ is simply the non-accelerating rate of unemployment ($NAIRU$) and represents equilibrium in the labor market. $NAIRU$ can be seen as a reflection of the potential outcome on the labor market, see Modigliani and Papademos (1975). It also represents imperfections on the labor market and can be identified with the structural and frictional unemployment. With increasing $NAIRU$ a higher fiscal imbalance is expected.

The variable idr_{it} expresses the proportion of the population aged 15-64 on the proportion of the population aged 65+. It is simply inverse dependency ratio (workers per dependent). Persson and Tabellini (2002) or Brender and Drazen (2005) use two demographic variables representing the percentage of population aged 15-64 and 65+. However, these two variables are collinear and they

⁶ Let us add that Akhmedov and Zhuravskaya (2004) indicate that empirical evidence on PBCs is generally very weak in the full developed countries.

⁷ A larger time period is not used due to lack of data for all OECD member states.

are not statistically significant⁸. Moreover, due to a reduction of these variables into one, the number of instruments is reduced. With increasing IDR a lower fiscal imbalance is expected.

A last control variable $trade_{it}$ has been used in the studies mentioned above as well. This variable represents the trade share, i.e. exports and imports as share of GDP. The trade share as an important determinant of fiscal outcome is mentioned in the related literature (see Vernon, 1974). With an increasing openness of the economy a lower fiscal imbalance is expected because of a decreasing efficiency of the fiscal policy.

As already mentioned above, the $growth_{it}$ is a very important control variable, which represents an *annual percentage growth* rate of *GDP* at market prices. Its role is to filter out and to capture fiscal fluctuations caused by the economic fluctuations. The results should not be misrepresented by a dynamic of the business cycle⁹.

We do not include a logarithm of GDP as another control variable in contrast to some previous studies. There is an almost perfect colinearity between the log of GDP and the $growth_{it}$ variable, when the differentiated GMM is used¹⁰. Additionally, the NAIRU variable can replace the log of GDP to a certain extend.

The electoral variable $elec_{it}$ codes the year the executive is elected. It equals 1 in the years of legislative election, and 0 in all other years.

4.3 Methodology

If it is assumed that the unobserved country-specific effects are equal across countries, that error term is not serially correlated and that the explanatory variables are strictly exogenous, the model (1) can be estimated with Ordinary Least Squares (OLS). It is almost certain that the unobserved country-specific effects are different across countries. Consequently, the simple Ordinary Least Square estimator is biased.

Shi and Svensson (2003) claim that in order to allow for cross-country differences, most empirical studies have employed the Fixed Effects (FE) estimators. However, the dynamic panel data model is used in this article (the inclusion of lagged dependent variables). Hence, there is another source of bias because the vector of lagged dependent variable is correlated with the vector of error term¹¹. The potential estimation bias is of order $1/T$, where T is the length of the panel (the number of periods) (see Nickell, 1981; Kiviet, 1995).

This problem is enlarged if the number of individuals i is large, while the number of periods T is quite small (note, that the bias becomes smaller as the length of the panel increases to infinity $T \rightarrow \infty$). Since the number of periods is relatively small ($T = 17$) in this panel and it is lower than the number of cross-sections ($i = 34$), the generalized method of moments (GMM) is employed. This method uses the Arellano-Bond estimator (Arellano and Bond, 1991).

The Arellando-Bond estimation transforms all regressors by differencing (first differencing, FD), and uses the GMM with the instrumental variables (IV)¹². In this article we also use the forward orthogonal deviations transform (FOD), proposed by Arellano and Bover (1995).

⁸ For instance, Shi and Svensson (2002b) remove these variables for this reason.

⁹ In fact, all control variables have the same role. They are important to ensure that our estimated results for the *political variable* will not draw misleading inferences regarding the unemployment, a business cycle, international trade, etc.

¹⁰ Because if: $\frac{\delta(\ln GDP)}{\delta GDP} = \frac{1}{GDP}$, and thus: $\delta(\ln GDP) = \frac{\delta GDP}{GDP}$, so for a sufficiently small changes of the *GDP* deals: $\Delta \ln GDP \approx \frac{\Delta GDP}{GDP}$, and it can be expressed: $(\ln GDP_t - \ln GDP_{t-1}) \approx \frac{(GDP_t - GDP_{t-1})}{GDP_{t-1}}$.

¹¹ The initial condition Y_{i0} is obviously correlated with the country fixed effect μ_i , so that the lagged dependent variable is correlated with the error term.

¹² We use the default two-step Arellano-Bond estimator. In two-step estimation, the standard covariance matrix is robust to panel-specific autocorrelation and heteroskedasticity and is asymptotically more efficient (unlike the one-step). Must be mentioned that two-step AB estimator can produce standard errors that are downward biased in small samples.

The instruments used in GMM regression are lagged levels of the dependent variable (they are generated for each period). The electoral dummy and the strictly exogenous covariates are instrumented by themselves.

The consistency of the GMM estimator depends on the condition of no second-order serial correlation of the differenced residuals. For this reason we check the Arellano-Bond test for second-order serial correlation (proposed by Arellano and Bond, 1991). Similarly, the consistency of the GMM estimator depends on the validity of instruments. Thus, we perform Hansen (1982) test for over-identifying restrictions, which is based on Sargan (1958) test.

5 Results

There are extra rows report the Hansen test for over-identifying restrictions [p -values] and the Arellano-Bond test for second-order serial correlation of the differenced residuals [p -values].

5.1 Basic findings

Table 1 reports the regression results when dependent variables are the budget balance (*bb*), expenditure (*exp*) and revenue (*rev*). In the first column of Table 1, we present FD GMM regression for the fiscal balance¹³. The existence of an election-motivated fiscal cycle (the PBC) is confirmed when the regression coefficient on the electoral variable *elec_{it}* is correctly signed and statistically significant at conventional levels of significance.

Table 1. Political budget cycles. Method: Generalized Method of Moments

	bb	exp	rev
Y(-1)	0.668*** (22.853)	0.583*** (14.978)	0.553*** (27.921)
Y(-2)	-0.162*** (-9.463)	-	0.030*** (-3.398)
nairu	-0.128 (-0.814)	0.345* (1.610)	0.124*** (3.298)
idr	0.623 (1.066)	- 1.086*** (-2.762)	-0.312 (-1.446)
trade	0.0419*** (8.396)	- 0.022*** (-4.895)	0.006*** (2.845)
growth	0.321*** (7.343)	- 0.353*** (-24.997)	0.030*** (4.795)
elec	-0.172** (-2.008)	0.116*** (3.352)	-0.002 (-0.131)
Hansen test	25.202 [0.563]	30.140 [0.357]	36.040 [0.207]
AB corr. test	0.226 [0.825]	0.0889 [0.929]	-0.007 [0.9948]
No. countries	34	34	34
No. observ.	407	439	407

$Y(-j)$ denotes the autoregressive coefficient at lag j , where $j = 1, 2$. *Significant at the 10 percent confidence level, **significant at the 5 percent level, ***significant at the 1 percent level.

Source: Eviews, own calculations.

¹³ We will discuss the results for FD GMM only, because the results for FOD GMM are very similar.

The coefficient on the electoral dummy $elec_{it}$ has the expected sign (fiscal deficits are higher in the election years) and is statistically significant at the 5% confidence level. The control variables display the expected signs and their influence is robust (except $nairu_{it}$ and idr_{it}). Both tests have expected p -values (we do not reject the null hypothesis: that the instruments are uncorrelated with the residuals; that there is no second order serial correlation in the first-difference residuals). The model is dynamically stable. The coefficient on the electoral dummy $elec_{it}$ implies that budget balance increased by about 0.17 percentage points when elections occur. Thus, it can be stated that there is the PBC in the overall budget balance in the OECD countries. Nevertheless, it should be mentioned that the identified PBC is relatively weak.

In the second column of Table 1, we present FD GMM regression for the expenditure. First, the coefficient on the electoral variable has the expected sign (expenditure are higher in the election year) and is statistically significant at the 1% confidence level. Second, the coefficient implies that expenditure increased (in average) by about 0.12% of GDP in the time of elections. Similarly to the previous case, the PBC is relatively weak.

In the third column of Table 1, FD GMM regression for the revenue is described. The coefficient on the electoral dummy $elec_{it}$ implies that revenues decreased in the election period however the coefficient is statistically insignificant and very low. Thus, there is not any PBC in the fiscal revenue in the OECD countries.

5.2 Shape of PBC

To test “the shape of PBC”, we lagged the electoral variable by one period. The lagged electoral variable shows fiscal policy movements after elections. Table 2 presents the obtained results. We present only the coefficients on the electoral variables, indicating “the shape of PBC”.

Table 2. The shape of political budget cycles. Method: Generalized Method of Moments

	bb	exp	rev
elec (-1)	0.105*** (4.878)	-0.097*** (-4.296)	0.039 (0.923)
Hansen test	30.160 [0.356]	31.446 [0.345]	30.219 [0.403]
AB corr. test	0.700 [0.503]	0.001 [0.999]	-0.389 [0.6972]
No. countries	34	34	34
No. observ.	407	439	407

*Significant at the 10 percent confidence level, **significant at the 5 percent level, ***significant at the 1 percent level.

Source: Eviews, own calculations.

We can observe that the PBC incurred during the election period is almost erased in the post-election period. Thus, in average, the budget balance is reduced by 0.1% GDP in the year after the elections and expenditure are reduced by almost 0.1% GDP too. Clearly, there is not a statistically significant post-election “counter cycle” in the revenue.

6 Conclusion

In this paper we considered the empirical evidence for the existence of a political budget cycle in developed countries. Our empirical results indicate that political budget cycle exists in the OECD countries. We examine the presence of PBCs in the all OECD countries using data over the period 1995 – 2012. We find empirical evidence that incumbent governments across the OECD tend to manipulate fiscal policy variables in order to enhance their re-elections perspectives. The fiscal deficit

increases by about 0.17% of GDP, whereas total expenditure by about 0.12% of GDP, during an election year. Second, the PBC has not been detected in fiscal revenue. Finally, we show that PBC incurred during the election period is almost erased in the post-election period. This fact is quite remarkable. Specifically, there are not necessary delayed responses in government decision making, when governments have “the right incentives”.

Last, there is another important way in this topic and another important question. Do PBCs differ across fully developed countries and why? One reason may be a different transparency of a fiscal policy. If the fiscal policy is less transparent and legible, incumbents could be motivated to affect the fiscal outcome increasingly. This topic will be examined in the next studies.

7 Acknowledgement

This paper has been supported by the SGS research project SP2014/145 of VSB-TU Ostrava.

References

- [1] Akhmedov, K. and E. Zhuravskaya, 2004. Opportunistic Political Cycles: Test in a Young Democracy Setting. *The Quarterly Journal of Economics*, vol. 119, issue 4, pp. 1301-1338.
- [2] Alesina, A., 1987. Macroeconomic Policy in a Two-Party System as a Repeated Game. *The Quarterly Journal of Economics*, vol. 102, issue 3, pp. 651-678.
- [3] Alesina, A., N. Roubini and G. Cohen, 1997. *Political Cycles and the Macroeconomy*. Cambridge, MA: MIT Press.
- [4] Alesina, A. and J. Sachs, 1988. Political Parties and the Business Cycle in the United States, 1948-1984. *Journal of Money, Credit and Banking*, vol. 20, issue 1, pp. 63-82.
- [5] Alt, J. E and D. D. Lassen, 2006. Transparency, Political Polarization, and Political Budget Cycles in OECD Countries. *American Journal of Political Science*, vol. 50, issue 3, pp. 530-550.
- [6] Arellano, M. and S. Bond, 1991. Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *The Review of Economic Studies*, vol. 58, issue 2, pp. 277-297
- [7] Arellano, M. and O. Bover, 1995. Another look at the instrumental variable estimation of error-components models. *Journal of Econometrics*, vol. 68, pp. 29-51
- [8] Block, S. A., 2002. Elections, Electoral Competitiveness, and Political Budget Cycles in Developing Countries. CID Working Paper No. 78
- [9] Brender, A. and A. Drazen, 2005. Political Budget Cycles in New Versus Established Democracies. *Journal of Monetary Economics*, vol. 52, issue 7, pp. 1271-1295.
- [10] Drazen, A. and M. Eslava, 2010. Electoral manipulation via voter-friendly spending: Theory and evidence. *Journal of Development Economics*, vol. 92, issue 1, pp. 39-52.
- [11] Franzese R. J., 2002. Electoral and partisan cycles in economic policies and outcomes. *Annual Review of Political Science*, vol. 5, pp. 369-421.
- [12] Hansen, L. P., 1982. Large Sample Properties of Generalized Method of Moments Estimators. *Econometrica*, vol. 50, issue 4, pp. 1029-1054.
- [13] Hibbs, D., 1997. Political Parties and Macroeconomic Policy. *The American Political Science Review*, vol. 71, issue 4, pp. 1467-1487.

- [14] Janků, J., 2013. Politicko-ekonomický cyklus v ČR. *Central European Review of Economic Issues Ekonomická revue*, vol. 16, issue 3, pp. 121-130.
- [15] Kalecki, M., 1943. Political Aspects of Full Employment. *Political Quarterly*. Marshall Society in Cambridge.
- [16] Keefer, P., T. Beck, G. Clarke, A. Groff and P. Walsh, 2001. New tools in comparative political economy: The Database of Political Institutions. *World Bank Economic Review*, vol. 15, issue 1, pp. 165-176.
- [17] Kiviet, J. F., 1995. On bias, inconsistency, and efficiency of various estimators in dynamic panel data models. *Journal of Econometrics*, vol. 68, pp. 53-78.
- [18] Lindbeck, A., 1976. Stabilization Policy in Open Economies with Endogenous Politicians. *The American Economic Review*, vol. 66, issue 2, pp. 1-19.
- [19] Macrae, D., 1977. A Political Model of the Business Cycle. *Journal of Political Economy*, vol. 85, issue 2, pp. 239-263.
- [20] Modigliani, F., and L. Papademos, 1975. *Targets for Monetary Policy in the Coming Year*. Brookings Papers on Economic Activity, 1:1975
- [21] Nickell, S., 1981. Biases in Dynamic Models with Fixed Effects. *Econometrica*, vol. 49, issue 6, pp. 1417-1426.
- [22] Nordhaus, W., 1975. The Political Business Cycle. *The Review of Economic Studies*, vol. 42, issue 2, pp. 169-190.
- [23] Persson, T. and G. Tabellini, 2000. *Political economics: explaining economic policy*. Cambridge, MA: Cambridge MIT Press.
- [24] Persson, T. and G. Tabellini, 2002. *Do electoral cycles differ across political systems?* Working Paper No. 232, IGER, Bocconi University.
- [25] Rogoff, K., 1990. Equilibrium Political Budget Cycles. *The American Economic Review*, vol. 80, issue 1, pp. 21-36.
- [26] Rogoff, K. and A. Sibert, 1988. Elections and Macroeconomic Policy Cycles. *The Review of Economic Studies*, vol. 55, issue 1, pp. 1-16.
- [27] Sargan, J. D, 1958. The estimation of economic relationships using instrumental variables. *Econometrica*, vol. 26, issue 3, pp. 393-415.
- [28] Schuknecht, L., 2000. Fiscal policy cycles and public expenditure in developing countries. *Public Choice*, vol. 102, pp. 115–130.
- [29] Schumpeter, J. A., 1939. *Business cycles. A Theoretical, Historical and Statistical Analysis of the Capitalist Process*. New York: McGraw-Hill Book Company.
- [30] Shi, M. and J. Svensson, 2002a. *Conditional Political Budget Cycles*. CEPR Discussion Papers 3352.
- [31] Shi, M. and J. Svensson, 2002b. *Political business cycles in developed and developing countries*, working paper, IIES, Stockholm University.
- [32] Shi, M. and J. Svensson, 2003. Political Budget Cycles: A Review of Recent Developments. *Nordic Journal of Political Economy*, vol. 29, pp. 67-76.
- [33] Shi, M. and J. Svensson, 2006. Political budget cycles: Do They differ across countries and why? *Journal of Public Economics*, vol. 90, issue 8-9, pp. 1367-1389.

- [34] Tujula, M. and G. Wolswijk, 2007. Budget balances in OECD countries: what makes them change? *Empirica*, vol. 34, pp. 1-14.
- [35] Vernon, R., 1974. *Big business and the state: changing relations in Western Europe*. Cambridge, Mass.: Harvard University Press.

WHAT IT ACTUALLY MEANS TO COMPLY WITH THE STABILITY AND GROWTH PACT CRITERIA?

Jakub Jedlinský

*University of Economics, Prague, nam. W. Churchilla 4, 130 67 Prague 3, Czech Republic
email: jjedlinsky@gmail.com*

Abstract

This paper focuses on the decomposition of relative indicators of indebtedness: budget deficit and public debt. It argues against the notion that compliance with the Stability and Growth Pact and obeying other subsequent demands on public finances are a matter of responsibility and consistency of EU member states and that this compliance can therefore be achieved and enforced through higher penalties, tighter supervision and specifications of the target values of indicators. A great attention is paid to the mathematical aspects of the matter, relations between the numerator and the denominator in the indices, relations between the types of creditors and observed values, as well as the types of government expenditures and these values. The main objective of the paper is to examine the question whether it is actually possible to solve the debt issues by means of fiscal policies or *vice versa* – impossible – because indebtedness (as a ratio) is in fact more of an accounting problem. If so, the solution must too be of an accounting – and not fiscal – nature.

Keywords

Stability and Growth Pact, Indebtedness Ratio, Austerity Measures, Endogenous Money.

JEL Classification

E52, E63, E65.

1 Introduction

Almost six years after the crisis has begun, European countries are still incapable of solving their indebtedness issues. The original Stability and Growth Pact that was supposed to set the limits for public debt and deficit has been revised and supplemented¹ multiple times. Still, the member states do not succeed in their efforts to consolidate public finances, no matter how loose or strict the enforcement of criteria is. The European Union answers with further commitments and compacts.

It seems natural that there is a direct relationship between ongoing indebtedness of a state and the debt-to-GDP ratio. The same thought may be applied to deficit-to-GDP ratio. Such way of thinking – especially when superficially applied by the media – leads to victimizing the countries that do not comply with agreed criteria. If the government was not careless and irresponsible, it would not have taken additional loans and the public finances would be in a better condition – that is a common interpretation of ratios exceeding the allowed 60% (resp. 3%).

Nevertheless, it is essential to understand what kind of currency we use and how money is connected to GDP and debt. Through money, debt and GDP – in other words, the nominator and denominator of both ratios – are also interlinked. The riddle goes like this: How to lower the nominator without lowering the denominator at the same time? As long as we use a credit fiat currency that is emitted in an accounting way against creating new debt, the riddle becomes a real conundrum. The task of this paper is to question the basic idea that governments (or central banks) are capable of lowering the debt ratio.

2 Endogenous money, GDP and Debt

In the world of endogenous money – in our world – money originates from commercial banks. New money is emitted every time somebody takes a credit. The mechanism was recently described in detail in a bulletin published by the Bank of England (McLeay et al., 2014).

¹ E.g. with Euro Plus Pact or the so called Sixpack.

2.1 Money creation

The debt crisis is a matter of accounting. It is impossible to create something against nothing in a double-entry bookkeeping. Therefore, while money is in fact being created out of thin air, there must appear a corresponding debt every time a commercial bank emits some. Otherwise, the balance sheet would not be correct. That is why the nominal debt constantly grows even though there may not even be a creditor *per se*.

Just like money is created when a credit is taken, it is being cancelled as the loan is being repaid. The ‘creditor’ is hence a balance sheet – not even a real subject. Even cash² is only a form of a debt derivative. It is an IOU that a commercial bank receives from a central bank. Cash is emitted against another financial asset and is therefore by definition collateralized by debt³. Cash is reported at the liabilities side of central bank’s balance sheet. And what is more, cash represent only a small percentage of money in EU. *Ceteris paribus*, it is impossible to raise the quantity of money without increasing the debt too. All money is endogenous; there is no channel through which new money could get into the system without bringing along new debt⁴. The next subchapter explains why it is important to bring new money into the system after all.

2.2 Equation of exchange

The quantity of money in an economy correlates with its possible economic outcome. This quite basic idea was algebraically formulated in the famous equation of exchange by Irving Fisher:

$$M \times V = P \times Q \quad (1)$$

M stands for money, V represents the velocity of money (how many times a unit of money is spent during a period), P stands for the price level and Q for the sum of expenditures measured in real terms. Basically, the right side of the equation represents GDP under the assumption that the transactions which do not enter GDP do not enter V neither.

In the situation of aggregate supply’s surplus over the aggregate demand, new money will tend to raise Q rather than P . On the other hand, if the purchasing power is too strong and firms fail to deliver enough goods and services, additional money in the system would then push the inflation up. As long as we are experiencing a crisis, unemployment, firms’ difficulties with selling their goods etc., it is not too presumptuous to assume that the first case is valid today. The economy needs more money to reach its potential. To quote Fisher (Fisher, 1933): “The reason, or a reason, for the common notion of over-production is mistaking too little money for too much goods.” But how can the economy possibly suffer from a lack of money while the central banks perform QE and interest rates are around zero or even lower? Let us take a closer look at the equation. The ‘devil’ can be hidden in both the nature of our money (a credit-based fiat currency) and the way newly emitted money is used.

Credit-based money is created against new debt and is *erased* when the loan is repaid. We measure the amount of new money and new debt – in other words, the inflow of new money. But there is also the outflow. The question how much money has been erased during a period is just as important as the question about the quantity of new money emitted. Yet too few people ask the former. Hypothetically, M may decrease while a lot of new credit is created. The more credit has been taken

² Cash is sometimes called ‘currency’ but in this paper, the word currency stands for a system of monetary units; that means ‘broad money’ or even higher monetary aggregates (including some types of debt derivatives denominated in the same unit).

³ Every financial asset is double-entry; there is always a debtor and a creditor.

⁴ This sentence is not completely true if we consider bonds and some derivatives of money. They are obviously based on debt too but their value may be altered by simple pricing - new ‘money’ may be created when these instruments are sold and their higher price is accepted. Nevertheless, such money is illiquid (almost nothing may be bought for them without first exchanging them for a more liquid – and debt-based – form of money) and thus irrelevant for the further text.

in the past, the more debt there is in the system, the more loans are being repaid and the faster money outflows from the system. The aftermath of this scheme will be discussed in the next subchapter.

The more substantial reason for why new money fails to increase GDP is the velocity of circulation, V . It is highly important to observe where the new money really goes. It would be a mistake to approach macroeconomics as a monolith. In fact, the velocity of money significantly differs in various ‘levels’ of economy. Economic agents tend to save more with rising levels of their incomes. Whereas a poor unemployed person would most likely spend the entire income on buying stuff he or she needs (and most of it very quickly), a middle class clerk may already afford to allocate a part of her income to a savings or insurance scheme or simply keep it on her own bank account. And a subject with an even higher income would be inclined to use the money as an investment in order to gain an even higher passive income. Such money would end in financial markets, outside of the real economy and beyond the reach of the GDP indicator. Graphically, in a very simplified and schematic form, the dependence of velocity of circulation on the level of income can be displayed as a pyramid:

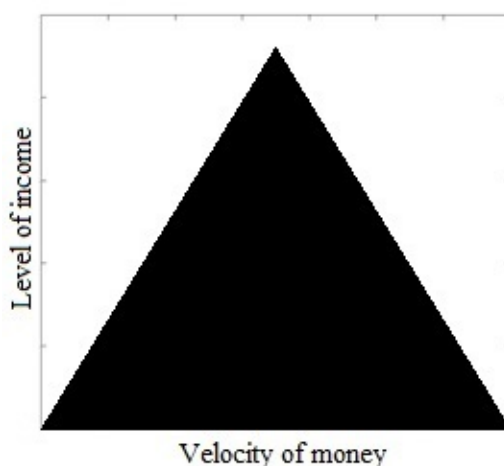


Figure 1. Velocity Pyramid (Source: own processing)

Money in circulation circulates. It is not consumed when spent. Another subject – the seller – receives the money and can spend it again. We may presume that the money will likely step up the pyramid gradually, slowly decreasing its velocity before it ends parked on a financial market or erased in a bank. The destiny of each single coin, banknote or digit is different⁵ but from a wider perspective, the story seems valid.

Our current economy suffers a disease called the liquidity trap. The liquidity trap describes a situation when the interest rates are so low that further lowering of the rates would not help to boost the economic output. The low rates indicate that the real economy promises only little profit – with relevant risk, however. There is a surplus of aggregate supply over demand which means it is hard to succeed as an entrepreneur in most markets. Households can take on more of the cheaper loans but they are generally over-indebted already. What is more, the zero interest rate is more of a fictional rate. It certainly does not apply to everyone. Max Keiser often speaks about the ‘Interest Rates Apartheid-Wall’. (Keiser, 2013) Certain groups of speculators can acquire very cheap money and use it to earn more money on financial markets, which – unlike the real economy – still promise pleasant profits. Most of the households must pay much higher interest and pledge their house or other assets as collateral to be granted with a credit. A liquidity trap makes money step up the pyramid faster, diminishing the velocity of circulation. The effect is strengthened by current public’s desire to have a passive income and a proclaimed ‘wisdom’ that prices of houses will always rise. Virtually

⁵ And it is influenced by culture, by the relation of the public towards consumption, by interest rates etc.

everybody tends to become a speculator. In effect, the velocity of circulation falls onto its all-time lows.

2.3 Debt-to-GDP ratio

The debt-to-GDP ratio contained in the Stability and Growth pact requires that state's public debt does not exceed 60% of state's GDP. If it does, the state should offer a believable plan on how the debt will sink to this proportion. The number originates from the Maastricht Treaty and has been a criterion for the acceptance of new members to the Eurozone. The benchmark does not really have a deeper economic meaning; these 60% simply complied with the requirements of Germany (Bartušková et al., 2013). Germany defended its position because it had to give up the Deutsche Mark, a successful and praised currency.

What can a government do to keep the ratio low or even to lower it? In the first phase of the current crisis, most of the European governments made a bet on austerity measures. Everyone mysteriously forgot the basic mathematics and treated a relative index (a ratio) as if it was an absolute index (which is an oxymoron). The train of thought saying that “if we cut our expenditures and repay what we owe, we will get rid of debt” was easy to explain to voters. But it was also devastating for the economy. Paul De Grauwe and Yuemei Ji conducted a study concerning the legacy of austerity in the Eurozone. They found out that “One effect of the intense austerity imposed on the debtor nations is a sharp increase in the government debt ratios in these countries.” (De Grauwe and Ji, 2013)

To display the ratio as clear as possible:

$$\text{indebtedness} = \frac{\text{nominal Debt in absolute numbers}}{\text{nominal GDP}} \quad (2)$$

As was explained earlier in this paper, both the nominator and the denominator are highly interlinked with the quantity of money in the economy. Performing austerity measures may have saved some absolute debt (in fact, it did not) but it raised the relative debt significantly, as the data show (Eurostat, 2014). If a government wants to improve this ratio and behave rational at the same time, it has basically three options:

1. It resigns on supplying the economy with money by itself and lets other subjects to take credit.
2. It takes credit and uses the new money in the most stimulating way.
3. It supports exporters and lets foreign countries to be indebted instead. The money will come into the country via current account's surplus.

The first option may feel appealing to the government. Only public debt is observed, so let's make the households or firms bear the burden of indebtedness which is an essence of today's financial system. This approach can be devastating for two reasons. As Fisher suggests, indebtedness is a strong catalyst of every crisis. It is almost a *conditio sine qua non*. “Thus over-investment and over-speculation are often important; but they would have far less serious results were they not conducted with borrowed money. That is, over-indebtedness may lend importance to over-investment or to over-speculation.” (Fisher, 1933) And secondly, over-indebtedness of a certain sector may quickly move to government's balance sheet – that is when the state is forced to redeem a bankrupting sector. In the eve of the crisis, Spain's public finances were completely fine (Dědek, 2014). The same thing may be said about Ireland or Iceland. Public finances of those countries went broke not because the governments had spent too much. They got into trouble because they had to assume the obligations

of bubbling financial and/or construction sectors. I can imagine that sooner or later, states will have to assume the obligations of other sectors too – households, crucial firms, cities⁶...

The second option assumes that government decides to use its power in a Keynesian manner and supports the economy at the cost of bearing the new debt. Now it is important to decide where to send the acquired money. If the Velocity Pyramid is valid, sending to lower levels of an economy would represent a stronger stimulus than e.g. cutting corporate taxes. The assumption is supported by a testimony of Mark Zandi (Chief Economist, Moody's Analytics) before the US Senate Finance Committee (Zandi, 2010). According to him, a fiscal stimulus 'Bang for the Buck' is around 1.5 when *Extending Unemployment Insurance Benefits, Increasing Infrastructure Spending, Temporary Increasing in Food Stamps or Job Tax Cuts*. On the other hand, every dollar spent on cutting the *Corporate Tax Rate* should bring only 0.32 dollars in GDP. And costly bank bailouts are virtually a black hole, having no boosting effect on GDP at all. The banks either use the money to clear their own debt – and by it they cancel the money – or use it for speculation on financial markets. Max Keiser claims that many commercial banks are technically insolvent and the QE only keeps the zombie banks alive, prolonging the agony of the crisis (Keiser, 2014).

As the criterion is 60%, converging to it would require a 'Bang for the Buck' ratio of 1.66. If every borrowed euro would bring €2 in GDP, the debt-to-GDP ratio would head towards 50%. Luckily enough, not all the GDP is created by government spending. An interesting fact is that two countries may take on the same amount of credit, have the same structure of expenditures and the same efficiency of stimulus and yet the effect on indebtedness may be the very opposite. Consider the 'Bang for the Buck' is 1. The debt-to-GDP ratio will converge to 100%. For a country like Estonia (10% public debt in 2013 – Eurostat, 2014), it would mean a rapid tendency to indebtedness. In Greece (175% public debt in 2013 – Eurostat, 2014), the very same behavior would be evaluated as a rapid debt reduction tendency.

Besides deciding how to use the new money, governments should also consider from whom to borrow. Not every loan brings new money into the economy. Examples:

- When a government borrows from the public (by a public offering of bonds), it does not create any new money. Unlike banks, households are not authorized to create new money by giving credit. It means that when they buy a bond, 'old' money is only transferred from say middle levels of the Velocity Pyramid into the hands of a government. The government may then accelerate the money or slow it down by placing it onto another level.
- When a government borrows from abroad, it is irrelevant whether new money have been created or not. The money is new for the examined economy anyway. A danger of a global imbalance appears though, which was the main problem of Greece.
- When a government takes credit from commercial banks, new money is created as described above.
- When a government sells its bonds to commercial banks or financial institutions, new money is usually created too, because these institutions themselves take credit in order to improve their balance sheets with government bonds that are perceived as a risk-free asset.

The third option a state or its government has is to rely on export. The more money a country imports from abroad, the less debt it needs to take on itself and the happier it is. This mentality strongly resembles mercantilism. Most economists tend to condemn mercantilism as economically irrational. It may truly be irrational to get rid of fruits of the nation's labor and efforts in order to get shiny precious metals. Yet is it not even more irrational to do the same in order to get virtual fiat money? Still, Germany – the zealous exporter – is admired as a reasonable player, not derided as a

⁶ See Detroit.

relic from the 17th century. Nevertheless, it always takes two to tango. Donors like Germany contribute to global imbalances equally to debtors like Greece.

As a side note, Germany is a clear example that debt is a systemic feature which keeps rising no matter the efforts to curb it. Even though Germans consume less than they produce in the long-term⁷, not only their nominal debt but also the debt-to-GDP ratio keep rising. Still, economic textbooks often disregard the inherent dependence of economic output on debt. They speak about economic cycles and pro-cyclical and counter-cyclical policies. That assumes that a cycle is something external. There are seven years of hunger described in the Bible, along with a recommendation to save some food for later during the good years. People have little to no impact on the harvest, God does – or rather weather, if we want.

In 2014, when agriculture represents only a fraction of the GDP, our welfare is not really dependent on vagaries of the weather. The good years or bad years are direct results of the actions we have done recently. Any hypothetical delay between policies and effects is more unlikely than certain. It contradicts the rule of Occam's razor. If we perceive the economic cycle as a monetary issue – and we usually do – and money as an endogenous factor, then a concept of counter-cyclical policy sounds like a nonsense, an oxymoron. If there was something like a real non-monetary cycle, it would have to manifest itself in real terms – by altering between aggregate supply surplus and aggregate demand surplus. Nothing like this has happened in the last decades. The supply exceeded the demand before 2008 as well as during the crisis. Once again, the crisis is an accounting issue.

What was said about the debt-to-GDP ratio in this subchapter may be basically said about deficit-to-GDP ratio too.

2.4 Limits of indebtedness

It was said that the debt-to-GDP ratio criterion was not based on some truly dangerous limit for public finances. Neither was it determined on the basis of a sustainable level of debt to GDP. We could find a glimpse of sustainability if we determined the ratio as a reciprocal of the aforementioned ‘Bang to Buck’ ratio, in its statistically founded average. If done so, the criterion would not be 60% but much higher. And such sustainability would not count with any turbulence, bubbles, bailouts etc.

Is there a real limit of indebtedness? As long as money is virtual and debt is mostly virtual too – creating together one closed system – there is no real limit until people somehow collectively decide that the debt may start causing problems. But how can we determine which percentage of debt may already cause a problem? According to Dědek (Dědek, 2014), it is a mystery. Too grave indebtedness may frighten the financial markets and those would increase the interest rates for the country. And they would also speculate against the country. Such a speculation can leave a country plundered. But how to determine the limit which already disturbs financial markets? The debt-to-GDP ratio of collapsing Argentina was around 40% in 1999. On the other hand, Japan is considered stable even while having the ratio exceeding 200%.

According to some authors (e.g. Bartušková et al., 2013), austerity measures are not supposed to heal the economy directly but to calm down the panic on financial markets which will consequently lower the offered interest rates and the debt service will get cheaper. National economies are taken hostage. Many economists consider it a taboo to let the governments print their own money, arguing they could misuse the competence. It is outrageous when we note that they in one breath recommend damaging the economy severely just to calm down financial markets – the genuinely responsible and respectable authorities that *are* allowed to create money.

Psychologically, human beings love to believe that they are capable of curing their problems by a sacrifice. Suffering is considered a panacea (as greatly described in Szasz, 2003). It purifies from sins. A problem appears when such sacrificing in fact fosters the initial trouble. People may thus get

⁷ That is more or less a definition of a trade surplus.

the idea that they do not suffer enough. The austerity measures in Greece did not cure Greek public finances, they made it worse. But the response of Troika was that Greeks were not consistent and firm enough in applying the austerity. It is a collective psychosis, a spiral leading to an economic decay, a pseudo-religious submission to a hyperreal chimera, a self-fulfilling prophecy. It causes itself, feeds itself and accelerates itself. Jared Diamond describes falls of civilizations like Rome or Maya (and temporary decays of China and Japan) in his history book (Diamond, 2000) as a result of following the same pattern. Now it is the Western civilization laying its own living standards onto a sacrificial altar hopelessly hoping to cure its ills.

3 Possible solutions

As a reader may have understood, I consider the debt criteria in a credit fiat-currency-based economy to be an irrational nonsense. It is mathematically nearly impossible to have growth without further indebtedness. But my personal evaluation is obviously not going to stop the member states from attempting to obey the criteria, nor will it stop the EU to enforce them. Several possible solutions which are – unlike fiscal cuts – capable of lowering the debt/deficit-to-GDP ratios will be thus presented in this chapter.

3.1 Cooking the books

At first, it must be said that we are in fact searching for a solution of an accounting problem. We try to solve a number, not a real issue. Knowing that, it may not be surprising that the only functioning solutions so far were mere accounting tricks.

This issue has been present since the creation of the Eurozone. Some countries cooked the books to fulfill the Maastricht criteria in order to join the Eurozone. France is an example for all. In 1997, France expanded its GDP with expected earnings from a planned privatization of its state owned Telecom (Dědek, 2014). Many words have been written about a Greek creative accounting, too.

There are two ways how to improve the debt-to-GDP ratio – either to report a higher GDP or to report less debt. The GDP may be expanded by items that traditionally do not enter it. The debt may be hidden in other balance sheets. This second option is not that interesting the state simply hides some of its debts in regions, *bundesländer*, cities, state-owned companies, funds etc⁸. The items that can possibly enter the GDP are more remarkable.

Italy and the UK have decided to include the black market economy into their GDP (Frye, 2014). “Estonia, Austria, Slovenia, Finland, Sweden and Norway will also be adding drugs and prostitution to their official stats.” (Keating, 2014). It is surprising that this step precedes the inclusion of legal yet non-reported activities. According to Visa: “The shadow economy in Europe today [2013] is worth more than €2.1 trillion” (Schneider, 2013).

People spend more and more time online, using online games and services that use their own *virtual* currencies. When the magic of black market will have been obliterated by the ever-growing debt, this ‘gross gaming product’ could then be the next item to include. Germany already includes the Bitcoin economy (Clinch, 2013). There are hundreds of so-called crypto-currencies similar to Bitcoin. As their importance will rise, more countries should consider taxing them and including the crypto-processed transactions into GDP. And in the end, someone will surely come up with the idea to estimate the size of all barter economy and count it in.

The EU member states could also learn a lesson from financial institutions. They can decorate their balance sheets with exotic securities and then rig the market so that it looks like the prices of these virtually worthless assets grow year after year. The last step would be to improve the GDP with

⁸ Hiding it in regional balance sheets cannot be straightforward. According to the Maastricht Treaty, “General government sector comprises the subsectors: central government, state government, local government and social security funds” (Eurostat, 2014).

hypothetical earnings from sales of these assets, just like France did with its Telecom. When fighting a crisis, the regulator would always turn a blind eye, right?

3.2 Inflation, Tills and Canceling the debt

Inflation is often mentioned as a tool for diminishing the debt. Inflation favors debtors over creditors. When there is great inflation, the old debts look smaller in comparison with the current nominal GDP. However, there are two problems with inflation which make this scheme less functional.

Firstly, inflation is powered by monetary emission. But in the world of endogenous credit money, such emission represents newly created debt. Imagine that it is possible to create such a high inflation that the previously accumulated debt becomes irrelevant; all without causing the spiral of hyperinflation. Then the debt-to-GDP ratio converges towards the inverted ‘Bang for the Buck’ ratio. It is highly probable that such a rapid shock in the economy would cause the ‘Bang for the Buck’ to decline. The resultant debt-to-GDP ratio would be unpredictable but it is almost sure it would greatly exceed 60%.

The other way to use inflation is to use it smoothly. This way, inflation would only consume the debt accumulated during last year, leaving the debt-to-GDP ratio stable. That is actually what central bankers intend to do when following the 2% inflationary target. The problem is that during a crisis, inflation is hard to achieve. It is not only because of the deflationary tendencies in the economy, like some say. It is also because of the liquidity trap that extracts money from real economy, as described above.

Nobel Prize winner Robert J. Shiller suggested an interesting debt instrument that could potentially replace government bonds (Shiller and Kamstra, 2009). It is called Trills. “My colleague Mark Kamstra and I proposed calling these shares Trills and making the shares pay an quarterly dividend equal to a trillionth of that quarter’s nominal GDP.” (Shiller, 2011) With such an instrument – or a similar one – governments would have a tool to effectively target the debt-to-GDP ratio. The debt would be derived from GDP. Another pleasant aspect of this solution is that it gives an incentive to the creditors; it makes them directly interested in the GDP output.

Cancelling the debt is the most obvious method of getting rid of it. It seems to be an uncrossable boundary now, but history knows hundreds of examples of successful societies writing off most of their debts. David Graeber wrote a review of cultures cancelling their debts regularly, as part of their economic systems – from old Jews who did it every 7 years to medieval feudal lords who did it whenever a new ruler was appointed (Graeber, 2011). In 1947, German domestic debt was cancelled by the Allies which led to an unprecedented economic boom (Ashcroft, 2012). Today, e.g. Steeve Keen or Charles Wyplosz are among the famous advocates of cancelling the debts. It is important to carry in mind that the debt is a systemic issue, it is an essence of the financial system. The original creditor is a sheet of paper; no real person would have to be damaged if the debt just disappeared.

3.3 Changing the currency

Hypothetically, a state can free itself from debt by emitting a currency that is not collateralized and conditioned by debt. There is a reason why governments shall not print their own money out of thin air. They would be tempted to print too much, as they think in the short-run. The theory supposes that if money is created by a person who takes a credit and is obliged to return the borrowed money with interest in the future, it proves that there is space for this money in the economy. So far so good but how can the theory justify the need for cancelling the money after they have been repaid to the bank? From the accounting point of view, the money has to be cancelled because the credit is cancelled too and the balance sheet would not work otherwise. But does it have any sense from the economic point of view?

The bank surely cannot keep the money. It would enrich itself in a way that would barely be tolerable by the public. But the money has proved its place in the economy so destroying it is irrational. I suggest that at this point – the moment credit money has been cancelled – the governments

should be entitled to create a corresponding amount of new money, now without any debt. In such a system, the debt would serve instead of being a master and a systemic disease.

The government would be either allowed to spend the money as it wants, or specific channels for getting the money into the economy would be established. Taking in account the velocity of money and also the ethics, it would be ideal if every human in the economy got exactly the same proportion of this money, in the form of a general basic income.

Note: If new money uncollateralized by debt begins to be added into the economy, the initial effect may not be an increase of the GDP (let alone an inflation-pressuring one). The new money could be used for repaying the existing loans; they could primarily displace redundant credit money. In the long run, there would already be a growth-promoting effect because the outflow of money would go down.

4 Conclusion

The amount of money, economic output (GDP) and indebtedness are three phenomena that are intensely interconnected in modern economies. Inflation or generally unstable price level are considered to be inhibitors of economic development (e.g. Dědek, 2014). Indebtedness, however, is the same kind of inhibitor (Fisher, 1933). Endogenous money is created on the basis of demand for it. The demand goes down with indebtedness going up. Necessarily, the economic activity then goes down too, at least if the equation of exchange is right. And it barely cannot be.

Compliance with the debt-concerned criteria of the Stability and Growth Pact is not a matter of supervision or insufficient legislation, as the authors of two-packs and six-packs assume (Bartušková et al., 2013). To find an increase in debt a problem of insufficient legislation is similar to claiming that people age and die because they cannot agree on laws that would prohibit it. People look at debt through religious lenses. It is a collective psychosis. Debt is regarded as a sin, we use the term ‘fiscal sinners’. This way of thinking can be very dangerous and damaging.

Indebtedness has no fiscal solution. The few possible other solutions of the debt/deficit-to-GDP puzzle have been introduced in this paper. Some of them are inspiring and can – besides a quite purposeless compliance with a ratio – help European economies. Unluckily enough, the thing governments probably will do, is cooking the books.

5 Acknowledgement

This research was financially supported within a grant (IGA VŠE) – IG210014 – Nové směry governance ve světle finanční a dluhové krize.

References

- [1] Ashcroft, R., 2012. *Four Horsemen*. [film - documentary] Production company: Motherlode.
- [2] Bartušková, H. et al., 2013. *Current Changes in the Economic Governance in the European Union*. Praha: Vydavatelství MAC.
- [3] Clinch, M., 2014. *Bitcoin recognized by Germany as 'private money'*. [online]. [2014-06-30]. Available from: <http://www.cnbc.com/id/100971898>.
- [4] De Grauwe, P. and Y. Ji, 2013. The Legacy of Austerity in the Eurozone. In: *CEPS commentary*. [online]. [2014-06-30]. Available from: <http://www.ceps.eu/system/files/PGD%20&%20YJ%20Austerity.pdf>.
- [5] Dědek, O., 2014. *Doba eura: Úspěchy i nezdary společné evropské měny*. Praha: Linde.
- [6] Diamond, J., 2000. *Osudy lidských společností: střelné zbraně, choroboplodné zárodky a ocel v historii*. Praha: Columbus.

- [7] Doyal, S. K. and T. Hoffman, 2007. An integrated Inventory Model for a single Supplier-single Customer Problem. *International Journal of Production Research*, vol. 15, issue 7, pp. 107-111.
- [8] Eurostat, 2014. *General government gross debt: % of GDP and million EUR*. [online]. [2014-06-30]. Available from: <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tsdde410&plugin=1>.
- [9] Fisher, I., 1933. The Debt-Deflation Theory of Great Depressions. *Econometrica*, vol. 1, issue 4, pp. 337-357.
- [10] Frye, A. et al., 2014. *Cocaine Sales to Boost Italian GDP in Boon for Budget*. [online]. [2014-06-30]. Available from: <http://www.bloomberg.com/news/2014-05-22/cocaine-sales-to-boost-italian-gdp-in-boon-for-budget.html>.
- [11] Graeber, D., 2011. *Debt: The First 5,000 Years*. New York: Melville House.
- [12] Keating, J., 2014. *Counting black markets boosts a nation's GDP*. [online]. [2014-06-30]. Available from: <http://www.sltrib.com/sltrib/opinion/58007497-82/gdp-activities-percent-boost.html.csp>.
- [13] Keiser, M., 2013. *Episode 440*. Keiser Report. [online]. [2014-06-30]. Available from: <http://rt.com/shows/keiser-report/episode-440-max-keiser-808>.
- [14] Keiser, M., 2014. *Episode 613*. Keiser Report. [online]. [2014-06-30]. Available from: <http://rt.com/shows/keiser-report/165492-episode-max-keiser/>.
- [15] McLeay, M. et al., 2014. *Money creation in the modern economy*. Bank of England: Quarterly Bulletin. [online]. [2014-06-30]. Available from: <http://www.bankofengland.co.uk/publications/documents/quarterlybulletin/2014/qb14q1prerel easemoneycreation.pdf>.
- [16] Schneider, F., 2013. *The shadow economy in Europe, 2013*. [online]. [2014-06-30]. Available from: <https://www.atkearney.com/documents/10192/1743816/The+Shadow+Economy+in+Europe+2013.pdf/42062924-fac2-4c2c-ad8b-0c02e117e428>.
- [17] Shiller, R. J. and M. Kamstra, 2009. *The Case for Trills: Giving the People and Their Pension Funds a Stake in the Wealth of the Nation*. Cowles Foundation Discussion Paper No. 1717.
- [18] Shiller, R. J., 2011. *Irving Fisher, Debt Deflation and Crises*. Cowles Foundation Discussion Paper No. 1817.
- [19] Szasz, T., 2003. *Ceremonial Chemistry: The Ritual Persecution of Drugs, Addicts, and Pushers*. Syracuse: Syracuse University Press.
- [20] Zandi, M., 2010. *Using Unemployment Insurance to Help Americans Get Back to Work: Creating Opportunities and Overcoming Challenges (Zandi's witness testimony)*. [online]. [2014-06-30]. Available from: <http://www.finance.senate.gov/imo/media/doc/041410mztest.pdf>

THE ASYMMETRY IN MONETARY POLICY BETWEEN EU COUNTRIES

Nadira Kaimova

University of Economics in Prague, Department of Monetary and Policy, nam. W. Churchilla 4, 130 67 Prague, Czech Republic
email: kaimovanadira@gmail.com

Abstract

It is quite evident that the 2007-2012 global financial crises (GFC) will have substantial lasting consequences for banking and financial market supervision and regulation as well as for the future evolution of banks and the financial industry at large. Since the inception of the crisis, a lot of analysis has been conducted on the causes of the crisis and on appropriate remedies and banks have embarked on restructuring and repositioning strategies to respond to the changed financial and economic landscape after the crisis. The GFC revealed that there are important interactions between the central bank (CB) monetary policy aimed at price stability and financial stability. ECB affects individual national economies using its strategies and instruments. Using especially interest rates makes monetary policy expansive or restrictive. For every country, belonging to euro area, has this policy different implications. Although ECB attempts to implement monetary policy for every country equally, for some countries has a monetary policy asymmetric effect. The purpose of this paper is using the Taylor rule of monetary policy, try to find contradictory effects of monetary policy.

Keywords

Financial Regulation, Global Financial Crisis, Banking, Taylor rule, Supervision, ECB.

JEL Classification

G01, G21 – G28, C12, E52.

1 Introduction

The GFC revealed the weaknesses of existing macro-prudential oversight in the EU and the inadequacy of nationally-based supervisory models in overseeing integrated financial markets with cross-border operators. Also, it challenged the existing architecture for financial services regulation and supervision in the European Union. For instance the crisis showed that low interest policy within an inflation targeting (IT) framework may reinforce a real estate bubble – increasing the severity of the downturn caused by financial instability once the bubble bursts. The crisis has shown that there is no such thing as an optimal banking structure or model. Some pure investment banks (e.g. Lehman Brothers or Bear Stearns), some pure retail banks (e.g. Spanish Cajas, Irish banks, Northern Rock), and some universal banks (e.g. ING or RBS) alike either failed or were absorbed or required exceptional government support. Accordingly, the European High-Level Expert Group chaired by Erkki Liikanen came to the conclusion that no particular business model fared particularly well, or particularly poorly, in the financial crisis, but the Group rather pointed out excessive risk taking as well as reliance on short term funding, not matched with adequate capital protection.

Each financial crisis comes with its own hard-learned lessons. The current financial crisis has offered and continues to offer regulators, policy makers, politicians, financial institutions, and the public ample opportunities to debate how to redesign, improve and refine the architecture of the global financial system. The ultimate objective of regulations is clear: to reduce the likelihood that a disruptive and devastating crisis such as this crisis would occur in the future. They should give regulators the authority to monitor the health of individual banks and the interlinked network of international banks, and to act decisively when weaknesses potentially threaten the health of the system and endanger the financial system's ability to effectively intermediate capital.

The main institutional innovations were the establishment of the European Systemic Risk Board, its chair to be elected by and from the members of the General Council of the European Central Bank (ECB) and in charge of monitoring macro-prudential risk; the transformation of the so-called

level three Lamfalussy committees of national regulators into independent authorities with legal personality an increased budget and enhanced powers.

The newly created bodies, namely the European Banking Authority, the European Insurance and Occupational Pension Authority, and the European Securities Markets Authority, were charged with the tasks of coordinating the application of supervisory standards and promoting stronger cooperation between national supervisors. Moreover, individual ESAs were given specific roles: for example ESMA is the EU supervisor of credit rating agencies, while EBA and EIOPA carry out 'stress tests' of their respective sectors. Yet, the new agencies have limited competences and their effective ability to regulate the financial sector remains to be seen.

The main purpose of this paper is to describe the system of regulation and supervision in European country. Moreover, overall evaluation of monetary policy and their impacts using the Taylor rule of monetary policy.

2 Regulation and supervision in European Union

European financial regulation is already largely centralised: rulemaking and policy formulation is increasingly the result whether of EU legislation, or of secondary rules, drawn up by the European Committees. As to supervision, it seems reasonable that in the longer term some type of consolidation in European Financial Supervision will take place. We have identified mainly two avenues, but there may be more, directly related to the way the markets will develop. Indeed, it is the markets that shape the structure of supervision, not vice versa.

The first avenue is based on a multipolar scheme, leading to concentration and to consolidation. It follows the concentration in the markets. It is likely to include banking and insurance, and probably securities as well. It is market driven, as it would be left to the market participants to locate their headquarters. Under the present directives, this scheme is, although still hesitantly, underlying the regulation on supervisory cooperation.

The second scheme is top down, and is based on a hierarchical structure, where competences have to be allocated to the centre and to the periphery. It would create a regime of even supervision, at least for the largest institutions that operate Europe-wide, but would eliminate any form of supervisory competition, creating the risk of increasing the regulatory burden. It is not necessary to mention that the second scheme would call for a major political decision. Without excluding it on the very long term, it does not serve the needs of to-day's financial markets. The institutional debate should not divert attention from the needs of the markets and all their participants, for which concrete robust solutions have to be devised.

Different factors have driven the construction of the European system of financial regulation, but a very important role in this process of regulatory change can be attributed to the directives. The European legislation on financial markets is based on concept of 'competition among rules',¹ i.e. the idea that, given the existing differences among EU countries, each member should recognise the validity of laws, regulation and standards of the other ones. In this respect the principle of mutual recognition was included in the Second Banking Coordination Directive (2BCD) that provided a list of activities that are included in the 'single passport', i.e. can be performed in every member State by a credit institution that is allowed to perform such activities in its country of origin. These 'passport activities' were then also permitted for the provision of investment services by the Investment Services Directive (ISD), widening the provision to financial institutions other than banks.

2.1 The EU institutional framework

To design both national and European-level regulatory systems, one should emphasize what does not work in the current arrangements, and what are the basic features that a suitable regulatory architecture should include. With regard to the first point, some theoretical contributions have

highlighted the fact that if ‘mutual recognition’ could have helped in a first stage of the financial integration process, now it is more an obstacle than an aid. Referring to the desirable features that a regulatory system should include, it is possible to refer to the four objectives of financial regulation: systemic and prudential stability, disclosure and competition. In EMU the monetary policy function is attributed to the European System of Central Banks, whereas financial stability is left to national authorities. While in fact the ECB is the centre of the ESCB and each NCB must comply with it, from a supervisory point of view, the ECB has only a consultative function, given the principle of ‘subsidiarity’, and the task of bank supervision is left to NCBs. Even for the disclosure and competition objectives, the situation is not encouraging: similarly to stability supervision, national regulatory systems are mostly ‘vertically’ organised, with few examples of ‘horizontal’ regulation and some cases of single-regulator (like some Scandinavian countries and the United Kingdom).

The ESAs fit into a complex set of existing institutional relationships. Importantly, the ESAs are accountable to the European Parliament and the Council. This accountability includes the transmission of the ESAs work programme for the next calendar year. Furthermore, the ESAs serve as independent advisory bodies and can issue opinions to the European Parliament and the Council.

In recent announcements of mergers and alliances between national stock exchanges and in the increasing number of financial conglomerates that operates cross-border it is possible to see a trend towards an internationalisation of financial systems. In the same way also financial regulation and supervision must achieve an international dimension. Recently, there have been several important examples of such internationalisation in prudential regulation, notably with the 1988 Basel Committee Agreement on minimum capital requirements, but also with other initiatives by the International Monetary Fund (IMF) or the Bank of International Settlement (BIS), or again by the Forum for Financial Stability (FSF) for major industrialised countries. The first Basel Agreement, in particular, has been discussed and sometimes strongly attacked since it did not consider the influence of market risk but only of credit risk on bank portfolios. Furthermore, the ‘horizontal’ approach to regulation and supervision is the exception and not the rule in European regulatory systems and, more generally, regulatory systems vary not only in their structure but also in their practical implementation, with consequent differences not only in direct, but most notably in indirect and compliance costs.

The different member States of European Union have chosen different regulatory structures, reflecting the institutional and legal evolution of their financial systems. Such differences have been in part ameliorated by the EC Directives and the need to adapt to the transformation that the Single Market has brought to the European financial markets. However, it is not possible to argue that there is a unitary framework that regulates and supervises financial firms and markets in Europe. It is therefore interesting to compare how the theoretical models are applied in practice. In most European countries, it has been implemented a combination of the supervisory models presented above, even if the institutional approach still represents the base for most of them. Insurance sectors are mostly supervised by specialised authorities (apart from the cases of single financial supervisor or governmental supervision).

The banking sector presents several differences: some countries have chosen to assign banking supervision to independent authorities, distinct from the central bank, whereas in other countries the central bank still has the objective of supervising banks. At the international level, there is the possibility of a moral hazard and a free rider problems; countries have, in fact, the incentives to design regulatory policies in such a way to allow competitive advantages for ‘domestic champions’, while it is not clear who should bear the costs of an international crisis. Furthermore, in the current institutional setting, it is not even clear who should have the function of lender of last resort in the EMU. Intuitively, one would think to the ECB as natural candidate since it is the central bank of the Union; unfortunately the Maastricht Treaty assigns little more than a consultative role to the ECB in financial supervision. In this respect, it is important to distinguish among two kinds of crises that could occur: European-level crises, and domestic-level crises. It is reasonable to think that the ECB

would intervene when a Europe-wide crisis will occur, at least coordinating the action of the different NCBs. Even if this conclusion is not straightforward, given the lack of clear competence of the ECB in such cases. The European financial regulatory and supervisory framework is based on few supranational institutions and on few principles contained in the Maastricht Treaty.

The EU financial regulatory framework has been established on three levels: a European level for systemic stability, a joint European-single member countries level for competition, and finally a system of Committees at the European level and of Memoranda of Understanding (MOUs) that should enhance cooperation among national authorities in the others fields of supervision.

The Commission articulates the new framework according to two levels of supervision:

- The micro-prudential supervision, consisting in supervising the financial institutions on an individual basis;
- The macro-prudential supervision, focusing on the stability of the financial system as a whole. It aims at mitigating the systemic risk and relies on macro-economic indicators.

The European System of Financial Supervision	
Micro-prudential Supervision	Macro-prudential oversight
European Banking Authority	European Systemic Risk Board
European Insurance and Occupational Pensions Authority	National macro-prudential supervisory authorities
European Securities and Markets Authority	
National micro-prudential supervisory authorities	
Joint Committee of the ESAs	

Fig. 1. The European System of Financial Supervision (Source: Annual Report 2011, European Systemic Risk Board)

3 Econometric analysis using the Taylor rule

John Taylor proposed the following rule designed to guide monetary policy:

$$i = r^* + \pi + 0.5 (\pi - \pi^*) + 0.5 (y - y^*) \quad (1)$$

where i is the nominal federal funds rate, r^* is the "natural" real federal funds rate (often taken to be 2%), π is the rate of inflation, π^* is the target inflation rate (for example, 2%), y is the logarithm of real output, and y^* is the logarithm of potential output.

The two basic ideas here are to raise the federal funds rate to one-half the extent that inflation exceeds its target and to lower the federal funds rate to one-half of the percentage that real output falls below its potential. Implicit in this formulation is that a reasonable rule of thumb applied consistently over time is more likely to achieve a good outcome than is aggressive manipulation of monetary policy. It is widely believed that central banks have paid close attention to variations on this Taylor Rule in recent years.

Here, wish to consider to what extent this prescription resembles the sort of policy that economic theory would recommend. Of course consider the question in the context of a simple, but widely used, optimizing model of the monetary transmission mechanism, which allows one to reach clear conclusions about economic welfare. However, policy optimization exercises are often greeted with skepticism about how robust the advantages may be of the particular complex rule that is shown to be optimal in the particular model. For this reason, the analysis here addresses only broad, qualitative features of the Taylor rule, and attempts to identify features of a desirable policy rule that are likely to be robust to a variety of precise model specifications.

For this analysis has been chosen real interest rate 2% and the same inflation rate 2%. These coefficients are differ only with small deviations in most Central Banks. However, here will be used the coefficient 0,5. Taylor rule will be applied to the selected EU countries, to have a better view of

comparisons. Hence, neither of components are not underestimated overestimated, but have equal 50% value.

Using the Taylor rule will be analysed 3 time series and longterm intercourse between three time series. This model is called multivariate time series model. Investigating longterm time series are created based on their cointegration. Either the time series are established a process $\{X_t\}$ and $\{Y_t\}$ stationary $[I(0)]$, or process that have first difference $[I(1) - \text{first order of integration}]$. Linear combination of these process has several rules

$$\begin{aligned} &\text{If } \{X_t\} \sim I(0), \text{ then } \{a + Bx_t\} \sim I(0), \\ &\text{If } \{X_t\} \sim I(1), \text{ then } \{a + Bx_t\} \sim I(1), \\ &\text{If } \{X_t\} \sim I(0) \text{ a } \{Y_t\} \sim I(0), \text{ then } \{A x_t + B y_t\} \sim I(0), \\ &\text{If } \{X_t\} \sim I(1) \text{ a } \{Y_t\} \sim I(0), \text{ then } \{A x_t + B y_t\} \sim I(1), \\ &\text{if } \{X_t\} \sim I(1) \text{ a } \{Y_t\} \sim I(1), \text{ then } \{A x_t + B y_t\} \sim I(1). \end{aligned} \quad (2)$$

If there exists long-term relation between $\{X_t\}$ and $\{Y_t\}$, then consider process as a mutually cointegrated and the last rule does not apply. Based upon the Taylor rule:

- Between time series exists long-term relation (the cointegration vector), while they are non-stationary, but their combination can be considered as a stationary.
- Or all three time series (main refinancing operations (MRO), inflation and output gap are stationary as long as entering into the model.

To identify whether the ECB used when determining MRO for Taylor rule time series are from the period 1999 – 2013, here is captured the period of global economic crisis.

3.1 Main refinancing operation (MRO)

The values for MRO which used for this model is always valid on the first day of the period. Next graph captures the development of MRO. The maximum value has been reached in 2001 at the level of 4.75%, and the minimum value is 0.5 % from the half part of 2013. However, ECB changed gradually by 0.25% values of MRO.

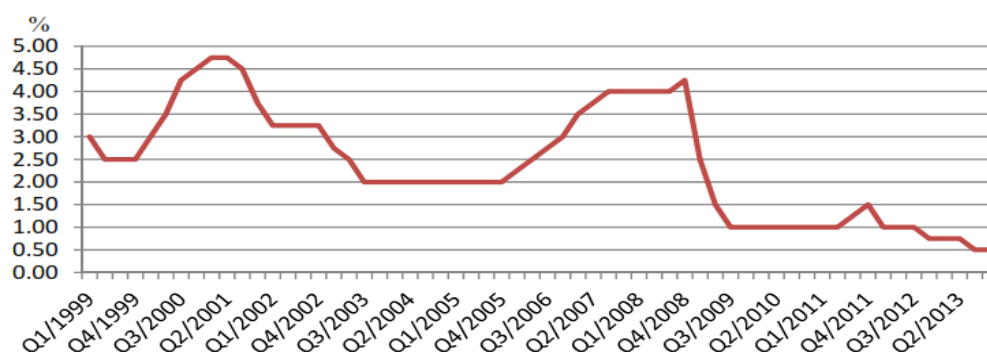


Fig. 2. Main refinancing operation ECB Q1/1999 – Q4/2013 (Source: OECD)

The MRO values variation in a particular range. Since 2008 while the global economic crisis can observe the steady decline of MRO value. At this graph below we can follow a clear trend development of this value. However, to verify it will be used the ADF-test of unit root, which will confirm or refute stationarity of this time series. Unless in the given time series exists unit root then, the time series has been created by a stationary process. This zero hypothesis of ADF-test indicates the presence of unit root.

Exogenous: Constant
 Lag Length: 1 (Automatic - based on SIC, maxlag=10)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.645239	0.4534
Test critical values:		
1% level	-3.548208	
5% level	-2.912631	
10% level	-2.594027	

*Mackinnon (1996) one-sided p-values.

Fig. 3. ADF unit root test of MRO (Source: Eviews 7 calculation)

The significance level $\alpha = 0.05$ accept the null hypothesis. Hence, can interpret that, this time series is stationary, because $\alpha < 0.4534$.

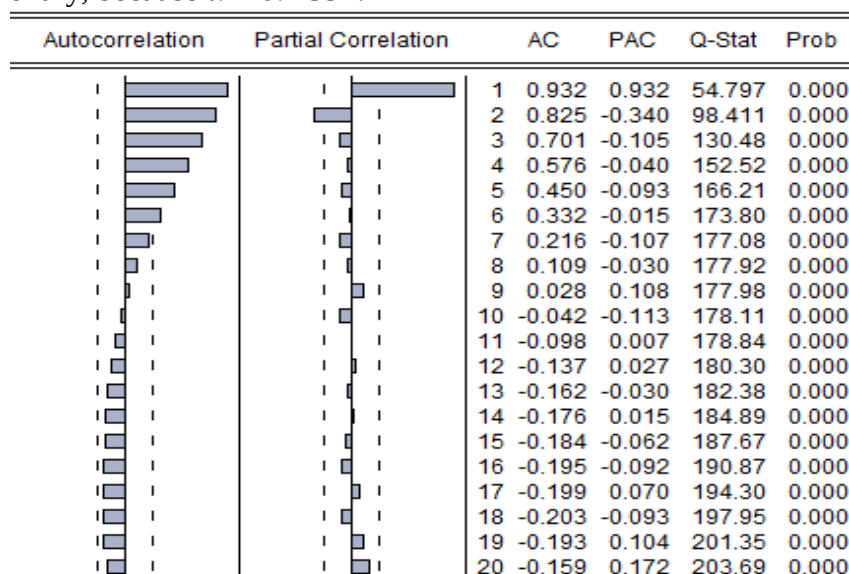


Fig. 4. Correlogram illustrating the non-stationary in the MRO time series (Source: Eviews 7 calculation)

However, this table represents linear decrease in the autocorrelation of columns, which confirms the presence of autocorrelation. The more slowly each column, the more time series are in trend.

3.2 Inflation

Inflation is calculated as a percentage development modification of the consumer price index compared with the value for previous period. However, at the first part it shows that until 2007 sensibly movement of inflation among 2 %– 2.5%. After the outbreak of global economic crisis in USA, the value of inflation increased up to 4% which was for ECB unacceptable. When the economic crisis touched European market the inflation turned into the negative values. In the following years ECB is trying it again back to the 2 - 3%, nevertheless currently we observe a slight decrease of inflation approaching zero. Anyway, ECB prevents this decrease by reducing the value of MRO, however it is not succeed whereas the inflation constantly decreasing.

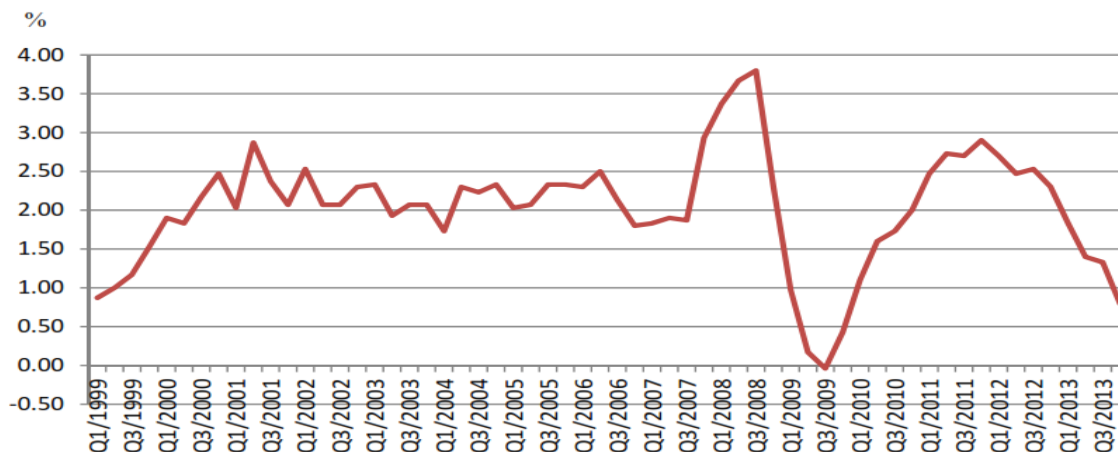


Fig. 5. Inflation development in EU Q1/1999 - Q4/2013 (Source: OECD)

As well as MRO time series, accordingly this graph detected that inflation does not have a long-term increasing or decreasing trend.

Null Hypothesis: INFLACIA has a unit root
 Exogenous: Constant
 Lag Length: 1 (Automatic - based on SIC, maxlag=10)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.599647	0.0087
Test critical values:		
1% level	-3.548208	
5% level	-2.912631	
10% level	-2.594027	

*Mackinnon (1996) one-sided p-values.

Fig. 6. ADF test of inflation time seriesSource: Eviews 7 calculation

The significance level $\alpha = 0.05$ does not accept the null hypothesis. Hence, will be interpreted as this infation time series is stationary.

3.3 The output gap

The value of output gap are calculated as the difference between real GDP and potential GDP, in considiration of potential GDP. Datas are on an annual basis.

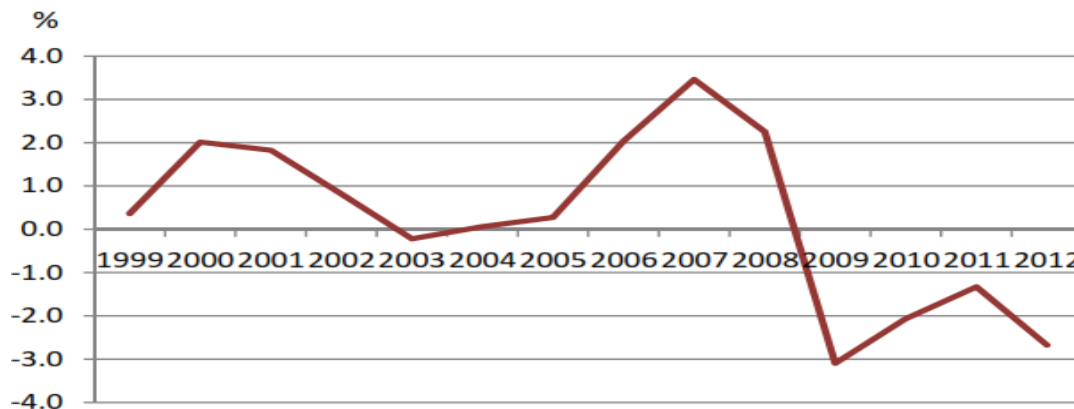


Fig. 7. Output gap development in EU (Source: OECD)

At first glance it shows the volatility, particularly at the turn of 2006 – 2007, when this had a huge increase and the turn of 2008 – 2009 had a rapid decrease. The ADF- test rejected the null hypothesis at the significance level $\alpha = 0.05$, and therefore we can conclude, that time series are non-stationary.

Null Hypothesis: OUTPUT_GAP has a unit root		
Exogenous: Constant		
Lag Length: 0 (Automatic - based on SIC, maxlag=2)		
	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.427825	0.5362
Test critical values: 1% level	-4.057910	
5% level	-3.119910	
10% level	-2.701103	

Fig. 8. ADF- test of output gap time series (Source: Eviews 7)

Based on ADF-test of unit root we found out that inflation time series is stationary and output gap with the MRO time series are non-stationary. As it was mentioned before, to identify cointegration time series must be fulfils certain conditions. If we would like to explore cointegration further, then it would be appropriate, that the MRO time series diferentiated into stationary, optionally examine the cointegration on two non-stationary series. Therefore, is possible, that the module using the Taylor rule does not reflect relations of the time series.

4 Conclusion

The financial crisis is having severe impacts in Europe and also beyond. Developing countries are suffering from a shortage of credit and reduced exports. The European banks that are operating in developing countries also pose a stability risk. In bilateral and multilateral free trade negotiations the EU has been pushing developing countries to open up their financial sector to the European financial industry without guaranteeing effective regulation and supervision.

At the EU level the regulation and supervision of financial markets and financial services providers remains fragmented. European member states still have diverse regulatory and supervisory cultures, for example, with regards to the role of the state. They have retained a variety of regulations and supervisory systems with competences remaining at national level with parliaments, banks or other supervisory institutions.

In EMU the monetary policy function is attributed to the European System of Central Banks, whereas financial stability is left to national authorities. While in fact the ECB is the centre of the ESCB and each NCB must comply with it, from a supervisory point of view, the ECB has only a

consultative function, given the principle of ‘subsidiarity’, and the task of bank supervision is left to NCBs. The ECB is involved in many EU structures and institutions in an advisory function and is legally mandated to provide information in support of action on financial stability.

The econometric analysis using the Taylor rule pointed out that the asymmetry in monetary policy between EU countries genuinely exists and shows the heterogeneity. For this analysis has been used multivariate time series model. The development of individual indicators is althought the analogous in EU countries, but the core of countries moves at a different level compared to peripherals.

References

- [1] Ahrend, R., B. Cournede and R. Price, 2008: *Monetary policy, market excesses and financial turmoil*, OECD Economics Department Working Papers, no. 597.
- [2] Borio, C., 2011. *Central banking post-crisis: what compass for uncharted waters?*, BIS Working Papers, no 353.
- [3] Blinder, A. S., 1997. *Central Banking in Theory and Practice*. The MIT Press.
- [4] Danthine, J.-P., F. Giavazzi, X. Vives and E.-L. von Thadden, 1999. *The Future of European Banking*. London,.CEPR - Centre for European Policy Research.
- [5] Courtis, N., 1999. *How Countries Supervise their Banks, Insurers and Securities Markets*. Central Banking Publications. Freshfields.
- [6] The Monetary policy of the ECB/Eurosystem, 2011. [online]. [2014-06-29]. Available from: <https://www.ecb.europa.eu/pub/pdf/other/monetarypolicy2011en.pdf?806851948acaa66136356457a4641a6c>.
- [7] Economy and Monetary Union. [online]. [2014-06-29]. Available from: <http://www.ecb.europa.eu/ecb/history/emu/html/index.en.html>.
- [8] European Commission, 2006, *Institutional Arrangements for the Regulation and Supervision of the Financial Sector*.
- [9] Friedman, M., 1960. *A Program for Monetary Stability*. New York: Fordham University Press.
- [10] Gros, D., 2011. *Fiscal and Monetary Policy Assymetries in a Common Currency Area*. [online]. [2014-06-29]. Available from: <http://www.europarl.europa.eu/document/activities/cont/201106/20110615ATT21432/20110615ATT21432EN.pdf>.
- [11] Lannoo, K., 2000. *Updating EU Securities Market Regulation*. Paper presented to the “Conference on Financial Supervision of Banks and Specialized Banks in the EU” European University Institute.
- [12] Review of the New European System of Financial Supervision, 2013. [online]. [2014-06-29]. Available from: [http://www.europarl.europa.eu/RegData/etudes/etudes/join/2013/507446/IPOL-ECON_ET\(2013\)507446_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/etudes/join/2013/507446/IPOL-ECON_ET(2013)507446_EN.pdf).
- [13] OECD, 2009. *The Financial Crisis: Reform and Exit Strategies*. Paris: OECD.
- [14] OECD Monthly Monetary and Financial Statistics (MEI). [online]. [2014-06-29]. Available from: <http://stats.oecd.org/index.aspx?queryid=86>.
- [15] Onado, M., 2001. *European Integration and Financial Regulation. Towards a European Authority*. Paper presented at the European Central Bank, Frankfurt, January 19, 2001.

WHAT DETERMINED SOVEREIGN CDS SPREADS IN THE EURO AREA?

Veronika Kajurová

*Masaryk University, Faculty of Economics and Administration, Lipova 41a, 602 00 Brno-Pisarky, Czech Republic
email: vkajurova@mail.muni.cz*

Abstract

Sovereign credit default swap spreads are considered as a leading indicator of the future development of creditworthiness, which can point out the potential situation in the economy. Thus the investors, governments or policy makers should pay the attention to the factors that can affect sovereign credit default swap spreads. The aim of this paper is to evaluate a role of selected determinants on sovereign credit default swap spread changes over the period 2004-2012 in the euro area member countries. Panel data estimation is conducted in the pre-crisis and crisis in order to capture the changing role of selected determinants. The findings could be beneficial for the participants in the financial markets, as well as for the policy makers both at national and international level.

Keywords

Sovereign Credit Default Swap, Determinant, Euro Area, Panel Data Estimation.

JEL Classification

C01, C33, C58, G15, G2.

1 Introduction

A credit default swap (CDS) represents a bilateral contract which transfers the credit risk of a specific company or sovereign from one party to another for a specified period of time. It is designed to protect an investor against the loss from par on a bond or loan following the default of the issuing company or sovereign (O'Kane, 2008). These tools allow investors to manage the credit risk by buying or selling the credit risk, but they can also be used by prudential authorities to extract warning signals regarding financial stability (Annaert et al., 2013). They can also reflect the potential situation of a company or economy as well and are also considered as a measure of the credit risk and as a leading indicator of the future development of creditworthiness.

The role of sovereign credit default swaps (SCDS) intensified together with the outbreak of sovereign debt stress in the euro area. SCDSs have become important tools in the management of credit risk, and the premiums paid for the protection offered by SCDSs are commonly used as market indicators of credit risk. Moreover the impact SCDSs on the stability of financial markets is discussed intensively (IMF, 2013).

Factors that can have an impact on CDS spreads are therefore in the centre of investors', analysts' or authorities' attention. The aim of this study is to examine the influence of SCDS spread determinants on monthly changes of SCDSs issued on the debt of euro area countries. A panel data estimation is used in the pre-crisis, crisis and post crisis period to capture the changing role of the selected determinants. The crisis period covers financial crisis and also the period of sovereign debt stress in the euro area.

The increased attention to CDSs determinants has started to be paid since the financial crisis burst. The determinants of CDS spreads are still in the spotlight of researchers, policy makers or prudential authorities who try to discover influence of selected factors on CDS spreads. The published works can be divided in to two main areas. One of them is focused on the determinants of CDSs spreads of corporates. The second area is devoted to the determinants of SCDS spreads.

One can find works which empirically investigate the role of selected determinants in individual countries; e. g. Eysell et al. (2013) studied the determinants of SCDS spreads in China. Badaoui et al. (2013), Ismailescu and Kazemi (2010) or Zinna (2013) investigated SCDS spread determinants in emerging market countries and Fontana and Scheicher (2010), Afonso et al. (2012) in the euro area.

2 Data

We obtained our dataset from Bloomberg database on monthly basis. A number of observations differ for each SCDS depending on date when it was issued. SCDSs of 5-year maturity were used in accordance with Mayordomo's et al. (2013) contribution which shows that this maturity-provider combination reflects new information more rapidly than other maturities. The SCDS series were obtained for euro area countries for which data were available. The following table provides a summary of countries included in our research.

Table 1. Overview of included countries

Country	Member of EU since	Member of EA since
Austria	1995	1999
Belgium	1952	1999
Estonia	2004	2011
Finland	1995	1999
France	1952	1999
Germany	1952	1999
Greece	1981	2001
Ireland	1973	1999
Italy	1952	1999
Netherland	1952	1999
Portugal	1986	1999
Slovakia	2004	2009
Slovenia	2004	2007
Spain	1986	1999

Source: European Union. EU member countries [online].

The total sample period covers almost nine years (July 2004 – November 2013) and is divided into two sub-periods – pre-crisis period (July 2004 – August 2008) and crisis period (September 2008 – November 2012). The start of the crisis period was set on September 2008 when Lehman Brothers went bankrupt. The crisis period covers financial crisis and also the period of sovereign debt stress in the euro area until the European Union's regulation on short selling and certain aspects of CDSs came into force on 1 November 2012.

Several explanatory variables are considered in the study. The choice of variables was based on previous literature and it was limited by data availability. Table 2 summarizes the selected determinants, indicators and expected relationship between change in the determinant and SCDS spread change.

Table 2. Selected determinants, indicators and sign of expected/theoretical relationship

Determinant	Indicator	Expected sign +/-
Liquidity	Bid-ask spread	+
Corporate CDS premium	iTraxx Europe index	+
Country stock market return	Country stock market index	-
European stock market volatility	VSTOXX index	+
Risk-free rate	Overnight index swap rate	-
Slope of term structure	10y-2y government bonds	-
Deficit	Government deficit	+

Source: European Union. EU member countries [online].

Bid-ask spreads of individual CDS prices are considered as a measure of liquidity. Higher (lower) spread should refer to the lower (higher) liquidity that should result in the higher (lower) probability of default.

As a proxy of corporate CDS premium, iTraxx Europe index was used. Fontana and Scheicher (2010) consider iTraxx index as measure of aggregate credit market development. They states that

given that iTraxx index is also a CDS spread; it seems plausible that this variable also picks up other CDS-market related information. It consists of 125 equally weighted CDSs issued on the debt of European reference entities. The positive relation between change in iTraxx index and change in SCDS spread is expected.

Annaert et al. (2013) propose that it is likely that common variation is linked to the economic environment, capturing general market and economic conditions. Hence countries' stock market indices are used as a measure of business climate. The higher (lower) market return should lead to the lower (higher) SCDS spreads since the stable economic conditions are expected.

VSTOXX index was used as a measure of European stock market volatility and as a measure of risk appetite. Market volatility has the reverse impact than market return because of the increasing uncertainty in the markets. The higher (lower) market volatility should lead to the higher CDS spreads as the uncertainty leads to the higher (lower) probability of default.

We used overnight index swap (OIS) rate as a proxy of risk-free rate. Hull and White (2012) suggest that OIS rates should be used as the risk-free rate when valuing derivatives instead of LIBOR and LIBOR-swap rates. They argue that the OIS rate is the most appropriate rate for calculating the no-default value of both collateralized and non-collateralized transactions. Lower risk-free rates should lead to increasing credit spreads, thus negative relationship is expected between change in OIS rate and SCDS spread.

Slope of term structure was included in our determinants since a high slope anticipates improved economic growth and therefore negative relationship is expected. Moreover, the slope carries information about future interest rate level as well. It is calculated as a difference between the 10year and 2year government bonds yields.

Finally we added variable deficit to our model. It is expected that higher deficits should lead to the higher SCDS spreads since the higher (or excessive) deficit brings other costs and has negative impact on the economy. The following figures provide the development of government deficits/surpluses in the euro area countries. Figure 1 shows government deficit/surplus for origin EA member countries except Ireland, Portugal and Spain which are included together with Greece and relatively new member EA countries (Estonia, Slovenia and Slovakia) in Figure 2.

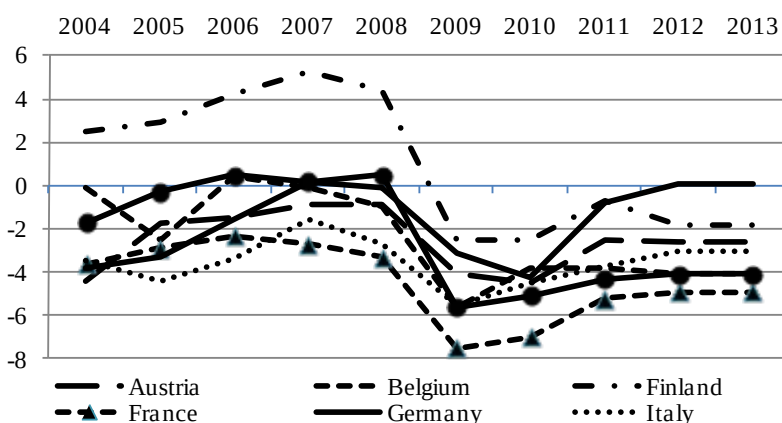


Figure 1. Government deficit/surplus for origin euro area member countries in % of GDP (Source: Eurostat)

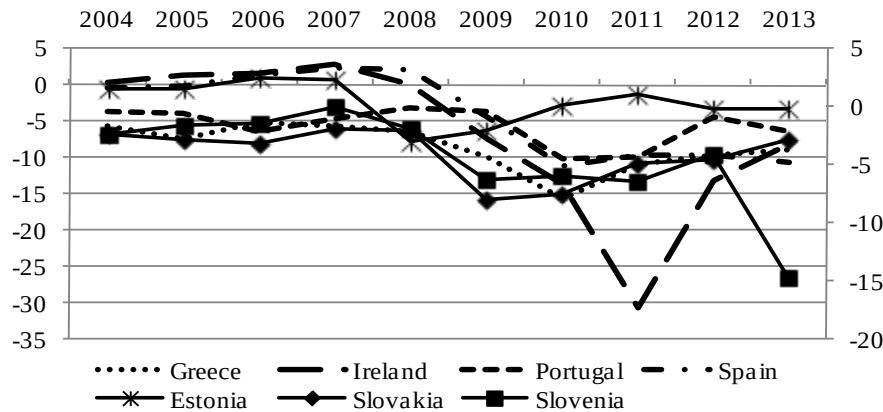


Figure 2. Government deficit/surplus for new euro area member countries and PIGS countries in % of GDP
 (Source: Eurostat)

3 Methodology

Verbeek (2008) suggests that an important advantage of panel data compared with time series or cross-sectional data sets is that they allow identification of certain parameters or question, without the need to make restrictive assumptions. Our dataset lends itself to panel estimation techniques that acquaint us to estimate how the changes in independent variables may influence the changes of dependent variable. Panel regressions with fixed effects are employed in order to find out whether the changes of selected variables have influence on SCDS spread changes. The model is specified as follows:

$$\Delta CDS_{it} = \alpha_i + \Delta CDS_{i(t-1)} + \beta_1 \Delta LIQ_{it} + \beta_2 \Delta iTraxx_{jt} + \beta_3 \Delta RET_{it} + \beta_4 \Delta VOL_{jt} + \beta_5 \Delta OIS_{jt} + \beta_6 \Delta STS_{it} + \beta_7 \Delta DEF_{it} + u_{it} \quad (1)$$

Where α_i are fixed unknown constants that are estimated along with β , i identifies country specific explanatory variables, j identifies common European market explanatory variables, t is time period, CDS is CDS spread, $CDS_{i(t-1)}$ is lagged CDS spread, LIQ is CDS liquidity (bid-ask spread), $iTraxx$ represents corporate CDS premium, RET is stock market index return, VOL is European stock market volatility, STS is slope of term structure, DEF is deficit and u_{it} is assumed to be i.i.d. over individuals and time.

When employing panel regression, it is important to choose between fixed or random effects estimation. Random effects estimation is used to assess the effects of the explanatory variables in the model which means that uncorrelated heterogeneity is assumed, and with correlated heterogeneity, we have to use fixed effects estimations (Andreß et al., 2013). Hausman test (Hausman, 1978) is one of method which can be used when making a decision about fixed or random effect estimation. It evaluates if fixed and random effects estimation is substantially different, hence the differences between the random and fixed effects can be directly tested. Andreß et al. (2013) summarizes the general idea of the Hausmann test: If two estimators are consistent under a given set of assumptions, their estimates should not differ significantly. The results of Hausmann tests showed that fixed effect estimation should be used.

4 Results

Panel regressions were run in pre-crisis and crisis period for euro area countries, for which SCDS spreads data were available), and then separately for heavily-indebted countries (Greece, Ireland, Portugal and Spain).

4.1 Pre-crisis period

When evaluating the results for euro area countries in the pre-crisis period only the changes in liquidity, corporate CDS premium (iTraxx) and in countries stock markets returns were statistically significant in accordance with the theoretical expectations, see Table 3. The sign of the coefficient of liquidity confirms that the highest spreads refer to the lower liquidity that should result in the higher probability of default and vice versa. The sign of iTraxx coefficient shows the positive relationship between variables as expected. The sign of stock market return coefficient also confirms the theoretical assumption that higher market return should lead to the lower SCDS spreads since the stable economic conditions are expected. OIS rate was statistically significant as well, but the sign of the coefficient was not in accordance with the assumptions.

Table 3. Panel regression results for euro area countries during pre-crisis period

	Coefficient	t-Statistic	Probability
Constant	2.5391	1.3335	0.1832
CDS(-1)	0.0530	1.2644	0.2068
Liquidity	0.2319	8.4818	0.0000^a
iTraxx	0.3266	6.0156	0.0000^a
Stock market return	-0.7919	-2.8514	0.0046^a
Stock market volatility	0.0864	1.1487	0.2514
Overnight index swap rate	0.0221	2.4804	0.0135
Slope of term structure	0.0205	1.4392	0.1509
Deficit	0.7757	0.2344	0.8148
Adj. R ²		0.3326	
D-W. Statistics		2.0290	

Statistically significant coefficients in accordance with theoretical assumptions are in bold.

^a denotes significance at 1% level.

Source: author's calculations in Eviews.

The explained variation reached up to 33.26 %. The Durbin-Watson statistics that measures the serial correlation in the residuals was 2.03. The value around 2 is required because it indicates no serial correlation.

Table 4. Panel regression results for Greece, Ireland, Portugal and Spain during pre-crisis period

	Coefficient	t-Statistic	Probability
Constant	2.8617	1.0209	0.3090
CDS(-1)	0.0006	0.0081	0.9936
Liquidity	0.1894	3.9593	0.0001^a
iTraxx	0.3650	3.8212	0.0002^a
Stock market return	-0.6300	-1.5935	0.1132
Stock market volatility	0.3503	2.7235	0.0072^a
Overnight index swap rate	0.0253	1.6758	0.0959
Slope of term structure	0.0340	1.4626	0.1457
Deficit	1.2884	0.3728	0.7098
Adj. R ²		0.3926	
D-W. Statistics		2.1231	

Statistically significant coefficients in accordance with theoretical assumptions are in bold.

^a denotes significance at 1% level.

Source: author's calculations in Eviews.

Table 4 provides results for the group of heavily-indebted countries. The results are a little bit different compared to the previous ones. The changes in liquidity, iTraxx index and in stock market volatility were statistically significant and in compliance with the theory. The influence of liquidity and iTraxx index was similar as in the previous results for euro area countries.

Instead of stock market return the changes in stock market volatility had the influence on SCDS spread changes. OIS swap rate, which was statistically significant in the previous, was also statistically significant, but the sign was not in accordance with our assumptions again. The explained variation higher than in the previous case, it reached up to 39.26 %. The value of the Durbin-Watson statistics showed that there is no serial correlation.

4.2 Crisis period

The results for euro area countries during the crisis period are reported in Table 5. Explained variation lowered to 4.59 % in this period compared to the explained variation in the pre-crisis period. The changes in liquidity and iTraxx index lost its explanatory power. The statistically significant variables were stock market return and stock market volatility. The signs of their coefficients were in harmony with the theoretical expectations. The changes in slope of term structure were significant as well, but the sign was not in accordance with the assumptions. The Durbin-Watson statistics confirmed no serial correlation.

Table 5. Panel regression results for euro area countries during crisis period

	Coefficient	t-Statistic	Probability
Constant	4.5960	0.5013	0.6154
CDS(-1)	0.0065	0.1618	0.8715
Liquidity	0.0094	0.9172	0.3594
iTraxx	-0.1704	-0.3458	0.7296
Stock market return	-1.8927	-2.3341	0.0199^a
Stock market volatility	0.5058	1.7689	0.0774^b
Overnight index swap rate	-0.0555	-0.3747	0.7080
Slope of term structure	0.0941	3.5286	0.0004
Deficit	3.3333	0.2917	0.7707
Adj. R ²		0.0459	
D-W. Statistics		2.0760	

Statistically significant coefficients in accordance with theoretical assumptions are in bold.

^a denotes significance at 1% level; ^b denotes significance at 10% level.

Source: author's calculations in Eviews.

Table 6 displays results for the group of heavily-indebted countries in the crisis period. When assessing the results for heavily-indebted countries, the explained variation also significantly lowered compared to the results in the pre-crisis period. It fell to 4.51 %. Only the changes in liquidity were statistically significant and in compliance with the assumptions. The changes in slope of term structure were significant as well, but were not in conformity with our expectations. No serial correlation was showed by the Durbin-Watson statistics.

Table 6. Panel regression results for Greece, Ireland, Portugal and Spain during crisis period

	Coefficient	t-Statistic	Probability
Constant	-27.3025	-0.3808	0.7038
CDS(-1)	-0.0163	-0.2307	0.8178
Liquidity	0.3648	2.8359	0.0051^a
iTraxx	-1.3060	-0.9105	0.3637
Stock market return	-2.2325	-1.0650	0.2882
Stock market volatility	0.6944	0.8429	0.4004
Overnight index swap rate	-0.3063	-0.7157	0.4750
Slope of term structure	0.1229	2.0909	0.0379
Deficit	42.0028	0.5790	0.5633
Adj. R ²		0.0451	
D-W. Statistics		2.0767	

Statistically significant coefficients in accordance with theoretical assumptions are in bold.

^a denotes significance at 1% level.

Source: author's calculations in Eviews.

5 Conclusion

The aim of this paper is to evaluate a role of selected determinants on SCDS spread changes over the period 2004-2012 in the euro area member countries. A panel data analysis was used to find out the explanatory power of selected determinants in the pre-crisis period and crisis period.

The results differed significantly for pre-crisis and crisis period. The determinants (liquidity and iTraxx index) which had the explanatory power during the pre-crisis period for euro area countries

lost it in the crisis period. Only stock market return remained significant in both periods. Moreover, stock market volatility started to be significant during the crisis period. The changes in liquidity were statistically significant in pre-crisis and crisis period when assessing the determinants in heavily-indebted countries. The changes in iTraxx index and stock market volatility lost its explanatory power.

Finding appropriate determinants and understanding their influence on SCDS spreads is crucial and beneficial for investors, analysts or policy makers. Together with the growing degree of both financial and economic integration in global, the role of determinants should not be underestimated. Our analysis did not include all possible determinants that can affect SCDS spreads, therefore the role of other country specific, European and global determinants should be estimated.

6 Acknowledgement

Support of Masaryk University within the project MUNI/A/0786/2013 “*Analysis and prediction of financial and investment products performance*” is gratefully acknowledged.

References

- [1] Afonso, A, D. Furceri and P. Gomes, 2012. Sovereign Credit Ratings and Financial Markets Linkages: Application to European Data. *Journal of International Money and Finance*, vol. 31, issue 3, pp. 606-638.
- [2] Andreß, H., K. Golsch and A. W. Schmidt, 2013. *Applied Panel Data Analysis for Econometric and Social Surveys*. Berlin Heidelberg: Springer-Verlag.
- [3] Annaert, J., M. De Ceuster, P. van Roy and C. Vespro, 2013. What Determines Euro Area Bank CDS Spreads? *Journal of International Money and Finance*, vol. 32, pp. 444-461.
- [4] Badaoui, S., L. Cathcart and L. El-Jahel, 2013. Do Sovereign Credit Default Swaps Represent a Clean Measure of Sovereign Default Risk? A Factor Model Approach. *Journal of Banking & Finance*, vol. 37, issue 7, pp. 2392-2407.
- [5] European Union. EU member countries [online]. [2014-06-29]. Available from: http://europa.eu/about-eu/countries/member-countries/index_en.htm.
- [6] Eyssell, T., H. –G. Fung and G. Zhang, 2013. Determinants and Price Discovery of China Sovereign Credit Default Swaps. *China Economic Review*, vol. 24, pp. 1-15.
- [7] Fontana, A. and M. Scheicher, 2010. *An Analysis of Euro Area Sovereign CDS and their Relation with Government Bonds*. E Working Paper No. 1271.
- [8] Hausman, J. A., 1978. Specification Tests in Econometrics. *Econometrica*, vol. 46, issue 6, pp. 1251-1271.
- [9] Hull, J. and A. White, 2013. LIBOR versus OIS: The Derivatives Discounting Dilemma. *Journal of Investment Management*, vol. 11, issue 3, pp. 14-27.
- [10] International Monetary Fund, 2013. *Global Financial Stability Report*. Washington D.C.: International Monetary Fund.
- [11] Ismailescu, I. and H. Kazemi, 2010. The Reaction of Emerging Market Credit Default Swap Spreads to Sovereign Credit Rating Changes. *Journal of Banking & Finance*, vol. 34, issue 12, pp. 2861-2873.
- [12] Mayordomo, S., J. I. Peña and E. S. Schwartz, 2013. Are all Credit Default Swap Databases Equal? *European Financial Management*, 9999, pp. 1-37.

- [13] O'Kane, D., 2008. *Modelling Single-name and Multi-name Credit Derivatives*. West Sussex: John Wiley & Sons Ltd.
- [14] Verbeek, M., 2008. *The Guide to Modern Econometrics*. 3rd Ed. West Sussex: John Wiley & Sons Ltd.
- [15] Zinna, G., 2013. Sovereign Default Risk Premia: Evidence from the Default Swap Market. *Journal of Empirical Finance*, vol. 21, pp. 15-35.

EUROPEAN UNION COMMON SECURITY AND DEFENCE POLICY AS AN IMPORTANT FACTOR OF TRANSATLANTIC SECURITY COOPERATION

Radomír Kaňa¹, Monika Mynarzová²

¹ VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: radomir.kana@vsb.cz

² VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: monika.mynarzova@vsb.cz

Abstract

Security of the European Union and its Member States has acquired a new dimension of urgency after the Cold War, when present security situation in the world became different. Fast changes in global security situation forced the European Union to play on the world political and military scene more important role. That's why it is forced to work hard on enhancing effective and in the future even a single security policy, which has to be accompanied by an adequate building of military capabilities and strengthened cooperation with key partners in the transatlantic security dimension. The article mainly focuses on the role of European Union foreign operations and missions within the Common Security and Defence Policy, which is considered the most important EU security instrument for significant contribution to global security within transatlantic cooperation.

Keywords

Common Security and Defence Policy, Common Foreign and Security Policy, Global Security, European Union, NATO.

JEL Classification

F15, F5, F52, F530.

1 Introduction

The end of the bipolar division of the world in the nineties of the last century has significantly reduced the likelihood of a global war, but we can in no case accept that the current world situation is free of safety hazards. The current multipolarity brings new threats such as the escalation of a series of regional conflicts, which by their nature are beyond standard military strategies and procedures. Other major threats include: proliferation of weapons of mass destruction, failure states, organized crime, terrorism, international armed conflict, illegal immigration, etc. (Pikna, 2014).

In the context of global security situation, as pointed out by Kaňa, Mynarzová (2012), the European Union together with other actors in global security, such as NATO and the U.S. have to assume its share of responsibility in this area. The importance of the European Union in the financial, economic and business field is unquestionable and it certainly ranks it among the world powers. With regard to this position in the world economy it undoubtedly brings a necessary duty to take adequate role on the international political scene. Foreign and security policy, which is considered one of the fundamental attributes of state sovereignty, is now - at the beginning of the 21st century- a forefront for a number of politicians who see it as a promising area for the deepening of the European integration process.

The current security situation in the world is different from the Cold War and, as such, requires different approaches to solve many problems of regional or global nature¹. If the European Union wants to play the role it seeks on the world political and military scene, it will be forced to work intensively on the process of deepening effective and - in the future - perhaps even a single security policy, accompanied by building appropriate military capabilities. Strengthening effective adequate tools in the form of Common Foreign and Security Policy and the Common Security and Defence Policy to enable the European Union to cope with the above challenges, due to strengthening its own military, police and civilian capacity should ensure improvement in global security. This article

¹ One of the key aspects of global security in the early 21st century are demographic factors (Čajka, Kazanský, 2014).

focuses on the role of the Common Security and Defence Policy of the European Union, which through foreign operations and missions contributes to the stabilization and security not only in Europe but also globally. Attention is also paid to the expenses EU Member States spend on defense and last but not least to the analysis of issues in cooperation of the EU and NATO as an important factor of transatlantic security.

2 Common security and defence policy of the European Union as an integral part of foreign and security policy of the European Union

Common Foreign and Security Policy, CFSP is very specific and peculiar area due to the national sovereignty of Member States, which remain under national control. According to Article 24 Treaty on European Union (TEU) is to ensure that Member States shall refrain from any action which would be contrary to the interests of the European Union or would reduce its effectiveness as a cohesive force in international relations.

The development of the Common Foreign and Security Policy of the European Union and its emergence in 1993 was accompanied by a number of activities in the diplomatic field and thus the emphasis on the "foreign" dimension (Bindi, 2010). Despite the gradual strengthening of the role of the Union in the field of international relations and in diplomatic activities in resolving many conflicts, its military capabilities were not able to provide, maintain and successfully solve any operation outside the territories of the Member States². This fact led first to the creation of the European Security and Defence Policy (ESDP), as an integral part of the Common Foreign and Security Policy, and then changed its name to the Common Security and Defence Policy (CSDP)-Lisbon Treaty (Merlingen, 2012; Europa 2010). Embedding the term the Common Security and Defence Policy in the Lisbon Treaty (TEU, Title V) provides a framework for a common defense policy, which might in the future develop into a common EU defense³.

The Maastricht Treaty is a landmark document in the history of the Community, which created the system of pillars within the structure of the European Union through which helped to shape relatively clearly defined area based on the principle of supranational and intergovernmental. It should however be emphasized that the pillar structure was part of a compromise because of the traditionally divergent positions of Member States on the issue of community affairs⁴. The second pillar, consisting of Common Foreign and Security Policy, has become a platform for further deepening cooperation between Member States as well as in the field of security and defense (Kaňa, 2009). Virtually the only exclusively European organization for military cooperation (defense) Western European countries, the WEU (Western European Union), founded in 1954 called the Paris agreements (based on the so-called Western Union, 1948). WEU is composed of ten member countries, six associated countries (including the Czech Republic), seven associate partners and five observers. In Maastricht, the WEU was envisaged as part of the second pillar, but the Treaty of Nice did not have these options and assumed her role as the European Union itself. WEU in 2001 officially ceased operations, but still not ceased to exist as an entity. Paris Agreement ended its validity after 55 years, on 31st March 2011. Treaty of Lisbon decided to transfer the powers and functions of the WEU to the EU institutions in 2011 (Navrátil, Kaňa, Zlý, 2012). The original intentions of the Community in the early 90's brought hopes to the military potential of the Western European Union that wanted to build a defense policy while strengthening the European pillar of NATO; however, these actions did not lead to the desired success.

² A typical example is the conflict in the former Yugoslavia, including Kosovo War (1998-1999).

³ In this regard, it would have to be decided unanimously by the European Council. Given the current level of cooperation (and opinions) of EU Member States in this area, however, early realization of this idea cannot be expected.

⁴ Eg. the Netherlands, Belgium and Greece favored a Community approach on foreign and security policy, while Great Britain, along with France, Denmark and Portugal were against it. By mutual agreement, the first pillar remained open to possible shifts of agreed areas from the second and third pillars.

There were many reasons - eg different opinions of members of the WEU and the European Union, traditionally different positions of France and Great Britain to the U.S. role in European security, the inability of WEU to agree on a form of interference during the events in the former Yugoslavia, Albania or in the case of the massacre in Rwanda. Call for establishment of a common European defense finally emerged from a meeting of British Prime Minister Tony Blair and French President J. Chirac in Saint-Malo, in December 1998. This was a groundbreaking event, especially when Britain reconsidered its negative opinion on the defense role of the CFSP and thus allowed strengthening of the military capabilities of the EU (Matějka, 2005).

The concept of a European Security and Defence Policy was first officially used at an EU summit in Cologne (June 1999), where an agreement on the mechanisms of coordination in crisis situations was made and a plan to create a European military capacity was started. The summit appointed the first High Representative for the CFSP - J. Solana, who should be assisted by the newly formed committees, and the Political and Security Committee (PSC) and the EU Military Committee (EUMC). Another crucial summit for the development of ESDP was meeting in Helsinki in December 1999. Within the framework of the European Headline Goal - EHG requirements for military units were concretized⁵, that should be able to realize the types of missions (including in the establishment of peace), which were approved under the Petersburg tasks⁶. The result of the Helsinki meeting was also WEU transfer of powers in relation to crisis management to the European Union and decisions on the establishment of political-military EU institutions within EU structures that provide strategic leadership for EU-led operations. Work group of EU and NATO was created in July 2000 to ensure the effectiveness of the European Headline Goal and like the NATO - the Initiative Defense Capabilities.

At the Nice Summit (December 2000), the concept of the military structure of ESDP and CFSP was definitively established, the Political and Security Committee, the EU Military Committee and Military Staff of the European have begun to operate since 2001. The Treaty of Nice (2003), which incorporated the ESDP into primary law, then finally confirmed the concept of political-military structures and defined the institution responsible for the functioning of the ESDP (Dubský, 2006). One of the Union key strategic documents on security was adopted December 12, 2003 as the European Security Strategy (subtitled A Secure Europe in a Better World) in order to identify the threats and the EU's position in the security environment. The European Security Strategy proposed the ways to face these threats together. In addition to the soft tools such as diplomacy and economic relations of the Union, it also mentions the use of military force. This strategy was revised in 2008 so as to respond to new security challenges. The newly defined threats included energy security, threats related to climate change and cybersecurity (Kaňa, 2007). In May 2004, the Headline Goal 2010, has been approved which included the concept of EU Battlegroups (EU Battle Groups Concept). These comprehensive security military units of about 1,500 men (in one or several EU member states) have to give the EU the ability to quickly intervene mainly in lower intensity conflicts (for example, in the context of evacuation and humanitarian missions or operations to prevent conflict). These groups are able to operate anywhere in the world within a radius of 6000 km from Brussels and must be able to deploy within 10 days of the decision of the EU Council. They must be able to stay in the place of conflict for 30 days, after the completion of units the period can be extended to up to 120 days or until the arrival of other units. There are always two battle groups on call alert and the ability to conduct two operations simultaneously is required. The first units reached operational capability

⁵ Member States had pledged that by 2003, would create a rapid reaction force of up to 60,000 people, the so-called European Rapid Reaction Forces, the ERDF, the goal was declared achievable in 2003, but lacked transport capacity for the transport of military forces over long distances, the necessary communication systems and some types of latest sophisticated equipment. Subsequently battle groups were formed.

⁶ One of the most important steps, achieved in early 90s, is the inclusion of the so-called Petersberg tasks in security policy, which today forms an important part of the common security and defense policy. Petersberg agreement allowed military forces of the WEU (member countries) to participate in humanitarian and rescue missions, peacekeeping missions and combat forces in crisis management, including peacemaking.

January 1, 2007 (EEAS, 2013). Treaty of Lisbon (2009) replaced the current term European Security and Defense Policy by the new term Common Security and Defense Policy, the latter continue to be a part of the Common Foreign and Security Policy of the European Union. It also introduced the so-called starter fund for the EU military operation, which complements the existing mechanism for financing of EU military operations - ATHENA. Crisis Management and Planning Directorate, CMPD was established in November 2009 in connection with the ratification of the Lisbon Treaty as part of the EU Directorate. This led to the integration of civilian and military dimensions of strategic planning and crisis management, which enhances the comparative advantage of the EU - the possibility of using a wide range of instruments for mission leadership. The permanent structured cooperation in defense, in which the participating States (the minimum number is not listed) undertake a more intensive development of its defense capabilities and provide its armed forces for the planned operation have become a new tool. Permanent structured cooperation shall be subject to approval by the EU Council, which decides by qualified majority at the request of the participating countries (Staab, 2011, Svoboda, 2010). Foreign missions and operations of the European Union can be a real contribution to improving global security. Foreign operations and missions of the European Union carried out under the CSDP are considered the most important tool to ensure not only its own but also global security. This makes it the top of the existing efforts of the Union's CSDP. Not all Member States are involved equally in the foreign operations, but it always regards the participation of the countries under the auspices of the Union. The European Union recognizes three types of these operations - military, police and missions in support of the rule of law. These types differ not only based on personnel involved (troops, police officers, civil servants), but in particular by its features (TEU, Article 43).

Since 2003, when the first EU foreign mission (EUPM) was sent - by February 2014 a total of 31 missions were sent, 15 of which have already been completed. Four of them were purely military, 9 were civilian/police and one operation (AMIS II) had a civilian-military character. As of June 2014, the Union conducted a total of 16 missions (see Table 1), 5 of which can be referred as military and 11 civilian/police. The key missions can include those in Somalia (Horn of Africa) and Kosovo.

The mission EU NAVFOR Somalia (Atalanta) was a major present military (Navy) EU operation (EU NAVFOR Somalia, 2014) running at the same time with two instructional (security) missions. On 2 June 2008 the UN Security Council adopted Resolution 1816, which called on states to combat piracy and armed robbery at sea. Council of the EU on 10 November 2008 decided to launch the operation EU NAVFOR ATALANTA. The operation was launched on 8 December 2008 and its mandate is focused on providing protection to vessels prior to pirate attacks, the prosecution of piracy and mugging ships along the Somali coast. The operation was extended until 2014 in March 2012 and its territorial jurisdiction was extended. Atalanta is just one part of a comprehensive approach to the issue of piracy and security in the Horn of Africa.

Training/Security EUCAP Nestor mission (building maritime capacity) and the EU Training Mission Somalia (Somali security forces) are two operations that help solve the problems of the region and are complementary to EU NAVFOR. Atalanta's mission includes the participation of non-EU countries (Montenegro, Serbia, Ukraine, Norway) together with the 24 member countries.

Military vessels are provided by Spain, Germany, the Netherlands and France. Common costs within the ATHENA mechanism are estimated at 39.65 million EUR. Operating and personnel costs are paid from the national budgets of the participating countries. Atalanta mission has contributed significantly to the reduction of pirate attacks in the region (European Union Naval Force, 2013 EU NAVFOR Somalia, 2014). EULEX Kosovo represents the largest civilian CSDP mission. After the unilateral declaration of independence (2008) local authorities were not able to provide standard functioning of public institutions and security structures. The very beginning of the mission EULEX Kosovo (originally December 2008) was indeed problematic due to Serbian and later Kosovar objections and concerns. There has been a shift until April 2009. Mission is divided into two divisions: Executive Division and Strengthening Division. Executive Division focuses on cases of

war crimes, manifestations of terrorism, organized crime, corruption, etc. Strengthening Division is to support the government and public institutions, judicial authorities and law enforcement institutions. EU experts provide advice, training, do the actual management of the authorities so as to develop and strengthen an independent judiciary, the police and customs administration.

Table 1. Ongoing EU Missions and Operations

Missions	Destination	Starting year	Estimated costs
EUBAM Libya	Libya	2013	30.3 mil. EUR
EUTM Mali	Mali	2013	12.3 mil. EUR
EUCAP SAHEL Niger	Niger	2012	8.7 mil. EUR*
EUCAP NESTOR	Kenya, Djibouti, Somalia, Seychelles	2012	22.88 mil. EUR*
EUTM Somalia	Somalia	2010	11.6 mil. EUR
EU NAVFOR Somalia	Somalia	2008	39.65 mil EUR**
EUFOR RCA	Central African Republic	2014	25.9 mil. EUR
EUSEC RD Congo	DR Congo	2005	73.5 mil. EUR
EUPOL RD Congo	DR Congo	2007	39.92 mil. EUR
ALTHEA/BiH	Bosnia and Herzegovina	2004	15 mil. EUR
EULEX Kosovo	Kosovo	2008	111 mil. EUR/year
EUPOL Afganistan	Afghanistan	2007	108 mil. EUR/2013-2014
EUMM Georgia	Georgia	2008	20.9 mil. EUR
EUBAM Rafah	Palestinian Territories	2005	0.98 mil. EUR till 30. 6. 2013
EUPOL COPPS/PT	Palestinian Territories	2006	9.33 mil. EUR/2012-2013
EUBAM Moldova and Ukraine	Moldova and Ukraine	2005	21 mil. EUR/2011-2013

* estimation for the first year, ** estimation till the end of 2014

Source: EEAS, own processing.

The mission involved 27 member countries of the EU (with Croatia, without Cyprus) and 5 non-member States which sent about 1200 experts. According to official sources, the mission assessed as successful (especially in the judiciary, customs and police), but many observers talk about the high rate of crime, corruption and slow process due to the very high budget (EULEX Kosovo, 2014, EEAS, 2014).

3 EU and NATO cooperation in the field of global security

The guarantor of European security and a major player in the global security arena is the North Atlantic Alliance. Both organizations since its establishment contribute to ensuring and strengthening the security situation in Europe, although the method of ensuring the safety of each organization differed. NATO was founded as a typical military international organization disposing armies of its member states to implement the relevant operations. It has set itself the objective of ensuring political stability, particularly in the integration process. The development of mutual relations does not start until the end of the Cold War, when the EU begins to intensively develop its activities in the field of foreign and security policy. Sphere of interest of the European Union and NATO as well as most of their members overlapped. It is therefore understandable that their relationship and cooperation were key elements of a Common Security and Defense Policy.

22 countries are part of both organizations, that is three-quarters of the 28 members of the EU and therefore the question of mutual cooperation is fundamental and still relevant. Washington NATO meeting in 1999, changed the former Berlin framework (the concept of international task force in 1996, which ensured mechanisms of use of NATO military capabilities for WEU). According to the conclusion of the NATO Council in Berlin, the Alliance decided to make its capacity available and

that the WEU will create consultation mechanisms and closer ties between the two organizations. In this context there is talk of the Berlin mechanism. A set of agreements between NATO and the EU itself was called Berlin Plus. Planning mainly military operations has long been the biggest point of contention among EU Member States and the EU and NATO. In particular, Great Britain has long rejected the establishment of autonomous EU planning centers, which, in its opinion, weaken the role of the Alliance. Member States finally agreed on a compromise solution. Planning EU military operations can use either the structure of NATO in the framework of the Berlin Plus agreements or national planning center authorized by Member States. EU used the first option for example when planning Operation Concordia in Macedonia or Althea in Bosnia and Herzegovina, the French infrastructure (France as the framework nation) was used in the planning of the operation Artemis in Congo. Essentially, the current mutual relations are governed by EU-NATO Declaration on European Security and Defence Policy, approved December 16, 2002, which at that time meant the recognition and support of the European Security and Defence Policy of the Alliance. On March 17, 2003 the above Berlin Plus agreements were signed to ensure cooperation between the two organizations. It has formed the basis of the present cooperation between the two organizations. EU signatory was high representative for the CFSP, Javier Solana, NATO signatory was NATO Secretary General George Robertson. The very precise and comprehensive texts of Berlin plus agreements, how this key set of agreements is commonly referred to, is not publicly known, due to the confidential nature of certain documents.

Information from the official NATO Press Release is generally used, the most comprehensive version of the agreement is presented to the Alliance through information on the website SHAPE - Supreme Headquarters Allied Powers Europe. Communiqué of the Washington Summit (1999), where this document was created⁷, provides most information on the four points of the contract (directly related to the possibilities of the EU). Use of the Berlin plus mechanism is possible within the NATO first refusal meaning the right of NATO to be the first to refuse the realization of the mission. Only then the EU decides for or against the mission using the offered capacity. If the Council decides to launch an operation within the Berlin plus, it is granted access to the operational capacities of the Alliance.

Mutual cooperation and coordination between NATO and the EU is currently based on a number of formal and informal mechanisms. Based on the Berlin Plus agreement NATO-EU Capability Group was created, which should ensure the coherence of NATO and the EU with regard to the development of interaction skills. Representatives of both organizations will have to meet several times a year. Contact is also provided by the staffs of both organizations - NATO International Military Staff and the EU Military Staff. Within the EU Military Staff a NATO liaison team is permanently present and a representative of the EU (EU Cell) operates at the Supreme Headquarters Allied Powers in Europe. There are also regular meetings of EU High Representative for Foreign Affairs and Security Policy and Secretary General of NATO, while individual Foreign Affairs ministers meet during informal meetings (Kaňa in Fojtíková, 2014).

As mentioned above, the fact that 22 Member States of the European Union are also Member States of NATO, is a sufficient argument for future effective cooperation in the field of international security. If individual EU countries want to ensure their own safety and also be eligible NATO ally, they must necessarily increase defense spending. The imbalance between spending on defense and military capabilities between the United States and other NATO members is striking.

At the end of the Cold War, European countries cut, sometimes very radically, their defence expenditures. Faced with peace on the continent, EU governments thought that they could finally benefit from “peac dividends” and could reallocate these resources to other areas of public spending. Thus, whilst on average western European countries spent 3.1% of their GDP on defence between

⁷ A relatively long delay between the document creation and the official signing was caused long-term Turkish refusal.

1985 and 1989, this figure had fallen to 1.7% in 2008⁸, and this was before the budgetary crisis (Liberti [online], 2011).

Since 2008 there is a continuous decline in defence spending of EU member states. As Figure 1 shows, in 2008, defence spending amounted to 201 billion EUR (in 26 Member States of the European Defence Agency - EDA), representing a year compared to a decrease of 1.3%. So far, the largest decline in spending was recorded in 2009, to the extent of 3.6%. In 2012, total defence spending 190 billion EUR, which represented an annual decrease of 0.6%. In this year the expenditures were the lowest since 2006, amounted to only 1.5% of GDP and 3.04% of total public expenditure. As regards the structure of defence spending in the EU Member States, the personnel expenditures in 2011-2012 decreased by almost 3%, and again reached the lowest level since 2006 (95.7 billion EUR). However, these costs represent approximately 50% of the total defence spending. The second largest item of expenditure on maintenance and operation, which in 2012 amounted to 44.8 billion EUR, which represented 23.7% of total defence spending.

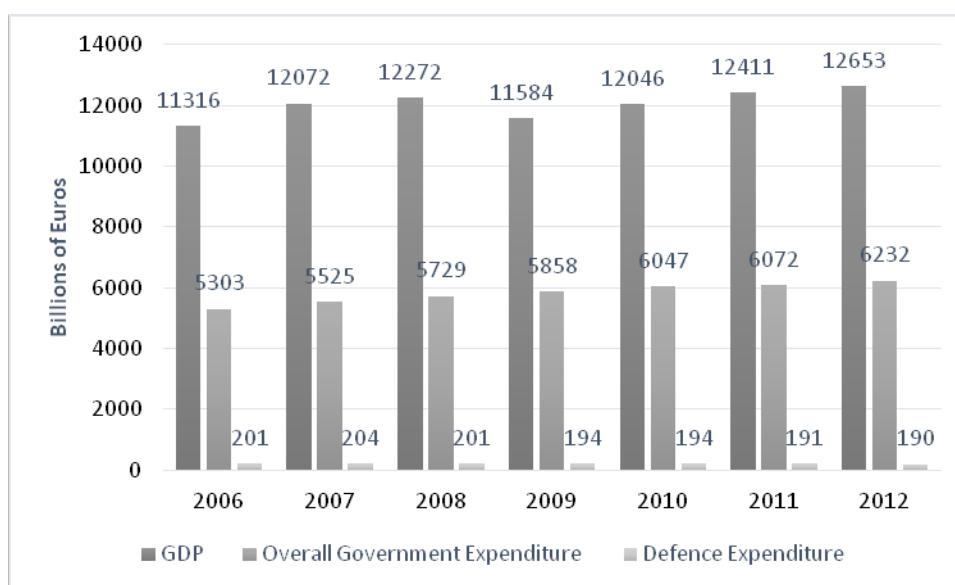


Figure 1. GDP, Overall Government Expenditure and Total Defence Expenditure in EU-26 2006-2012 (Source: EDA, own processing)

Regarding investment in defence spending, then after a sharp annual decline in 2011 of 13.8%, an increase of 5% was recorded in 2012, to reach the same level as in 2006. Defence investment amounted 39 billion EUR in 2006 and their share of total defence spending reached 20.6%. Expenditure on research and development as a significant part of defence investment recorded in this period the steepest decline (38%) and reached in 2012 4.8 billion EUR, i.e. only 2.5% of total expenditure on defense (EDA, 2013).

As regards the comparison of defense spending EU and US defence spending in the EU in 2011 was only 1.55% of GDP, while in the U.S., despite an annual decrease of 2.3%, it reached 4.66% of GDP (see table 2). Especially alarming is the fact that investments in defense spending, which mainly include expenditure on research and development amounted in the EU up to 37 billion EUR in 2011, while in the U.S. amounted to 145.7 billion EUR (EDA, 2013).

⁸ In 2011 the US spent 503 billion EUR on defence in 2011 compared to 193 billion EUR spent in the EU: around 2,5 times more (see Table 3).

Table 2. Defence Expenditure in EU and U.S. 2010-2011

Defence Expenditure	2010		2011		% change 2010-2011	
	EU	U.S.	EU	U.S.	EU	U.S.
As % of GDP	1.61 %	4.77 %	1.55 %	4.66 %	-3.4 %	-2.3 %
As % of Total Government Expenditure	3.20 %	11.23 %	3.17 %	11.18 %	-0.9 %	-0.4 %
Per capita	390 EUR	1 676 EUR	387 EUR	1 610 EUR	-0.7 %	-3.9 %
Total	194 billion EUR	520 billion EUR	193 billion EUR	503 billion EUR	-0.5 %	-3.3 %

Source: EDA, own processing.

In 2012, only two EU Member States exceeded the required level of defense expenditure amounting to at least 2% of GDP (Tuček 2013). What is dangerous is the fact that it represents rather a long-term trend than a consequence of the financial crisis. This low level of defense spending currently does not allow Member States to optimize their use and to increase their military capacity. The continuation of this trend may in the medium term, mean gradual loss of influence of the European Union in the field of security and defense (Kaňa, Mynarzová, 2012).

4 Conclusion

The issue of current conflict resolution, whether through military intervention or through diplomatic negotiations, confronts the European Union with the need to strengthen its position in the field of foreign and security policy and to build the necessary military capabilities that will ensure the required status. Building and strengthening adequate tools in the form of a Common Foreign and Security Policy and its framework of the Common Security and Defence Policy will allow the European Union to cope with the above challenges, due to strengthening its own military, police and civilian capabilities to ensure improvements of global security in the future.

In particular, completed missions and operations of the EU, as one of the key instruments in the framework of the Common Security and Defence Policy, are according to the official communiqué of the EU Council, but also other EU institutions, considered successful. Of course, opinions of independent experts may be more critical but time shows the real success rate of current operations (Kaňa, Mynarzová, 2014).

It can be stated that the possibilities for the EU military operation and possible deployment of battle groups are quite wide. Despite the gradual strengthening of the role of the Union in the field of international relations and in diplomatic activities in resolving many conflicts, its military capabilities are not yet able to provide, maintain and successfully solve large-scale operations outside the territory of the Member States. The limited capacity of expedition forces is due mainly to the lack of defense expenditures in EU countries.

In addition to these foreign CSDP missions they played an important role in the case of major events, known as the so-called Arab Spring that took place during the year 2011. What was clearly reflected here was an inconsistent attitude of the EU countries, especially in the case of civil war in Syria (the question of common opinion on the arms embargo). Even today, there is little consensus on EU sanctions against Russia in the aftermath of the events in Ukraine. Catherine Ashton, EU Representative for Foreign Affairs and Security Policy is often criticized for a little and relatively passive activity. We believe that to ensure global security, a functional cooperation between the EU and NATO is necessary. The European Union is currently the most important partner of NATO and this fact cannot be changed even by some members of the U.S. administration who think that building own military capabilities within the CSDP is useless and inefficient. The future development of NATO will surely play a key role in the development of a common security and defense policy of the Union, meaning that European countries would take responsibility for their own safety. The best

solution for the EU's cooperation with NATO in the field of global security seems to be an approach of enhanced coordination, which would accept the necessary degree of specialization and shift the maximum possible level of mutual compatibility while strengthening the above mentioned formal mechanism of cooperation.

Compatibility and necessary harmonization should be strengthened at the level of administration, public policy, and also in the field of building, training and equipping military units so they can subsequently be used by both organizations. This cooperation could be seen as very important for both EU and its CSDP in relation to the conduct of military missions or potential future development of the CSDP.

References

- [1] Bindi, F., 2010. *The Foreign Policy of the European Union*. Washington, DC: The Brookings Institution.
- [2] Čajka, P. and R. Kazanský, 2014. Non Military Aspect of Population Growth as Current Demographic Problems of the EU Countries. In: *International Conference on European Integration 2014. Proceedings of the 2nd International Conference on European Integration 2014*. Ostrava: VŠB-TU Ostrava, pp. 59-69.
- [3] Dubský, Z., 2006. Bezpečnostní a politická dimenze integračního procesu: Společná zahraniční a bezpečnostní politika EU. Praha: Oeconomica.
- [4] EDA. *Defence Data 2012*. [online]. [2014-06-05]. Available from: <http://www.eda.europa.eu/docs/default-source/eda-publications/defence-data-booklet-2012-web>.
- [5] EDA. *EU – US Defence Data 2011*. [online]. [2014-06-14]. Available from: <http://www.eda.europa.eu/docs/default-source/news/eu-us-defence-data-2011.pdf>.
- [6] EEAS. *Common Security and Defence Policy – EU Battlegroups*. [online]. [2014-05-16]. Available from: http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/esdp/91624.pdf.
- [7] EEAS. *EU Operations*. [online]. [2014-05-16]. Available from: http://www.eeas.europa.eu/csdp/missions-and-operations/completed/index_en.htm.
- [8] EULEX Kosovo. *What is EULEX?* [online]. [2014-03-16]. Available from: <http://www.eulex-kosovo.eu/en/info/whatisEulex.php>.
- [9] EU NAVFOR Somalia. *Mission*. [online]. [2014-03-16]. Available from: <http://eunavfor.eu/mission>.
- [10] Europa. *Společná bezpečnostní a obranná politika* [online]. [2013-06-17]. Available from: http://europa.eu/legislation_summaries/institutional_affairs/treaties/lisbon_treaty/ai0026_cs.htm.
- [11] European External Action Service. *Common Security And Defence Policy - Eu Battlegroups*. [online]. [2014-06-02]. Available from: http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/esdp/91624.pdf.
- [12] European Union Naval Force. *Key Facts and Figures*. [online]. [2014-05-16]. Available from: www.eunavfor.eu/key-facts-and-figures.
- [13] Kaňa, R., 2007. European Security and Defence Policy – Relations to the NATO and the USA. In: *Proceedings of abstracts. Increasing Competitiveness or Regional, National Markets Development – New Challenges*. [CD ROM]. Ostrava: VŠB-TU Ostrava.

- [14] Kaňa, R., 2009. Současné aspekty Evropské bezpečnostní a obranné politiky. In: *Evropská unie po českém předsednictví. Sborník abstraktů příspěvků z mezinárodní vědecké konference pořádané u příležitosti 160. výročí založení VŠB-TU Ostrava*. [CD ROM]. Ostrava: VŠB-TU Ostrava.
- [15] Kaňa, R., 2014. Přínos EU k zajišťování bezpečnosti a míru ve světě. In: L. Fojtíková et al., eds. *Postavení Evropské unie v podmínkách globalizované světové ekonomiky*. Ostrava: VŠB-TU Ostrava, pp. 271-299.
- [16] Kaňa, R. and M. Mynarzová, 2012. Interoperability between EU Countries in the Security Area. In: *International Conference on European Integration. Proceedings of the 1st International Conference on European Integration*. Ostrava: VŠB-TU Ostrava, pp. 105-116.
- [17] Kaňa, R. and M. Mynarzová, 2014. European Union's Contribution to Global Security. In: *International Conference on European Integration 2014. Proceedings of the 2nd International Conference on European Integration 2014*. Ostrava: VŠB-TU Ostrava, pp. 310-318.
- [18] Liberti, F., 2011. *Defence spending in Europe: Can we do better without spending more?* [online]. [2014-06-05]. Available from: http://www.notre-europe.eu/media/policy46_fliberti_en.pdf?pdf=ok.
- [19] Matějka, Z., 2005. Evropská unie a její bezpečnostní politika. In: ORT, A. et al. *Bezpečnost Evropy a Česká republika*. Praha: Professional Publishing.
- [20] Merlingen, M., 2012. *EU Security Policy. What it is, how it works, why it matters*. London: Lynne Reiner Publishers.
- [21] NATO Press Release. *An Alliance for the 21st Century*. [online]. [2014-06-02]. Available from: <http://www.nato.int/docu/pr/1999/p99-064e.htm>.
- [22] Navrátil, B., R. Kaňa and B. Zlý, 2012. *Evropská unie a integrační procesy. Terminologický slovník (aktualizovaný po Lisabonské smlouvě)*. Ostrava: VŠB-TU Ostrava.
- [23] Pikna, B., 2014. *Bezpečnostní politika Evropské unie (na pozadí bezpečnosti globální)*. [online]. [2014-06-05]. Available from: http://www.polac.cz/eu/bp_eu.pdf.
- [24] Staab, A., 2011. *The European Union Explained: Institutions, Actors, Global Impact*. Bloomington: Indiana University Press.
- [25] Svoboda, P., 2010. *Právo vnějších vztahů EU*. Praha: C. H. Beck.
- [26] Tuček, F., 2013. *Kdo zajistí evropskou bezpečnost?* [online]. [2014-06-02]. Available from: <http://www.revuepolitika.cz/clanky/1865/kdo-zajisti-evropskou-bezpecnost>.
- [27] Úřad vlády ČR, 2009. *Lisabonská smlouva*. Praha: Odbor informování o evropských záležitostech.

BUSINNES CYCLE SYNCHRONIZATION IN EUROZONE MEMBER STATES AND IN SELECTED POTENTIAL MONETARY UNIONS

Stanislav Kappel

*VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: stanislav.kappel@vsb.cz*

Abstract

Synchronization or at least similarity of business cycle is one of the main conditions for successful implementation and functioning of monetary union. The extent of synchronization of national business cycles is an indicator for gauging whether countries are ready to adopt a common currency. The aim of this article is to evaluate synchronicity of business cycles of Eurozone member states and selected potential monetary unions – MERCOSUR (Argentina, Brazil, Paraguay, Uruguay and Venezuela), NAFTA (Canada, Mexico and the United States) and Australia with New Zealand. The analysis is based on correlations of cyclical component of GDP, output gaps synchronicity calculation, and measuring the similarity of output gaps amplitude. The results indicate a high degree of business cycles alignment between states of the Eurozone (with some exceptions) and states of NAFTA and a lower degree of business cycles alignment between states of MERCOSUR and Australia with New Zealand.

Keywords

Business Cycle, Monetary Systems, Monetary Union, Economic Integration.

JEL Classification

E32, E42, F02, F36.

1 Introduction

It is not easy to make a decision which country is an appropriate candidate for joining or creation of a monetary union. On the one hand, the membership in a monetary union has some advantages (i.e. it reduces cost of transaction or elimination of exchange rate risk), but on the other hand, the membership has certain disadvantages of course, too (probably, a loss of autonomy monetary policy is the greatest). The Optimum Currency Area (OCA) theory is one of the instruments for quantification of costs and benefits for a membership in the monetary union.

Synchronization or at least similarity of a business cycle is one of the main conditions for successful implementation and functioning of a monetary union. With increasing synchronization of business cycle, a probability of occurrence of demand or supply shocks, which are asymmetric, decreases. Hence the effectiveness of one central bank in monetary union increases.

The aim of this article is to evaluate synchronicity of business cycles of Eurozone member states and selected potential monetary unions – MERCOSUR (Argentina, Brazil, Paraguay, Uruguay and Venezuela), NAFTA (Canada, Mexico and the United States of America) and Australia with New Zealand. For this aim correlation analysis, index synchronicity and index similarity is used.

The paper is organized as follows: the first chapter deals with an introduction. In chapter two, there are presented some remarks about the OCA theory and business cycle synchronization research. In chapter three, the data, countries, period and methods used in this paper are described. Chapter four concerns with the results and a conclusion is seen in chapter five.

2 Theoretical and empirical approaches

The basic approach for researching a monetary union is the Optimum Currency Area theory (OCA theory). A research of the optimum currency area has begun in sixties in so called traditional versions OCA. In this decade, well-known papers were published, Mundell (1961), McKinnon (1963) and Kenen (1969). Mudell (1961) researches an adaptation of a country or a region in the case of external imbalance. He defines the optimum currency area as an area with internal mobility and external

immobility of production factors (especially labour) and existence of fixed exchange rate between members.

2.1 Optimum currency theory and business cycle synchronization

According to Mundell (1961), the world is not the optimum currency area and therefore flexible exchange rate between some regions or states must exist. Thanks to the flexible exchange rate, the adaptation in the case of an asymmetric shock can be reached. McKinnon (1963) extends the OCA theory. He adds the next criterion, the degree of economic openness. It is defined as a proportion of tradable and non-tradable goods. A flexible exchange rate is appropriate for close economy and fixed exchange rate for open economy. Third criterion is the diversification in production and consumption (Kenen, 1969). The fixed exchange rate is more appropriate for economy with diversion production, because this economy reacts to asymmetric shocks better. Other criterions (Mongelli, 2002) are: price and wage flexibility, mobility factors including labour, financial market integration, similarities of inflation rates, fiscal integration, political integration, similarities of supplies and demand shocks and business cycles synchronization.

In economic theory, there are two basic approaches for business cycles in the frame of OCA theory. The first approach is based on Frankel and Rose (1996); according to them the correlation of business cycles depends on its mutual trade. If two countries have mutual trade, it will tend to a correlation of business cycles more. To accept common currency is suitable for both counties, because this has positive influence for mutual trade. The second approach is represented especially by Krugman (1993); he argues that business cycles could be idiosyncratic after entering into a monetary union. It is based on the theory of specialization. Countries have started specializing after entering the monetary union because of comparative advantages. It can tend to divergence of business cycles.

One of the approaches, how business cycle synchronization is researched, is due to some indexes. For example, Altavilla (2004) computes concordance index and correlation of business cycle for Germany, France, Italy, Spain, Belgium, Great Britain, Eurozone and USA from 1980Q1 to 2002Q4. Eurozone states reach the highest degree alignment of business cycles, especially Germany, France and Belgium. Wynne and Koo (2000) compare correlation of cyclical components of GDP, inflation and unemployment among EU15 and among 12 US monetary districts from 1950 to 1992. US monetary districts are more synchronized than EU 15.

3 Methods and data

Three methods are used for evaluating business cycle synchronization. Data are adjusted seasonally, logarithms and cyclical component of GDP are obtained due to the Hodrick-Prescott filter. Calculation of the cyclical component is based on Lucas' conception of business cycle¹.

The first method is correlation. Correlation between two variables is a measure how well the variables are related. The most widely used technique is a Pearson correlation coefficient. The Pearson correlation coefficient (r_{xy}) is formally expressed as:

$$r_{xy} = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2 \sum_{i=1}^n (y_i - \bar{y})^2}} \quad (1)$$

A synchronicity index is the second used method. The synchronicity index used in this paper is based on papers Rozmahel and Najman (2010) and Harding and Pagan (2006) and it is expressed as follow:

¹ It means fluctuation of macroeconomic variable around its trend, see Lucas (1977).

$$I_{ij} = \frac{1}{T} \sum_{t=1}^T [S_{it}S_{jt} + (1 - S_{it})(1 - S_{jt})], \quad (2)$$

where S_{it} denotes an output gap of country i at time t and S_{jt} an output gap country j at time t . Time series must be converted into a binary series to calculate this index. The positive output gap has a value of 1 and the negative output gap has a value of 0. The synchronicity index indicates how many percentages two countries have, its output gap above or under their potential product at same time².

A similarity index is the least used method. This index takes into account distance output gaps of two countries. So the index works with differences of the magnitude of cycles. The similarity index has following specification (Mink, Jacobs and de Haan; 2007):

$$\gamma(t) = 1 - \frac{\sum_{i=1}^n |g_i(t) - g_r(t)|}{\sum_{i=1}^n |g_i(t)|}, \quad (3)$$

where $g_i(t)$ denotes an output gap of country i in time t and $g_r(t)$ an output gap of reference country r in time t . A higher index indicates a higher level of similarity of business cycles. In this paper, the similarity index is computed towards the economically strongest country. In Eurozone, there is Germany, Brazil is in MERCOSUR, the USA in NAFTA and in the case Australia with New Zealand, the reference country is Australia.

Data are obtained from Eurostat for Eurozone countries, for NAFTA countries, Australia and New Zealand from OECD database and for MERCOSUR countries from CEPALSTAT database (Economic Commission for Latin America and the Caribbean, United Nations). The research period is based on quarter observation from the first quarter 1995 to the fourth quarter 2013. For Greece data are available only from the first quarter 2000 to the first quarter 2001, for Malta from the first quarter 2000, for Ireland from the first quarter 1997 to the third quarter 2013, for Portugal to the third quarter 2013, for Uruguay from the first quarter 2005, for Venezuela from the first quarter 2013 to the third quarter 2013 and for Argentina to the third quarter 2013.

4 Results

Empirical results for Eurozone and potential monetary union in order MERCOSUR, NAFTA and Australia and New Zealand are introduced in this section. In each section, there are computed standard deviations (SD) for a particular country, than correlation, the synchronicity index and the similarity index.

4.1 Eurozone

Eurozone is the best known monetary union. Eurozone was established in 1999, but the predecessor was European Monetary System, established in 1979. Basic components were Exchange Rate mechanism (ERM) European Currency Unit (ECU) and credit mechanisms (more see e.g. Dėdek, 2008).

At the moment, Eurozone has eighteen members. There are: Austria (1999), Belgium (1999), Cyprus (2008), Estonia (2011), Finland (1999), France (1999), Germany (1999), Greece (2001), Ireland (1999), Italy (1999), Latvia (2014), Luxemburg (1999), Malta (2008), Netherlands (1999), Portugal (1999), Slovakia (2009), Slovenia (2007) and Spain (1999)³.

In Table 1, there standard deviation of cyclical components if GDP for Eurozone states is introduced.

² Next modification is a concordance index. See for example Rozmahel and Najman (2010).

³In parentheses are introduced entrances to Eurozone.

Table 1. Standard deviation of cyclical components of GDP Eurozone states

Country	AT	BE	CY	EE	FI	FR	DE	EL	IE
SD	0.0157	0.0132	0.0209	0.0584	0.0241	0.0118	0.0158	0.0219	0.0347
Country	IT	LV	LU	MT	NL	PT	SL	ES	SK
SD	0.0182	0.0825	0.0358	0.0202	0.0167	0.0132	0.0241	0.0158	0.0401

Source: author's calculations.

France, Belgium, Austria, German and Spain have low levels of standard deviation. It means smaller fluctuation of cyclical component of GDP. On contrary, Latvia, Slovakia or Estonia have high levels. For business cycle synchronization the standard deviation should be the same or at least very similar. In next Table 2 correlations are introduced.

Table 2. Correlation of cyclical components of GDP between Eurozone states

	AT	BE	CY	EE	FI	FR	DE	EL	IE	IT	LT	LU	MT	NL	PT	SI	ES	SK
AT	1																	
BE	0.90	1																
	(0.00)																	
CY	0.61	0.63	1															
	(0.00)	(0.00)																
EE	0.55	0.39	0.24	1														
	(0.00)	(0.00)	(0.04)															
FI	0.81	0.82	0.66	0.63	1													
	(0.00)	(0.00)	(0.00)	(0.00)														
FR	0.95	0.88	0.61	0.64	0.85	1												
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)													
DE	0.88	0.84	0.49	0.58	0.85	0.90	1											
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)												
EL	0.38	0.32	0.30	0.59	0.43	0.47	0.35	1										
	(0.01)	(0.03)	(0.05)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)										
IE	0.72	0.66	0.29	0.80	0.71	0.75	0.70	0.54	1									
	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)										
IT	0.22	0.09	0.12	0.71	0.24	0.35	0.27	0.45	0.59	1								
	(0.06)	(0.45)	(0.32)	(0.00)	(0.04)	(0.00)	(0.02)	(0.00)	(0.00)									
LT	0.66	0.55	0.48	0.83	0.77	0.71	0.61	0.62	0.77	0.46	1							
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)								
LU	0.82	0.78	0.37	0.42	0.61	0.77	0.75	0.31	0.67	0.15	0.46	1						
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.04)	(0.00)	(0.2)	(0.00)						
MT	0.52	0.48	0.48	0.38	0.51	0.50	0.52	-0.05	0.32	0.46	0.48	0.38	1					
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.73)	(0.02)	(0.00)	(0.00)	(0.00)					
NL	0.84	0.79	0.65	0.41	0.82	0.84	0.82	0.34	0.61	0.14	0.66	0.63	0.65	1				
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.00)	(0.23)	(0.00)	(0.00)	(0.00)					
PT	0.56	0.60	0.53	0.22	0.57	0.56	0.60	0.10	0.31	0.17	0.43	0.49	0.66	0.65	1			
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.51)	(0.01)	(0.14)	(0.00)	(0.00)	(0.00)	(0.00)				
SI	0.57	0.51	0.51	0.59	0.75	0.62	0.64	0.60	0.49	0.23	0.73	0.34	0.58	0.66	0.61	1		
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.05)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)			
ES	0.79	0.68	0.48	0.66	0.65	0.86	0.71	0.63	0.72	0.43	0.68	0.66	0.49	0.75	0.49	0.66	1	
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)		
SK	0.18	0.18	0.33	0.62	0.42	0.30	0.22	0.66	0.33	0.46	0.63	-0.03	0.38	0.25	0.20	0.58	0.40	1
	(0.12)	(0.12)	(0.00)	(0.00)	(0.00)	(0.01)	(0.05)	(0.00)	(0.01)	(0.00)	(0.00)	(0.81)	(0.00)	(0.03)	(0.08)	(0.00)	(0.00)	

Note: levels of significance in parentheses, bold figures are correlation equal or higher than 0.80.

Source: author's calculations.

The best values have the states which adopted euro in 1999 and especially so called “core” states in Eurozone – Germany, Austria, Belgium, Netherlands, Luxemburg, France or Finland. Lower values have the states so called “periphery” states and states which adopted the euro later. In the case

of Italy and Slovakia statistic signification is not always confirmed. In the rest countries, statistic signification is confirmed almost everywhere. The table 3 shows results for synchronicity index.

Table 3. Synchronicity index between cyclical components of GDP Eurozone states

	AT	BE	CY	EE	FI	FR	DE	EL	IE	IT	LT	LU	MT	NL	PT	SI	ES	SK
AT	1																	
BE	0.83	1																
CY	0.78	0.79	1															
EE	0.58	0.50	0.54	1														
FI	0.80	0.74	0.84	0.57	1													
FR	0.92	0.80	0.78	0.61	0.86	1												
DE	0.86	0.74	0.76	0.59	0.87	0.91	1											
EL	0.56	0.56	0.56	0.60	0.51	0.60	0.53	1										
IE	0.75	0.73	0.63	0.69	0.70	0.75	0.78	0.58	1									
IT	0.71	0.68	0.59	0.76	0.70	0.76	0.70	0.60	0.64	1								
LT	0.67	0.54	0.67	0.74	0.70	0.68	0.70	0.62	0.71	0.78	1							
LU	0.78	0.76	0.68	0.54	0.61	0.75	0.74	0.58	0.69	0.57	0.57	1						
MT	0.68	0.70	0.70	0.59	0.71	0.75	0.71	0.38	0.62	0.70	0.64	0.68	1					
NL	0.83	0.76	0.79	0.49	0.90	0.88	0.87	0.53	0.55	0.70	0.67	0.68	0.73	1				
PT	0.72	0.71	0.73	0.44	0.73	0.72	0.75	0.44	0.61	0.59	0.63	0.72	0.86	0.76	1			
SI	0.63	0.57	0.64	0.55	0.73	0.63	0.70	0.53	0.54	0.62	0.57	0.62	0.70	0.70	0.71	1		
ES	0.72	0.76	0.68	0.65	0.68	0.78	0.71	0.64	0.76	0.70	0.65	0.68	0.66	0.73	0.63	0.59	1	
SK	0.51	0.50	0.59	0.72	0.61	0.57	0.55	0.71	0.58	0.75	0.72	0.50	0.63	0.61	0.55	0.68	0.72	1

Note: bold figures are correlation equal or higher than 0.80.

Source: author's calculations.

Again, the previous results are confirmed. The highest values have countries which have adopted euro at first. From these countries there are countries of the “core”, especially Germany, Austria, Belgium, France or Finland. Table 4 shows the last index, similarity index. It is computed in relation to Germany as the economically strongest country in Eurozone.

Table 4. Similarity index of cyclical components of GDP between Germany and other states of Eurozone

Country	AT	BE	CY	EE	FI	FR	EL	IE	IT
Value	0.54	0.37	0.14	0.08	0.42	0.41	0.07	0.26	-0.02
Rank	1.	5.	10.	11. - 12.	3.	4.	13. - 14.	7.	16. - 17.
Country	LT	LU	MT	NL	PT	SI	ES	SK	
Value	0.07	0.27	0.06	0.46	0.08	0.16	0.23	-0.02	
Rank	13. - 14.	6.	15.	2.	11. - 12.	9.	8.	16. - 17.	

Source: author's calculations.

Austria, Finland and France have the highest similarity indexes in relation to Germany. In opposite, Slovakia and Italy have achieved the lowest indexes. In these countries, the similarity index is even negative.

4.2 MERCOSUR

In this chapter results for MERCOSUR countries are introduced. MERCOSUR (Mercado Comúndel Sur; Common Market of the South) was created in 1991 and it is a trade agreement between Argentina, Brazil Paraguay, Uruguay and Venezuela since 2012. Grigoli (2012) shows, that MERCOSUR was established as free trade zone at first. Customs union is MERCOSUR since 2006. Numa (2011) argues that MERCOSUR states are not ready for creation common currency at this time because the conditions for accepting common currency are not fulfilled.

Table 5 shows standard deviations, correlation, index synchronicity and index similarity these countries.

Table 5. Standard deviation, correlation, synchronicity and similarity indexes between MERCOSUR states

SD		Correlation					Synchronicity					Similarity	
Country	Value	ARG	BRA	PAR	URG	VEN	ARG	BRA	PAR	URG	VEN	Country	Value
ARG	0.0402	ARG	1				ARG	1				ARG	0.02
BRA	0.0202	BRA	0.26 (0.02)	1			BRA	0.57	1			PAR	0.09
PAR	0.0287	PAR	0.47 (0.00)	0.49 (0.00)	1		PAR	0.65	0.66	1		URG	-0.64
URG	0.0141	URG	0.58 (0.00)	0.48 (0.00)	0.50 (0.00)	1	URG	0.71	0.61	0.67	1	VEN	-0.09
VEN	0.0554	VEN	0.48 (0.00)	0.08 (0.56)	0.12 (0.33)	-0.06 (0.72)	1	VEN	0.65	0.48	0.46	0.51	1

Note: levels of significance in parentheses.

Source: author's calculations.

A standard deviation is high in the case of Argentina and Venezuela. It means that volatility of business cycle is high in these two countries. Correlation is from 0.4 to 0.6. An exception is the correlation between Venezuela and Brazil, Paraguay and Uruguay and the correlation Argentina with Brazil. A level of significance is higher than 10 % in the case of Venezuela. Synchronicity index is from 0.48 to 0.71. The lowest values achieve indexes in the case of Venezuela again. In the other cases, a synchronicity index has approximately from 0.6 to 0.7. Paraguay and Argentina have positive a similarity index in relation to Brazil. However, the indexes are very low.

We can say, according to Table 5, that the worst results are in the case of Venezuela. It can be caused by later attachment to MERCOSUR. To conclude, on the base of these results MERCOSUR is not a good candidate for creating a monetary union at this time.

4.3 NAFTA

NAFTA (North American Free Trade Area) is an economic group of Canada, USA and Mexico. This free trade agreement was created in 1994. Chriszt (2000) shows two basic approaches for creating a monetary union NAFTA. The first is an acceptance of US dollar by Canada and Mexico (dollarization). The second is a creation of a new common currency. It speaks about Amero as the name of the new currency. Chriszt (2000) argues that NAFTA is ready for creating a monetary union on the base of OCA theory. But Canada is prepared more than Mexico to join to the USA. In Table 6 empirical results for NAFTA are showed.

Table 6. Standard deviation, correlation, synchronicity and similarity indexes between NAFTA states

SD		Correlation			Synchronicity			Similarity	
Country	Value	CAN	MEX	USA	CAN	MEX	USA	Country	Value
CAN	0.0109	CAN	1		CAN	1		CAN	0.30
MEX	0.0194	MEX	0.74 (0.00)	1	MEX	0.78	1	MEX	0.39
USA	0.0122	USA	0.82 (0.00)	0.81 (0.00)	1	USA	0.87	0.78	1

Note: levels of significance in parentheses.

Source: author's calculations.

A standard deviation is the highest in the case of Mexico. Mexico's business cycle is the most volatile from these countries. The correlation between countries is high. The highest is with the USA. A correlation between Canada and Mexico is lower but still relatively high. A synchronicity index is high, too. The highest is between the USA and Canada. A similarity index is higher in Mexico in relation to USA than Canada in relation to USA.

According to these results, Canada, Mexico and the USA are relatively good candidates for creating a monetary union. Their synchronization of business cycle is relatively high and in some cases, the results are better than in the case of Eurozone.

4.4 Australia and New Zealand

Australia and New Zealand are the final economic area. Australia and New Zealand create together CER (Closer Economic Relation), sometimes called as ANZCERTA (Australia and New Zealand Closer Economic Relations Trade Agreement). This free trade agreement was established in 1983. Grimes (2000) considers three options for New Zealand: retaining its own currency, accepting the Australian dollar or creating a new currency together with Australia (it speaks about ANZAC dollar frequently). In Table 7, results are introduced for Australia and New Zealand.

Table 7. Standard deviation, correlation, synchronicity and similarity indexes between Australia and New Zealand

SD		Correlation		Synchronicity		Similarity	
Country	Value	AUS	NZ	AUS	NZ	Country	Value
AUS	0.0063	AUS	1	AUS	1	NZ	-0.002
NZ	0.0108	NZ	0.32 (0.0055)	NZ	0.64		

Note: level of significance in parentheses.

Source: author's calculations.

A standard deviation is higher in New Zealand. New Zealand's business cycle is more volatile than Australia's business cycle. A correlation is relatively low; 0.32. A synchronicity index is 0.64 and a similarity index is -0.002. These results are not so high for creating a monetary union in comparison with the previous economic areas (especially in comparison with Eurozone and NAFTA).

5 Conclusion

The aim of this paper was to evaluate synchronicity of business cycles of Eurozone member states and selected potential monetary unions – MERCOSUR, NAFTA and Australia with New Zealand. The analysis is based on correlations of cyclical components of GDP, output gaps synchronicity calculation, and measuring the similarity of output gaps amplitude. The theory of Frankel and Rose (1996) was confirmed, because the Eurozone has the highest level of business cycles synchronization, especially the states which adopted the Euro firstly. NAFTA is another economic zone with a higher level of synchronization. According to the results, NAFTA is an appropriate candidate for creating a monetary union.

A lower level of business cycles synchronization was reached in the case of MERCOSUR and Australia with New Zealand. According to these results MERCOSUR and Australia with New Zealand are less appropriate candidates for creating a monetary union. They do not fulfil this criterion ex ante but with creating of monetary union there could be fulfilled this criterion ex post because with increasing mutual transactions, alignment of business cycle could be subsequently increased.

In the countries of Eurozone, there was confirmed “core” and “periphery”. In countries of the “core” (especially Germany, Netherlands, Austria, Finland and France) there was reached the highest alignment of business cycles. On contrary, in the countries of the “periphery” (Greece, Italy) and in the countries which entered to Eurozone later (especially Slovakia), a lower alignment of business cycles was reached.

However, the criterion of business cycle synchronization is only one of the criterions of the OCA theory. It is very useful but not the only criterion. To find if some potential monetary union is appropriate for creating a real monetary union, we must consider other criterions of the theory optimum currency area.

6 Acknowledgement

This paper was created under the terms of the project SGS VŠB-TUO SP2014/115 *Assessing the Macroeconomic Impacts of Unconventional Monetary Policy Measures of Selected Central Banks*.

References

- [1] Altavilla, C., 2004. Do EMU Members Share the Same Business Cycle? *Journal of Common Market Studies*, vol. 42, issue 7, pp. 869-896.
- [2] Criszt, M., 2000. Perspective in a Potential North Monetary Union. *Federal Reserve Bank of Atlanta. Economic Review*, vol. 2000, issue 4, pp. 29-38.
- [3] Dědek, O., 2008. Historie evropské měnové integrace. Od národních měn k euru, Praha: C. H. Beck.
- [4] Frankel, J. A. and A. K. Rose, 1996. *The Endogeneity of the Optimum Currency Area Criteria*. National Bureau of Economic Research Working Paper No. 5700.
- [5] Grigoli, F., 2012. The Impact of Trade Integration on Business Cycle Synchronization for Mercosur Countries. *European Journal of Comparative Economics*, vol. 9, issue 1, pp. 103-131.
- [6] Grimes, A., 2000. Case for a World Currency: Is a ANZAC Dollar a Logical Step? *Victoria Economic Commentaries*, vol. 17, issue 2, pp. 17-26.
- [7] Harding, D. and A. Pagan, 2006. Synchronization of Cycles. *Journal of Econometrics*, vol. 32, issue 1, pp. 59-79.
- [8] ECLAC. *CEPALSTAT. Database and Statistical Publications 2014*. [online]. [2013-04-20]. Available from: http://estadisticas.cepal.org/cepalstat/WEB_CEPALSTAT/estadisticasIndicadores.asp?idioma=i.
- [9] Eurostat. *Eurostat Statistics Database 2014*. [online]. [2013-04-28]. Available from: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database.
- [10] Kenen, P. B., 1969. The Theory of Optimum Currency Areas: An Eclectic View. In: R. A. Mundell and A. K. Swoboda, eds. *Monetary Problems of the International Economy*. Chicago University Press, pp. 41-60.
- [11] Krugman, P., 1993. Lesson of Massachusetts for EMU. In: F. Torres and F. Giavazzi, eds. *Adjustment and Growth in the European Monetary Union*. Cambridge: Cambridge University Press, pp. 241-261.
- [12] Lucas, R. E., 1977. Understanding Business Cycles. *Carnegie-Rochester Conference Series on Public Policy*, vol. 5, pp. 7-26.
- [13] McKinnon, R. I., 1963. Optimum Currency Area. *American Economic Review*, vol. 53, issue 4, pp. 717-725.
- [14] Mink, M., J. Jacobs and J. de Haan, 2007. *Measuring Synchronicity and Co-movement of Business Cycles with an Application to the Euro Area*. CESifo Working Paper Series No. 2112.
- [15] Mongelli, F. P., 2002. “New” Views on the Optimum Currency Area Theory: What is EMU Telling us? European Central Bank Working Paper no. 138.
- [16] Mundel, R. A., 1961. Theory of Optimum Currency Areas. *American Economic Review*, vol. 51, issue 4, pp. 657-665.

- [17] Numa, M., 2011. The Feasibility of a Monetary Union in MERCOSUR. *Michigan Journal of Business*, vol. 4, issue 2, pp. 11-59.
- [18] OECD. *OECD StatExtracts 2014*. [online]. [2014-05-20]. Available from: <http://stats.oecd.org/>.
- [19] Rozmahel, P. and N. Najman, 2010. Index hospodářského cyklu České republiky a vybraných zemí střední a východní Evropy s eurozónou. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunenses*, vol. 58, issue 6, pp. 407-414.
- [20] Wynne, M. A. and J. Koo, 2000. Business Cycle under Monetary Union: A Comparision of the EU and US. *Economica*, vol. 67, issue 267, pp. 347-374.

ACCEPTABLE INDICATORS OF INTELLECTUAL PROPERTY PROTECTION AND THEIR COVARIANCE IN THE CZECH REPUBLIC

Milan Kaštan

*VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: milan.kastan@vsb.cz*

Abstract

Economic impacts of Intellectual Property Rights are difficult to assess. Intensity of intellectual property rights (IPR) protection can be measured by range of indicators. Selection of appropriate indicator is one of many impediments related to econometric analysis of this phenomenon. Aim of this article is to present various indicators of intensity of IPR protection and to identify differences and similarities amongst them. Those are identified on the basis of correlation coefficients. Correlations among indicators are assessed on the nationwide, industrial and sectorial level. The development in particular sectors and industries and their covariance is also assessed. Main data base is 1993-2013, annual data are used, and some indicators are not available for the whole observed period. According to results of correlation analysis it is not possible to recommend which is the best indicator for empirical analysis of intensity of IPR protection. We recommend to construct multi-criterion indicator which is consisted of legislature based, instrument based, value based, and other indicators which are presented in this study.

Keywords

Intellectual Property Rights, Patents, Utility Patents, Intangible Assets.

JEL Classification

O34, C49.

1 Introduction

Intellectual property rights (IPR) have a broad economic consequences. These consequences are of microeconomic and macroeconomic nature. Among the first mentioned can be included Lanjouw and Schankerman (2001) study of economic incentives for settling intellectual property disputes by judicial and extrajudicial way. Lamoreaux and Sokoloff (2002) deals with intermediaries in the market of technologies. The relation between IPR protection and economic prosperity is the core subject in the macroeconomic studies. For example Branstetter, Fisman and Foley (2005), or Teece (1977) are interested in international transfers of technologies caused by the increase of IPR protection in receiver countries. Boldrin and Levine (2008) provides range of empirical studies focused on the various economic impacts of IPR.

The scope of intellectual property protection is phenomena which is often discussed in theory but difficult to evaluate for purposes of empirical analysis. Evaluation of macroeconomic phenomenon is associated with simplification. Different indicators of one phenomenon might simplify reality in a different ways. Hence empirical analysis might be biased by the choice of indicator. Which is also the case of empirical studies of economic consequences of intellectual property protection.

The aim of this article is to present various indicators of intensity of intellectual property protection and to identify differences and similarities amongst them. The research was carried out on real data on the Czech Republic during last two decades. The structure of the article is as follows. Methodological principles are described in next part, which is followed by introduction of various indicators and their classification. Fourth part is devoted to results, and fifth part concludes. The article concerns industrial property rather than copyright.

2 Methodology

Possible indicators were identified by the literature exploration. Total number of 13 indicators were divided into four groups according to its nature. This main groups are (i) legislature based, (ii) instrument based (iii) value based, and (iv) other indicators. Indicators are described in the third part of this paper. Indicators vary by the length of time for which data are available for Czech Republic.

The earliest data used refers to 1995, the latest to 2013¹. Data are always examined for the longest available period (which is limited to the shortest data series in observed pool or pair).

Similarities and differences among examined indicators are identified using correlation analysis. Correlation coefficients are computed for pairs of indicators within and across the four main groups. Computations are done for unadjusted values of indicators, also for logarithmic values and their differences. These data transformation were performed in order to cover possible range of standard data transformation.

All of examined indicators describe the Czech economy as the whole, but some of them (as specified in part 3 of this article) may also describe only various parts of the whole. Three types of classification of the economy are used. The first is International Patent Classification (IPC), which is based upon Strasbourg Agreement (WIPO 1979). Another two classifications are embedded in System of National Accounts (United Nations 1993, Eurostat 1996), they are statistical classification of economic activities (NACE) and the classification of institutional sectors.

A large number of surveyed data pairs results in many correlation coefficients. Only those coefficients which absolute value is greater than 0,6 and statistical significance is at least 95 % are considered to be relevant (unless otherwise stated). The number of indicators which are mutually correlated is assessed; also the indicators which do not correlate to others (or correlate to them least) are identified.

Results of correlation analysis can be divided into three parts. First part is focused on correlation of coefficients within group, second part deals with correlations across groups of indicators. Third part is concerned with correlation of specific parts of economy (according to the three above mentioned classifications) to the economy as a whole. The latter involves only correlation within one indicator.

3 Indicators

There are different ways of expressing the scope of protection of intellectual property rights. Indicators may be classified according to its nature into (i) legislature based, (ii) instrument based, (iii) value based indicators, and (iv) other indicators. The following subsection of the text are devoted to particular groups. In each subchapter are presented values of indicators for the Czech Republic. First and fourth group indicators are dimensionless numbers, therefore they are presented in relation with the values in other countries.

3.1 First group – legislature based indicators

Ginarte and Park (1997) introduced multi-criterion legislature based index, their cross-national study was later expanded by Park (2008) to 122 countries. Index examines whether the patentability of pharmaceuticals, chemicals, food, microorganisms, and other types of goods is available; whether the examined country participates in international treaties such as Paris convention or Patent cooperation treaty; other examined areas are duration of the protection, availability of enforcement mechanisms, and existence of restriction of patent rights such as compulsory licensing. Final score of above mentioned aspects is in the range from 0 to 5, where 5 is the highest possible protection.

Below presented Tab. 1 captures Park index values for Visegrad group countries, and for other countries which residents own substantial part of intellectual property rights validated for the Czech Republic. The higher is the value of the index, the stronger is the protection of intellectual property in rated country.

¹ Most of the data referring to year 2013 were not available by the end of the June 2014.

Table 1. Values of Park index for selected countries

	Country	Average 1960-1990	1995	2000	2005
<i>Visegrad group</i>	Czech Republic (CZ)	-	2,96	3,21	4,33
	Poland (PL)	1,38	3,46	3,92	4,21
	Slovak Republic (SK)	-	2,96	2,76	4,21
	Hungary (HU)	2,20	4,04	4,04	4,50
<i>Other substantial in the Czech Republic</i>	Switzerland (CH)	3,04	4,21	4,33	4,33
	France (FR)	3,29	4,54	4,67	4,67
	Germany (DE)	3,24	4,17	4,50	4,50
	Japan (JP)	2,93	4,42	4,67	4,67
	USA (US)	4,14	4,88	4,88	4,88
<i>Of above mentioned</i>	Mean	2,89	3,96	4,11	4,48
	Coefficient of variation	0,28	0,10	0,08	0,05
<i>Of all 122 countries</i>	Mean	1,80	2,58	3,05	3,34
	Coefficient of variation	0,45	0,42	0,33	0,27

Source: Park (2008) and own computation.

The Table 1 shows that in recent years there was a harmonization of the laws across all observed countries. The level of protection increased over time. Coefficient of variation among eight above mentioned countries is diminishing. Disadvantage of Park index is low frequency of data. There are only three observations available for the Czech Republic and therefore it is impossible to obtain statistically significant results of correlation analysis.

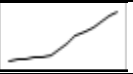
3.2 Second group – instrument based indicators

Instrument based indicators assess the extent of intellectual property protection on the basis of instruments that are validated and are in force in observed country. Patents, utility patents, and trademarks are territory based rights, so the inventor apply for the patent in desired markets (countries). The higher is the amount of patents granted (and valid) in a country, the more difficult is to avoid their infringement, and the stronger is protections of intellectual property rights considered. Numbers of valid instruments (patents, utility patents, etc.) can be obtained from statistic databases of patent and trademark offices. The scope of protection of intellectual property (measured by the number of valid patents) cannot be easily compared between countries (even in per capita or other relative terms). But the comparison over the time is possible.

Patents and utility models can be classified according to IPC into eight sections (A to H) – which is subject of analysis in part 4.3. There are another instruments which number granted or valid might serve as indicators of the scope IPR protection – registered trademarks, industrial design, etc. Trademarks are on the boundary of copyright and industrial property rights and are not covered in this study. Some basic facts about different types of IPR can be found in WIPO (2005).

Below presented Tab. 2. displays the numbers of patents and utility models valid and granted in the Czech Republic during 1995 – 2013 period. As we can see, the number of patents which are granted for the Czech Republic is steadily increasing as well as the number of patents validated for the same territory. The territorial structure of industrial property rights owners in the Czech Republic is described in more details in Kastan (2013).

Table 2. Instrument based indicators of intellectual property rights protection in the Czech Republic

Year	Patents granted	Utility models granted	Patens valid	Utility models valid
Mini chart				
1995	1 299	1 470	NA	NA
1996	1 287	1 152	NA	NA
1997	1 478	1 499	NA	NA
1998	1 451	1 185	NA	NA
1999	1 480	1 368	NA	NA
2000	1 611	1 156	7 789	6 550
2001	1 719	1 162	8 498	6 727
2002	1 803	1 044	9 231	6 808
2003	1 803	1 021	9 709	6 761
2004	1 616	1 104	9 807	6 663
2005	2 305	1 085	10 954	6 691
2006	3 318	1 021	13 178	6 616
2007	3 941	1 059	15 708	6 456
2008	4 792	1 046	19 597	6 410
2009	4 701	1 178	21 826	6 490
2010	4 604	1 194	23 409	6 579
2011	5 029	1 545	26 081	7 137
2012	5 329	1 609	28 864	7 765
2013	5 213	1 552	30 758	8 231

Source: own adaptation based upon CZSO (2014a).

3.3 Third group – value based indicators

The group of value based indicators is diverse, monetizing the scope of protection is the unifying element. Indicators belonging to this group are also derived from existing instruments of intellectual property rights protection. Unlike the previous group, their numbers are not important, but their value is, which raises the problem of determining the value. Indicators based upon national accounts methodology were selected for this research. This methodology also answers the question of evaluation of intangible assets.

Source of aggregated information are balance sheet accounts of the national accounts². The disadvantage of this aggregated information is, that they include values of patents together with other intangibles. The advantage is, that the information are provided on national, sectorial and industrial level. Assets listed in national accounts have following hierarchical structure (from left to right) which is in reduced form displayed in Table 3.

There are six value based indicators used in presented research:

- AN.112: Intangible fixed assets
- AN.22: Intangible non-produced assets
- Z1: percentage share of AN.112 to AN.11
- Z2: percentage share of AN.1122 to AN.11
- Z3: percentage share of sum of (AN.1121+AN.1123+AN.1129) to AN.11
- Z4: percentage share of AN.22 to AN.2

² Based on SNA 1993, ESA 1995 methodology.

Intangible fixed assets data are available at national economy level and also at NACE level. So AN.112, Z1, Z2, and Z3 are examined in greater detail with respect to this classification. Data related to intangible non-produced assets (AN.22, and Z4) are available at national economy level and also for particular institutional sectors.

Table 3. Hierarchical structure of assets with respect to intangible assets

Economic Assets	Non-financial assets (AN)	Produced assets (AN.1)	Tangible fixed assets (AN.11)		
			Fixed assets (AN.11)	Intangible fixed assets (AN.112)	Mineral exploration (AN.1121)
					Computer software (AN.1122)
					Entertainment, literary or artistic originals (AN.1123)
					Other intangible fixed assets (AN.1129)
					Inventories (AN.12)
		Valuables (AN.13)			
		Non-produced assets (AN.2)	Tangible non-produced assets (AN.21)		
			Intangible non-produced assets (AN.22)	Patented entities (AN.221)	
				Leases and other transferable contracts (AN.222)	
				Purchased goodwill (AN.223)	
				Other intangible non-produced assets (AN.229)	
	Monetary gold and special drawing rights (SDRs) (AF.1)				
	Financial assets and liabilities (AF)	Currency and deposits (AF.2)			
		Securities other than shares (AF.3)			
		Loans (AF.4)			
		Shares and other equity (AF.5)			
		Insurance technical reserves (AF.6)			
		Other accounts receivable/payable (AF.7)			

Note: codes in bracelets correspond to ESA 1995 and to national accounts database.

Source: own adaptation based upon Eurostat (1996).

Figure 1 displays development of above mentioned indicators at the Czech Republic level. It is obvious, that the nominal value of intangibles is increasing, but their share to other fixed assets is very low. Presented shares vary across industries and sectors (in Figure 1 is described the whole economy, not the parts). Highest share of intangible assets (Z1) can be recorded in NACE_J industry – Information and communication – it is above 10 % on average during observed time period.

The share of non-produced intangibles to all non-produced assets (Z4) also vary across the institutional sectors. The sector S.12 – Financial corporations – has a Z4 values close to 35 to 40. But the absolute values of AN.22 are dominant in the sector S.11 – Non-financial corporations. Cog in the figure might be the result of different method of intangible assets evaluation during periods when they are traded and during periods when they are not traded.

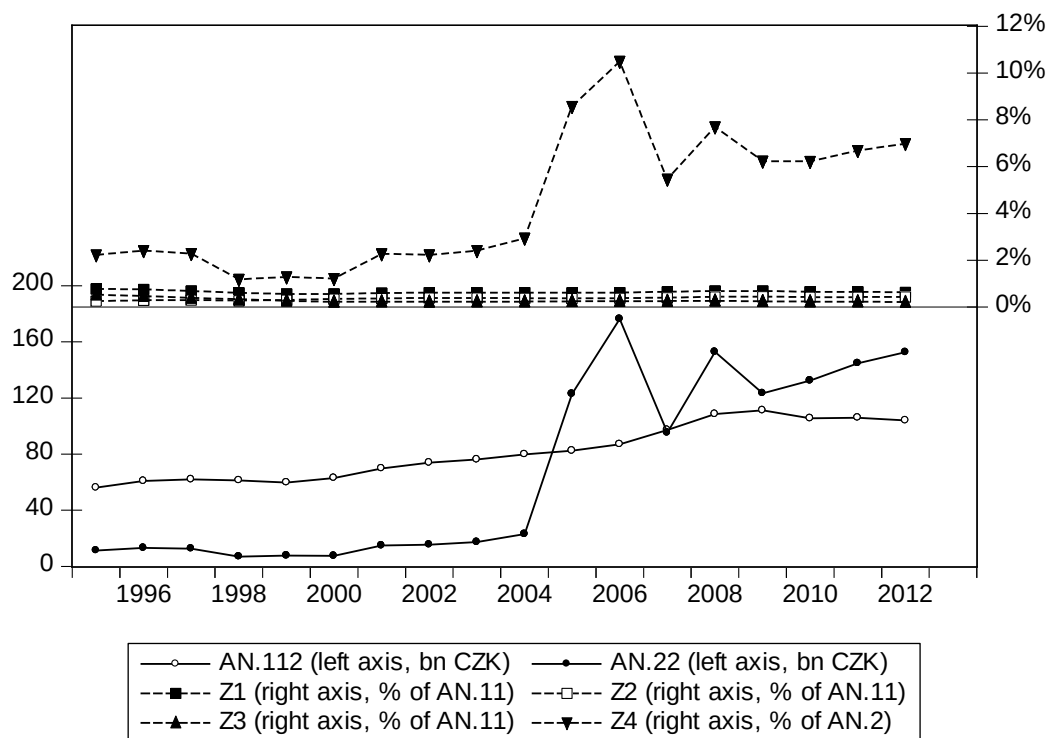


Figure 1. Value based indicators of the scope of IPR protection in the Czech Republic (Source: CZSO 2014b)

3.4 Fourth group - others

Last group of indicators of scope of protection of intellectual property rights is consisted of other indicators. They might be mixture of above mentioned, but also subjective based indicators. Worldwide investigation is done by World Economic Forum, where respondents are asked “In your country, how strong is the protection of intellectual property, including anti-counterfeiting measures? [1 = extremely weak; 7 = extremely strong]”³ (WEF 2013). WEF survey captures opinion of over 13 000 business leaders in 148 economies. Data are available since 2006 on yearly basis. There are two different WEF indicators – score and rank. Both of them were included in presented research.

Following Figure 2 represents the WEF score values for the Czech Republic and other countries (same group as in 3.1). The higher is the value, the stronger is the protection of IPR in the country. Comparing Table 1 and Figure 2 we can see that there are differences among indicators. At first, the trend in Figure 2 is not as obvious as in Table 1. And second, the convergence is not as high as in first case. But it is important to point out, that the observed periods do not overlap.

³ This questionnaire is a part of broader survey, where WEF evaluates competitiveness of countries.

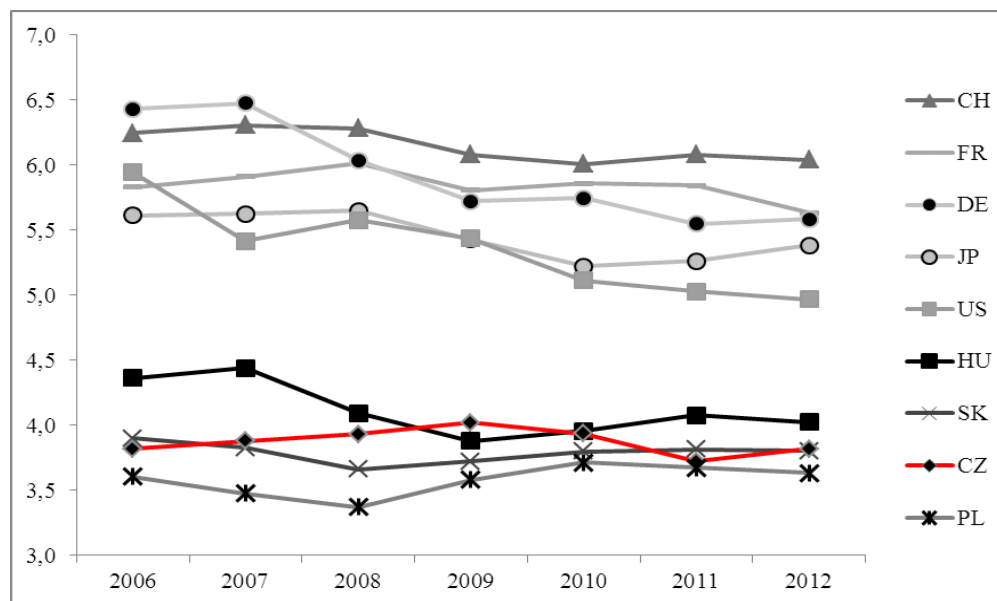


Figure 2. Indicators of intellectual property rights protection according to WEF (Source: WEF 2013, own adaptation)

4 Results

Presented results of correlation analysis are divided into three parts. First deals with correlations within groups of indicators, second deals with correlations across groups, and the third part is focused on correlations of particular parts of the Czech economy.

4.1 Correlation within groups

Following table displays correlation within groups of indicators. There is different number of indicators in each group. Correlations of one indicator to other indicators in the group are assessed.

Table 4. Correlations of indicators of IPR protection within groups

Group	Indicator	Statistically significant correlation within groups of indicators		
		Unadjusted value	Log(value)	D(log(value),1)
(i)	Park	<i>Not applicable due to insufficient number of observations</i>		
(ii)	Patents valid	3/3	3/3	1/3
	Utility models valid	2/3	3/3	0/3
	Patents granted	1/3	1/3	1/3
	Utility models granted	2/3	2/3	0/3
(iii)	AN.112	3/5 + 1/5	3/5 + 1/5	3/5
	AN.22	3/5	3/5	1/5
	Z1	1/5	1/5	2/5
	Z2	3/5 + 1/5	3/5 + 1/5	1/5
	Z3	1/5 + 2/5	1/5 + 2/5	2/5
	Z4	3/5	3/5	1/5
(iv)	WEF_Rank	0/1 + 1/1	0/1 + 1/1	0/1 + 1/1
	WEF_Score	0/1 + 1/1	0/1 + 1/1	0/1 + 1/1

Note: Each line of fraction(s) represents the number positive correlations / out of number of other indicators in group + number negative correlations detected / out of number of other indicators in group.

Source: own adaptation.

We can say, according to above mentioned table 4, that the correlations within groups of indicators are rather strong while considering unadjusted values and logarithm. Negative correlation in third group and fourth group are denoted after the + sign. Negative correlation between Z2 and Z3 is given

by the accounting principles. Negative correlation between WEF_Rank and WEF_Score also makes sense.

Correlations within groups are worse while taking into account differences of logarithm values (last column), especially within second group. Number of patents and utility models valid and granted is often used in empirical studies, therefore both should be considered. Indicators in third group are correlated only in subgroups of intangible assets (first subgroup is consisted of AN.112, Z1, Z2, and Z3, second subgroup is consisted of AN.22 and Z4).

4.2 Correlation across groups

Previous subchapter illustrated the intensity of correlation between indicators within groups, this part is focused on correlation across groups. In following table in each line there are listed those indicators which are correlated to the indicator in the first column of a line.

Table 5. Correlations of indicators of IPR protection across groups

Group	Statistically significant correlation across groups		
	Indicator	Unadjusted values and log(value)	D(log(value),1)
(i)	Park	<i>Not applicable due to insufficient number of observations</i>	
(ii)	Pat_valid	AN.112, AN.22, Z1, Z2, <i>WEF_Rank</i> , <u>Log(Z4)</u>	
	UM_valid	WEF_Rank, (-) Z3	
	Pat_granted	AN.112, AN.22, Z2, Z4	
	UM_granted	WEF_Rank	
(iii)	AN.112	Pat_valid, Pat_granted	
	AN.22	Pat_valid, Pat_granted	
	Z1	Pat_valid	
	Z2	Pat_valid, Pat_granted	
	Z3	(-) UM_valid	
	Z4	Pat_granted, <u>Log(Pat_valid)</u>	
(iv)	WEF_Rank	UM_valid, UM_granted, <i>Pat_valid</i>	
	WEF_Score		

Note: Correlations across groups are almost identical for unadjusted values and for logarithm of values, therefore they are presented in single column. *Italics* represents correlations between unadjusted values only, and underlined values represents correlations between logarithm values only.

Source: own adaptation.

The correlations across groups are quite often while considering unadjusted and logarithm values. The results are very similar; therefore they are put into the same column. The indicator is written in italics or underlined whenever correlations across groups differ.

If we examine rates of change of values (last column), then we can say, that the correlation across groups of indicators is rare. There is only one significant correlation which occurs between intangible non-produced assets (AN.22) and patent granted. If the empirical study works with the rate of change of indicator, then should be considered, that every indicator of the scope of IPR protection might give different results.

4.3 Correlation of particular parts

Correlation between particular parts of economy can be observed using indicators from second and third group. Patents granted and Utility models granted (second group of indicators) are available for sections of IPC. There are eight main sections of IPC. It was found out, that rates of changes of patent granted are correlated for four sections. These sections are A – Human necessities, B – Performing operations; Transporting, C – Chemistry; Metallurgy, and H – Electricity. Together they represent about 80 % of all patents granted each year. Considering utility models granted there are six out of eight sections which are strongly correlated to the whole (considering their rates of change). These

sections are A – Human necessities, B – Performing operations; Transporting, C – Chemistry; Metallurgy, E – Fixed Constructions, F – Mechanical Engineering; Lighting; Heating; Weapons; Blasting, and G – Physics. Utility models granted in those sections represents more than 90 % of all utility models granted in the Czech Republic each year.

Indicators within third group are available for main sections of NACE (AN.112, Z1, Z2, Z3) and for main institutional sectors (AN.22 and Z4). By examining of correlation among rates of change of value AN.112 were strong positive correlation of sections C - Manufacturing, H – Transportation and Storage, J – Information and Communication, and R – Arts, Entertainment and Recreation detected. Value of assets in these four out of twenty one sections creates more than half of all AN.112 assets in the Czech Republic.

Examining the Z1 (percentage shares of AN.112 to AN.11) correlations shows that share in sections A – Agriculture, Forestry and Fishing, and E – Water supply; Sewerage, Waste management and Remediation activities develop contrary to the share in whole economy. The correlation coefficients are negative and significant. Share of intangible fixed assets to all fixed assets owned by entities in sections B – Mining and Quarrying, I – Accommodation and Food Service Activities, J – Information and Communication, M – Professional, Scientific and Technical Activities, and S – Other Service Activities, are positively correlated to the whole economy. These five above mentioned sections represents also more than half of the value of intangible fixed assets in the Czech Republic.

While dividing the Czech economy into institutional sectors were strong correlations of $D(\log(AN.22),1)$ of sectors S.11 – Non-financial corporations and S.13 – General government sector, and negative correlation of the sector S.15 – Non-profit institutions serving households, to the whole economy detected. Also while examining the share of Intangible non-produced assets to all Non-produced assets (indicator Z4) were strong positive correlation of S.11, S.12 – Financial corporations and S.13 to the whole national economy detected.

5 Conclusion

This paper introduces thirteen different indicators of the scope of intellectual property rights protection. Those indicators are classified into four groups. Aim of the paper is to identify similarities and differences among indicators. Unadjusted values of indicators are quite often correlated within and across the groups, and also on the particular parts of economy according to IPC, NACE, and sectorial classifications. On the other hand, the correlations among rates of change of observed indicators are rather rare.

Empirical analysis of economic consequences of the scope of intellectual property rights protection should consider all relevant indicators, because their development was not correlated during observed period. Presented results might be an incentive to creation of multi-criterion indicator of the scope of IPR protection which will include all four approaches: legal based, instrument based, value based, and survey based, together.

References

- [1] Boldrin, M. and D. K. Levine, 2008. *Against Intellectual Monopoly*. Cambridge: Cambridge University Press.
- [2] Branstetter, L., R. Fisman and C. F. Foley, 2005. *Do Stronger Intellectual Property Rights Increase International Technology Transfer? Empirical Evidence From U.S. Firm-Level Data*. The National Bureau of Economic Research (USA) Working Paper No.11516.
- [3] CZSO, 2014a. *Patent statistics*. [online]. [2014-05-20]. Available from: http://www.czso.cz/csu/redakce.nsf/i/patentova_statistika.
- [4] CZSO, 2014b. *National accounts*. [online]. [2014-05-20]. Available from: <http://apl.czso.cz/pll/rocenka/rocenka.indexnu>.

- [5] Eurostat, 1996. *European System of Accounts*: ESA 1995.
- [6] Ginarte, J. C. and W. G. Park, 1997. Determinants of patent rights: a cross-national study. *Research Policy*, vol. 26, issue 3, pp. 283-301.
- [7] Kastan, 2013. Who Owns Patents that are Valid in the Czech Republic?. In: Z. Machova and N. Uhrova, eds. *Proceedings of the 11th International Conference: Economic Policy in the European Union Member Countries: Selected Papers*. Ostrava: VŠB – Technical University of Ostrava, pp. 97-104.
- [8] Lamoreaux, N. R. and K. L. Sokoloff, 2002. *Intermediaries in the U.S. Market for Technology, 1870-1920*. The National Bureau of Economic Research (USA) Working Paper. No.9017.
- [9] Lanjouw, J. O. and M. Schankerman, 2001. *Enforcing Intellectual Property Rights*. The National Bureau of Economic Research (USA) Working Paper. No.8656.
- [10] Park, W. G., 2008. International patent protection: 1960-2005. *Research Policy*. vol. 37, issue 4, pp. 761-766.
- [11] Teece, D. J., 1977. Technology Transfer by Multinational Firms: The Resource Cost of Transferring Technological Know-how. *Economic Journal*. vol. 87, issue 346, pp. 242-261.
- [12] United Nations, 1993. *System of National Accounts: SNA 1993*.
- [13] WEF, 2013. *The Global Competitiveness Index data platform*. [online]. [2014-05-19]. Available from: <http://www.weforum.org/issues/competitiveness-0/gci2014-data-platform/>.
- [14] WIPO, 1979. *Strasbourg Agreement Concerning the International Patent Classification*. [online]. [2014-05-13]. Available from: http://www.wipo.int/treaties/en/text.jsp?file_id=291858.
- [15] WIPO, 2005. *Understanding Industrial Property*. World Intellectual Property Organization Publication No. 895(E).

COMPETITIVENESS OF COUNTRIES IN GLOBAL ENVIRONMENT

Christiana Kliková

*VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: Christiana.klikova@vsb.cz*

Abstract

This paper aims to determine how globalisation affects the competitiveness of the economy and to verify the assumption that competitiveness increases with the degree of an economy's globalisation. The first part of the paper briefly formulates competitiveness both at the enterprise and at the macroeconomic (national) level. Special attention is paid to the measurement of competitiveness at the macro level using the Global Competitiveness Report and the World Competitiveness Yearbook. Both approaches are validated using the example of the V4 countries. The second part of the paper describes the measurement of globalization using the KOF Index of Globalization. Then, globalization trends are presented on the example of the V4 countries. The assumption that the higher degree of globalisation an economy achieves, the more competitive it becomes has been confirmed only partially.

Keywords

Competitiveness, Global Competitiveness Report, World Competitiveness Yearbook, Globalisation, KOF Index of Globalization, V4 Countries.

JEL Classification

A12, B22, F62.

1 Introduction

Competitiveness is the key feature of any company – in order for a company to succeed on the market, it must be competitive. The definition of a company's competitiveness is relatively straightforward: a company is competitive if it is able to remain on the market and, if possible, increase its market share. When products or services of the company are no longer demanded on the market, or if the company is unable to meet its duties and obligations, it loses its competitiveness and must leave the market. This means that if the company does not market such goods or services that would be demanded and purchased by consumers, it becomes uncompetitive.

The same does not wholly apply to countries, because the concept of national competitiveness is a much more complex issue. What does it mean? Encyclopaedia of Economics (2002) defines competitiveness of the economy as a concept that synthetically expresses the ability of a country to penetrate foreign markets with their goods and services and gain comparative advantages from international trade.

It is the difference between the concept of competitiveness at the enterprise and national level that makes increasing competitiveness at the national level tricky.

Klvačová (2003) concludes that before the onset of globalisation, the state created the rules of competitiveness among companies by means of their mutual competition, and oversaw its fairness and observing its rules. Although the creation of these rules was always influenced by domestic and foreign economic entities, as well as standards applicable abroad, the responsibility for creating them lay with the nation states; however, it was the nation states that were also responsible for their economic and social impacts within the national economy.

Globalization turned the "division of labour (and the separation of powers)" upside down. National states ceased to act as the creators of the competition rules and began to compete to attract mostly foreign investors: they try to adapt their legal regulations and laws governing business to the legal regulations and laws of the countries that foreign investors consider the most convenient, and also strive to provide foreign investors with greater benefits than those offered by other countries. This change in the functioning of the rules gives rise to inconsistencies in understanding competitiveness of countries.

While one group of authors consider the competitiveness of countries to be a possibility to use all domestic resources to increase competitiveness, the other group of economists markedly opposes this doctrine. One of the most accurate opinions on the matter was formulated by Paul Krugman (1994) in his article *Competitiveness: a dangerous obsession*, which criticizes the leaders of Europe and the USA for artificially creating the idea that nations (in the economic sense) should compete with each other on world markets to gain wealth at the expense of other countries.

Let's have a closer look at competitiveness of countries; let's compare the competitiveness of countries with their level of globalization, let's find out how globalization affects the competitiveness of the economy and verify the assumption that the more global an economy is, the more competitive it becomes.

2 Competitiveness of a country

As already mentioned above, the competitiveness of a country is not clearly defined, and thus there is no universally accepted definition of this term (Cellini, Soci 2002).

Porter argues that the overall competitiveness of a country is determined by four attributes (corporate strategy, factor endowment, related and supporting industries and domestic demand), which are decisive for the environment in which each country generates its production. Based on these attributes Porter constructed the national diamond (Figure 1).

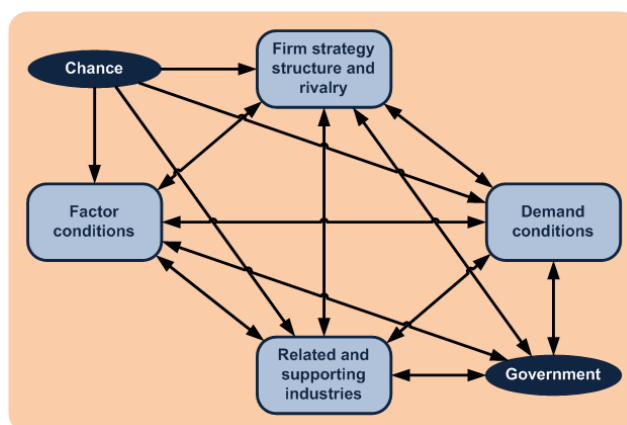


Figure 1. Porter's National Diamond (Source: Porter (1998), author's own work)

The broader concept of competitiveness is based on a multi-criteria approach which evaluates the various factors that ensure the well-being of the population. It is set out:

- in the Global Competitiveness Report published by the World Economic Forum together with Harvard University, which includes the Global Competitiveness Index (GCI),
- the World Competitiveness Yearbook, published by the International Institute for Management Development (IMD) in Lausanne, which includes a comparative overview of global competitiveness (World Competitiveness Scoreboard)

2.1 The Global Competitiveness Report (GCR)

Prepared since 1979 for the annual meeting of the World Economic Forum, it defines competitiveness as a set of factors, policies and institutions that determine the level of productivity of a country, thereby mainly determining the level of prosperity that can be achieved by that country. As competitiveness is measured by productivity, the aim of every country is to create an environment in which firms and employees can increase their productivity.

Global Competitiveness Index (GCI) is based on the most important factors that promote productivity and competitiveness of a country. These factors are divided into twelve pillars (Figure 2).

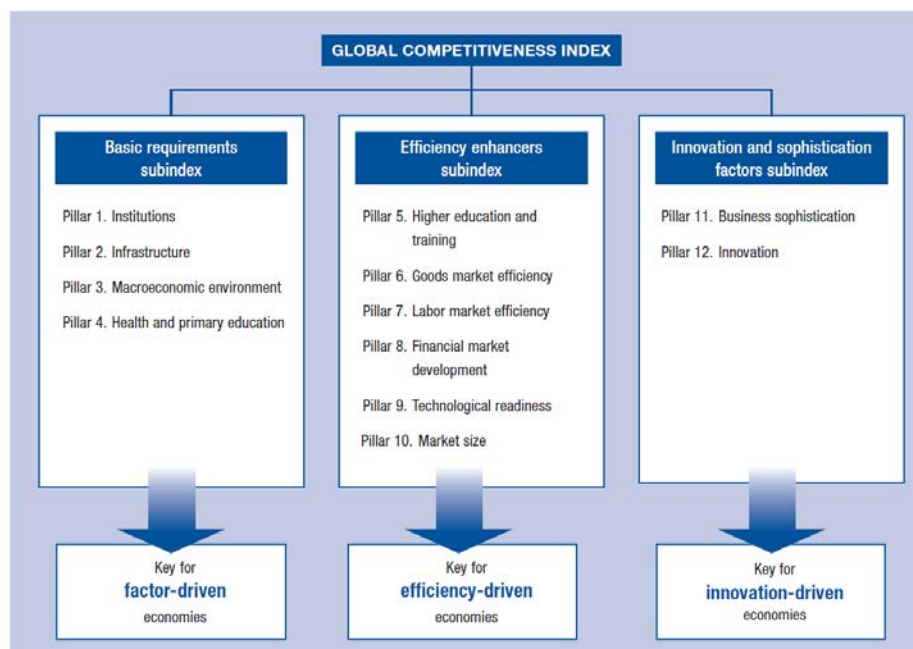


Figure 2. Division of the GCI pillars into three subindices according to the stage of development of the economy (Source: GCR (2014), author's own work)

The Czech Republic belongs to innovation-driven economies, even though its biggest problems concern the factor of innovation, institutions and infrastructure (Figure 3).

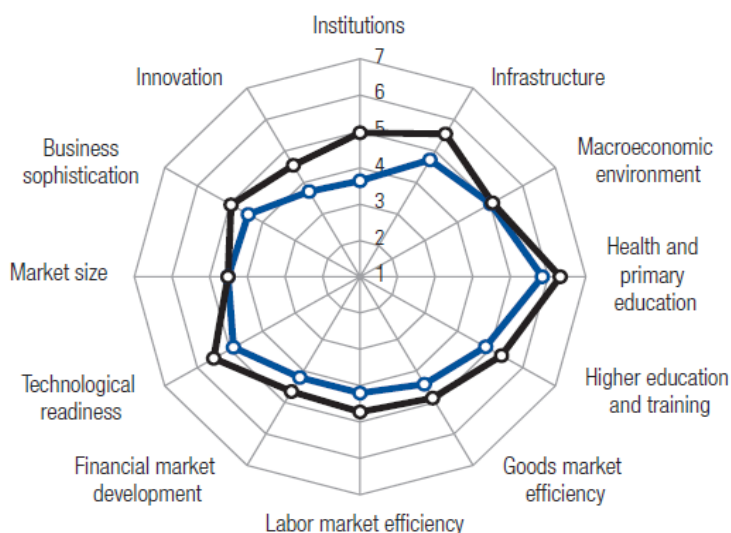


Figure 3. Global Competitiveness Index of the Czech Republic (Source: GCR, 2013)

Other Visegrad countries (Poland, Slovakia and Hungary) are currently in the transition between performance-driven and innovation-driven economies.

Their place in terms of competitiveness in absolute terms over the period 2007–2013 is shown in Figure 4. Poland is one of the most successful countries of the Visegrad group, placing 42nd among

148 economies surveyed in 2013, closely followed by the Czech Republic (46th place) which was not overtaken by Poland until 2013. Slovakia appears to be the least competitive in this respect, placing only 78th in 2013 despite ranking around 40th place in 2007.

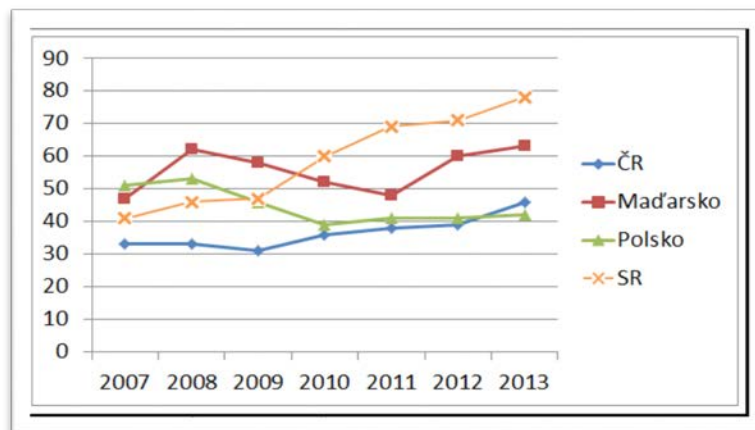


Figure 4. Ranking of V4 countries by competitiveness, GCI (2007–2013) (Source: GCR)

2.2 World Competitiveness Yearbook (WCY)

Published since 1989, the World Competitiveness Yearbook defines competitiveness as an area of economic theory which analyses facts and policies that shape a country's ability to create and maintain an environment that ensures greater added value for its businesses and greater prosperity for its people. It evaluates 60 countries, with 333 criteria being used for the evaluation, two thirds of which are composed of hard data as opposed to GCR. These criteria are organized into four blocks, each covering 5 areas (Table 1)

Table 1. Factors and sub-factors according to IMD

Economic performance	Domestic economy
	International trade
	International investments
	Employment
	Prices
Factors related to macroeconomic assessment of the economy	
Government efficiency	Public Finance
	Fiscal policy
	Institutional framework
	Business legislation
	Social framework
Factors determining the extent to which government policies aid competitiveness	
Business efficiency	Productivity and efficiency
	Labour market
	Finance
	Management practices
	Attitudes and values
Factors indicating the extent to which companies present themselves as innovative, profitable and responsible to the environment	
Infrastructure	Basic infrastructure
	Technological infrastructure
	Scientific infrastructure
	Health and environment
	Education
Factors determining the extent to which basic, technological, scientific and human resources meet the needs of businesses	

Source: WCY, author's own work.

Figure 5 shows the ranking of the V4 countries in 2007–2013 in terms of competitiveness according to the World Competitiveness Yearbook. Under this assessment, Poland was "the most competitive" Visegrad group country in 2013 (33rd place), closely followed by the Czech Republic (35th), the group's leader until 2013; Slovakia placed 47th with Hungary being last at 50th place.

Comparing Figures 4 and 5, we can see that the order of countries as assessed by the World Competitiveness Yearbook is different from that of the Global Competitiveness Index. This is due to the different calculation methodology, especially in different use of hard and soft data.

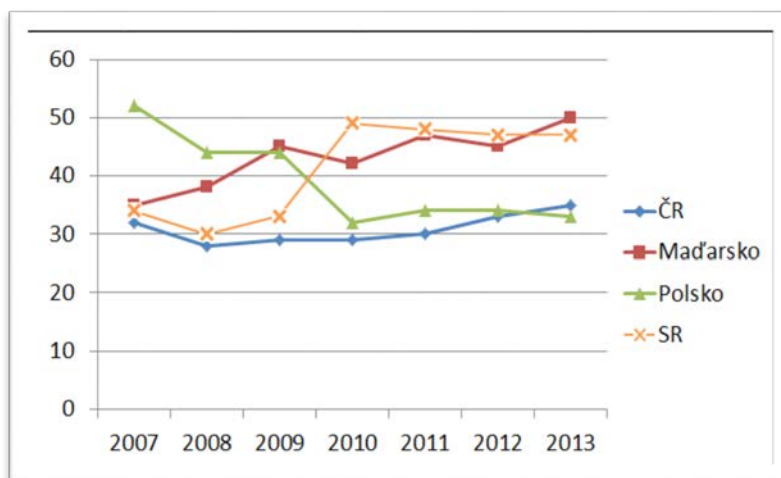


Figure 5. Ranking of V4 countries by competitiveness, WCY (2007–2013) (Source: WCY)

International Institute for Management Development (IMD) in Lausanne also formulated the Golden rules of competitiveness, which consist of the following requirements:

1. Create a stable and predictable legal and administrative environment.
2. Ensure speed, transparency and accountability in the administration, as well as the ease of doing business.
3. Invest continually in developing and maintaining infrastructure both economic (road, air, telecom, etc.) and social (health, education, pension, etc.).
4. Strengthen the middle class: a key source of prosperity and long-term stability.
5. Develop privately-owned medium-sized enterprises: a key element of diversity in an economy.
6. Maintain a balanced relationship between wage levels, productivity and taxation.
7. Develop a local market by promoting private savings and domestic investments.
8. Balance aggressiveness on international markets with attractiveness for added-value activities.
9. Counterweight the advantages of globalization with the imperatives of proximity to preserve social cohesion and value systems.
10. Always return the tangible signs of successful competitiveness to the people by providing a higher level of prosperity for all.

3 Globalization and how it is measured

Globalization can be understood as "... a long-term process of mutual convergence of interests of people across the planet at all levels of social life (i.e. it is a cultural, political and economic process)..." (Rolný and Lacina 2002, p. 13)

Globalization manifests itself in very diverse ways and involves (or affects) all aspects of life. From an economic perspective, its main attributes are considered to be the following:

- growing importance of science, innovation, engineering and technology;
- concentration of foreign direct investment where it is advantageous to investors;

- increasing importance and number of transnational corporations;
- development of transnational economic diplomacy;
- declining importance of national states in selected traditional areas;
- increasing dependency of the states on foreign trade and foreign direct investment (Kliková, 2013).

As already mentioned, in addition to economic nature, globalization also has social and political dimension. To measure interconnectedness of a country with the global environment, various sub-indicators are used (e.g. the degree of openness of the economy, the number of Internet users relative to the total population, etc.); however, a more comprehensive view is offered by KOF Globalisation Index and the AT Kearney Globalization Index.

3.1 KOF Index of Globalization

Clark (2000), Norris (2000), Keohane and Nye (2000) define globalization as a process of creating networks of connections among actors at multi-continental distances, mediated through a variety of flows including people, information, ideas, capital and goods.

Globalization is thus conceptualised as a process that erodes national boundaries, integrates national economies, cultures, technologies and governance and produces complex relations of mutual interdependence among countries.

KOF globalization index has been published annually by the Swiss think tank KOF in Zurich since 1970, covering 207 countries in 2010 and 166 countries in 2013. KOF Index of Globalization covers three dimensions of globalization:

- economic dimension, characterized as long distance flows of goods, capital and services (including e.g. the share of exports and imports to GDP, the share of FDI to GDP, hidden trade barriers, etc.);
- social dimension, expressed as the dissemination of ideas, concepts, information, and people; the social dimension of globalization is classified in three categories: personal contacts, information flows and cultural proximity. The social dimension of globalization is specified by e.g. data on international tourism, the number of Internet users, the number of sent and received international letters, the share of trade in periodicals to GDP, the share of McDonald's restaurants to GDP, the share of IKEA centres to GDP, etc.);
- political dimension, which we perceive as the dissemination of government policies (namely the number of embassies in a country, the country's membership in international organizations, the number of participating countries to UN peacekeeping missions, the number of international treaties signed, etc.).

The interconnection of the Visegrad Group countries with the global environment in the period 1993-2010 is shown in Figure 6. Among the "most globalised" countries in this group is Hungary, whose KOF Index of Globalization has been steadily increasing since 1993. In this respect, Poland appears to be the least globalised, with its interconnectedness with the global environment also growing in the period under review, but slowly. This corresponds with the fact that globalization brings many new possibilities, especially for small countries, as it is based, among other things, on technological change that allows overcoming this "smallness". It offers these countries to expand their markets, allowing them to implement free trade and exploit new investment opportunities. Therefore, small countries are "more globalised" than the big ones.

At present (2013), Hungary leads the V4 countries with the KOF Globalization Index of 87.4, closely followed by the Czech Republic (85.8), with Poland being the least globalised country in this group having the KOF Globalization Index of 80.8.

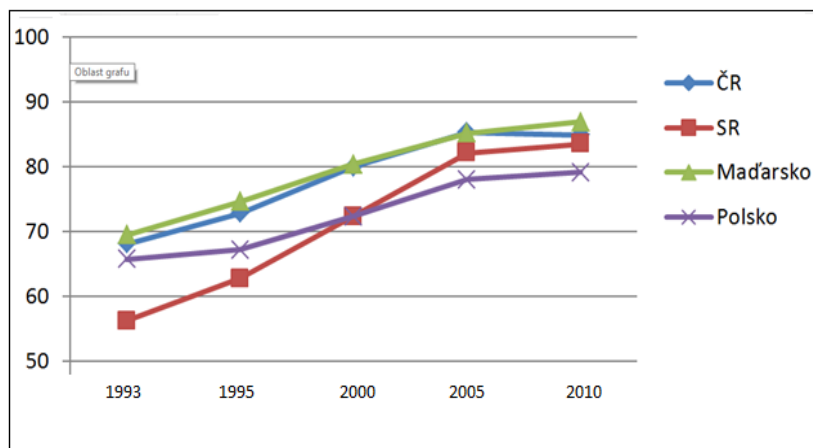


Figure 6. Comparison of the KOF indices of globalization of V4 countries, 1993-2010 (Source: KOF Index of Globalization)

The U.S. magazine Foreign Policy, in cooperation with the worldwide management consultancy A.T. Kearney created a globalization index assessing the degree of integration of states in global affairs. However, as was only published in the period 2003–2007, we will not deal with it in more detail.

4 Competitiveness of a country assessed in terms of globalization

The relationship between a country's competitiveness and its level of (economic) globalization is evident; globalization is affecting the country's competitiveness by its nature, because economic globalization is conditional on the existence of international organizations, activities of multinational corporations, foreign direct investment, regionalisation of countries and internationalization and the intensity of international trade; All these attributes of globalization undoubtedly increase competitiveness at the macro level. This means that the globalization's effect on competitiveness of countries is positive.

Let's now consider the extent to which it is reasonable to assume a mutual correlation of globalization and a country's competitiveness – in other words, whether or not a country which is more competitive is also more globalised. For this purpose, let's first compare the Global Competitiveness Index (GCI) and the KOF Index of Globalization and its overall economic dimension for the year 2013.

4.1 Global Competitiveness Index and the KOF Index of Globalization

Table 2 shows five countries ordered by competitiveness according to Global Competitiveness Index and the KOF Index of Globalization.

Table 2. Five most competitive countries – GCI and its comparison with the ranking according to the KOF Index of Economic Globalization 2013 and the overall KOF Index of Globalization 2013

	Country	GCI	KOF index, ec.		KOF index, ov.	
1.	Switzerland	5.72	27.	78.4	10.	86.3
2.	Singapore	5.67	1.	97.6	5.	88.9
3.	Finland	5.55	15.	84.6	16.	84.9
4.	Sweden	5.53	10.	88.7	7.	87.6
5.	Netherlands	5.50	5.	92.2	3.	91.3

Source: 2013 GCI, 2013 KOF Index of Globalization.

The presented data show that this assumption is confirmed only partially; Switzerland, which ranked as the most competitive economy out of 148 countries surveyed by the 2013 Global

Competitiveness Report, placed 10th when assessed using the KOF Index of overall globalisation, and it placed 27th out of the 166 countries surveyed when assessed for economic dimension of globalization. Similar outcomes apply to Finland, which placed 3rd while using the GCI, but 15th or 16th in terms of the level of globalization achieved, respectively.

Since almost all the assumptions were confirmed for Singapore and the Netherlands, partial confirmation of this assumption can be concluded.

4.2 Competitiveness of countries according to the World Competitiveness Yearbook and KOF Index of Globalisation

Let's now look at the evaluation of competitiveness of countries in 2013 according to the World Competitiveness Yearbook; specific values and rankings are shown in Table 3 and can be compared with the KOF Index of Globalization

Table 3. Five most competitive countries – WCY and its comparison with the ranking of countries according to the KOF Index of Economic Globalization 2013 and the overall KOF Index of Globalization 2013

	Country	WCY	KOF index, ec.		KOF index, ov.	
1.	USA	100.0	82.	60.3	34.	74.8
2.	Switzerland	93.4	27.	78.4	10.	86.3
3.	Hong Kong	92.8	?	?	?	?
4.	Sweden	90.5	10.	88.7	7.	87.6
5.	Singapore	89.9	1.	97.6	5.	88.9

Source: 2013 WCY, 2013 KOF Index of Globalization.

Again, the assumption that more globalised countries are also more competitive has not been confirmed. It is therefore clear that the degree of globalization of a state is not indicative of its competitiveness.

5 Conclusion

This paper aims to determine whether or not globalization affects the competitiveness of an economy and to verify the assumption that the higher degree of globalisation an economy achieves, the more competitive it becomes.

The first part of the paper briefly formulated competitiveness at the enterprise and at the macro (national) level. Special attention was given to the measurement of competitiveness at the macro level using the Global Competitiveness Report, published by the World Economic Forum together with Harvard University, and the World Competitiveness Yearbook, published by the International Institute for Management Development (IMD) in Lausanne.

Both approaches have been demonstrated on the example of the V4 countries in the period 2007 – 2013.

The second part of the paper defined globalization and described in more detail its measurement using the KOF Index of Globalization. Here, also, globalization trends are presented on the example of the V4 countries.

The third part of the paper was aimed at testing the assumption that competitiveness of an economy increases with the degree of globalisation it achieves; this hypothesis has not been confirmed, or it has been confirmed only partially where the country's competitiveness was measured using the WOF methodology.

Relying on these results, we can agree with the statement that in terms of the functioning of the economy as a whole, the criteria evaluating the competitiveness of countries are often mutually contradictory and incompatible (Malý, 2014). The same is true for the degree of globalization achieved by each country; globalization brings a range of new possibilities especially to small countries, as it provides an extension of their market, opportunity to carry out free trade and exploit

new investment opportunities. Therefore, small countries are generally "more globalized" than the big ones.

References

- [1] Cellini, R. and A. Soci, 2002. Pop competitiveness. *Banca Nazionale del Lavoro Quarterly Review*, March 1, vol. 55, issue 220. [online]. [2014-05-25]. Available from: <http://www.economiacivile.it>.
- [2] Clark, W. C., 2000. Environmental Globalization. In: NYE J. S. and J. D. DONAHUE (eds.), *Governance in a Globalizing World*. Brookings Institution Press, Washington, D.C., pp. 86-108. [online]. [2014-05-25]. Available from: http://www.caps.am/materials/methods/measuring%20globalization_2010.pdf.
- [3] Keohane, R. O. and J. S. Nye, 2000. Introduction. In: NYE J. S. and J. D. DONAHUE (eds.), *Governance in a Globalizing World*. Brookings Institution Press, Washington, D.C., pp. 1-44. [online]. [2014-05-25]. Available from: http://www.caps.am/materials/methods/measuring%20globalization_2010.pdf.
- [4] Kliková, Ch., 2013. State, Economic Policy and Globalization. Conference Proceedings of the 11th International Conference *Economic Policy in the European Union Member Countries. Selected Papers*. Ostrava: VŠB-TUO, 2013, pp. 105 – 114.
- [5] Klvačová, E., 2002. Konkurenceschopnost národních ekonomik: podstata, měření, problém, vypovídací schopnost. Praha: VŠE, FMV, KMO.
- [6] KOF Index globalizace 2013. [online]. [2014-05-25]. Available from: http://globalization.kof.ethz.ch/media/filer_public/2013/03/25/rankings_2013.pdf.
- [7] Krugman, P., 1994. Competitiveness: A Dangerous Obsession. *Foreign Affairs*, March/April 1994, vol. 73, issue 2, pp. 28-44.
- [8] Malý, J., 2014. Konkurenceschopnost: problémy jejího měření a důsledky její rozdílné úrovně mezi zeměmi EU. Snímky z konference *Rozdíly v konkurenceschopnosti mezi státy EU – předpoklady a bariéry jejich překonání*. Brno 2014. [online]. [2014-05-28]. Available from: http://www.eu-vyzkum.eu/pdf/seminar_konference_10/Maly_OPVK_10.pdf.
- [9] Norris, P., 2000. Global Governance and Cosmopolitan Citizens. In: Nye J. S. and J. D. Donahue (eds.), *Governance in a Globalizing World*. Brookings Institution Press, Washington, D.C., pp. 155-177. [online]. [2014-05-22]. Available from: http://www.caps.am/materials/methods/measuring%20globalization_2010.pdf.
- [10] Porter, E. M., 1998. *The Competitive Advantage of Nations. With a new Introduction*. New York: Free Press.
- [11] Rolný, I. and L. Lacina, 2004. *Globalizace, etika, ekonomika*. 2nd Ed. Věrovany: nakladatelství Jan Piszkievicz.
- [12] Slaný, A. et al., 2006. *Konkurenceschopnost České ekonomiky (vývojové trendy)*. Brno: Masarykova univerzita.
- [13] The Global Competitiveness Report, 2013–2014. [online]. [2014-05-22]. Available from: http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2013-14.pdf.
- [14] World Competitiveness Yearbook – WCY, 2013. [online]. [2014-05-22]. Available from: <http://www.imd.org/news/World-Competitiveness-2013.cfm>.
- [15] Žák, M. et al., 2002. *Velká ekonomická encyklopedie*. Praha: LINDE.

CONSEQUENCES OF ECONOMIC PROCESSES ON THE LABOUR MARKETS OF THE EU AND COORDINATED APPROACH TO TACKLING

Roman Klimko¹, Eva Rievajová²

¹ *University of Economics in Bratislava, Faculty of National Economy, Dolnozemska 1, 852 35 Bratislava, Slovak Republic*

email: roman.klimko@euba.sk

² *University of Economics in Bratislava, Faculty of National Economy, Dolnozemska 1, 852 35 Bratislava, Slovak Republic*

email: eva.rievajova@euba.sk

Abstract

Recession, debt crisis and consolidation of public finances significantly slowed economic growth of the EU, which was also accompanied by adverse developments in labour markets. High interdependence of economies affects the need for coordination of structural policies of EU member states, a consensus on the general direction of economic and employment policies of the Member States. Following the unfavourable development of employment we could see in previous years that EU average unemployment rate was increasing. For this purpose Europe 2020 and the follow-up documents and recommendations focused on growth performance, employment and competitiveness of the EU member countries was adopted. Expectations regarding economic developments in Europe in the coming years anticipate a gradual recovery, which should be reflected in a more rapid growth dynamics and catching-up countries to the EU average.

Keywords

Europe 2020, Employment Package, National Reform Programme, Labour Market.

JEL Classification

J01, J08.

1 Introduction

Period of decline in unemployment in the years 2005-2008 was subsequently replaced by period of rising unemployment, as a result of the rising financial and economic crisis and therefore unemployment in the EU can be described as more structural than cyclical. The latest labour market trends are partly the result of cyclical movements, and particularly deep economic crisis, but also due to structural and institutional problems of the labour market affecting economic activity and labour market performance. The situation on the labour markets of EU countries after the onset of the financial and economic crisis has deteriorated significantly, especially for vulnerable groups. High interdependence of economies affects the need for coordination of structural policies of Member states. The aim of the structural policies of national governments is to achieve sustainable economic growth, to increase employment and quality of life. Tackling unemployment and the social consequences of the crisis must be a key shared priority for Europe. Structural unemployment and poverty are the greatest policy challenges and are essential to meet the Europe 2020 targets relating to employment and social inclusion.

2 European Employment Strategy and Europe 2020

The European Employment Strategy (EES) is the EU's main instrument for coordinating reform efforts of Member States in the labour market. EES aims to provide both a greater number and better jobs throughout the EU. It is inspired by Europe 2020 growth strategy. The EES provides a framework for Member States for exchanging information, discussions and coordination of employment policies. It is based on the Annual Growth Survey (AGS), which sets out the EU's priorities for the upcoming year in order to stimulate growth and job creation. The AGS starts European semester, which promotes closer coordination of national governments in their economic and fiscal policies. Institutional components of the EES (EC, 2013c):

- Employment guidelines;
- National Reform Programmes;
- Joint employment report;
- Country-specific recommendations.

Every year the Commission proposes guidelines for the employment policies, which are subsequently approved by Member States’ governments and adopted by the Council. They represent common priorities and targets for the employment policies. The government of each Member State prepares the National Reform Programme (NRP) and the Commission reviews it. It describes how individual guidelines will be put into practice. The Commission then considers the report, while taking care to ensure that the set national targets are consistent with the objectives of the EU (currently with the objectives of Europe 2020). Joint employment report is based on (a) evaluation of the employment situation in the EU, (b) the implementation of the Employment guidelines, and (c) assessment of draft national reform programmes by the Employment Committee. It is also part of the AGS. The Commission presented a new proposal and the objective is to review the guidelines for the employment policies for the coming year. Subsequently, the Joint employment report is adopted by the Council. Based on the national reforms programme assessment and the Commission’s proposal, the Council makes, by a qualified majority, recommendations to individual Member States.

Table 1. EU 2020 Headline targets and Integrated guidelines for employment

EU 2020 Headline target	Integrated guidelines
Employment rate 75 % (age group 20-64)	Increasing labour market participation and reducing structural unemployment
a) School drop-out rate less than 10%	a) Developing a skilled workforce responding to labour market needs, promoting job quality and lifelong learning
b) At least 40% people aged 30-34 with tertiary education	b) Improving the performance of education and training systems at all levels and increasing participation in tertiary education
Reduction of population at risk of poverty or social exclusion – at least 20 million fewer	Promoting social inclusion and combating poverty

Source: Marlier and Natali (2010), own processing.

At the end of 2009, Member States and the Commission launched discussions on how to build on the Lisbon Strategy and what role the EES should play in this context. In June 2010, after extensive consultations, the Europe 2020 strategy was formally adopted. It is based on the previous Lisbon Strategy and emphasises a smart, sustainable and inclusive growth, which naturally places an accent on a high level of employment (EC, 2013a). Weishaupt and Lack (2011) note that the new Europe 2020 strategy is in many ways more ambitious than the previous Lisbon Strategy and the reasons are:

- New priorities were set;
- Economic, fiscal, employment, social and environmental policies are coordinated in a common ‘European semester’;
- The role of the Commission is strengthened;
- The labour ministers proclaimed a more active and constructive role.

Member States have set new priorities which are expressed in five EU Headline targets, ten Integrated guidelines and seven Flagship initiatives. The five major goals include three that have a direct relation to the labour market, skills and social policies and are supported by four integrated guidelines.

At first glance it might seem that the objectives of the Europe 2020 strategy are only a continuation of the EES objectives. But it is not so, and there are significant differences. On the one hand, there are fewer targets, which give EES a clearer structure and focus. On the other hand, the main objectives of the EU are more ambitious, clearer or completely new. For example, increasing the employment rate remains a key objective, but it not only exceeds the Lisbon target by five percentage points, but also the age group concerned was modified. Young people aged between 15 and 19, have been set out, because they are generally still in the school system. A big change compared to the past is the fact that new targets are set at European level, but Member States agreed to set national targets in the national reform programmes, outlining how they will contribute to meet the EU's main objectives. This is just one of the things that have improved compared to the Lisbon Strategy, namely, that individual goals are not only vaguely set, while just for the EU as a whole. The Commission is hereby probably trying to increase Member States' efforts to achieve them. The main objectives and integrated guidelines are supported by three main initiatives: Youth on the Move, Agenda for new skills and jobs, and the European platform against poverty and social exclusion (EC, 2013a).

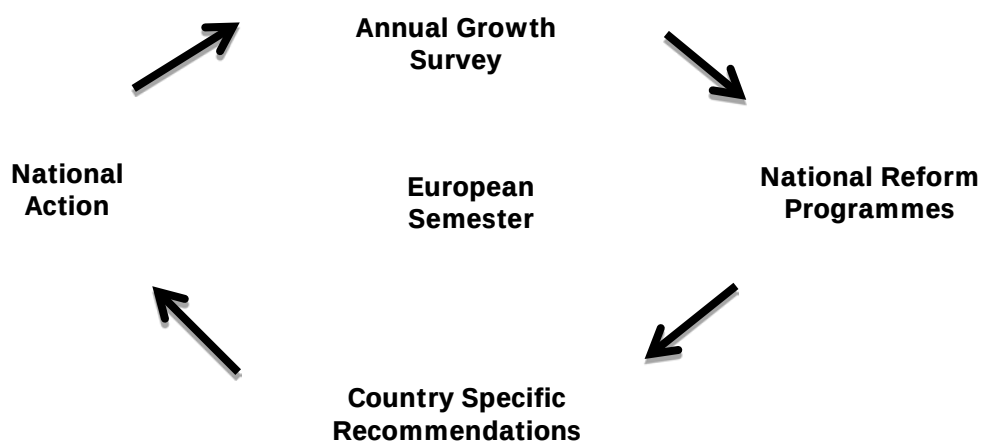


Figure 1. European Semester (Source: own processing)

In comparison with the Lisbon Strategy, the Europe 2020 strategy introduced a new management process, so-called European Semester (EC, 2013b). The European Semester is also an effective governance method for monitoring and steering the implementation of actions to support Europe 2020 goals. The European Semester begins every year in January, once the Commission has published AGS. On its basis, the Council subsequently identifies (in March) the main economic challenges and provides strategic advice on individual policies. These are then reflected in the national reform programmes, in which Member States outline the actions they will take in areas such as employment and social inclusion. In late April, the Commission assesses the individual national reform programmes. Based on the evaluation of the Commission, the Council issues specific recommendations to Member States in June and July. Especially for those countries whose policies or budgets are not set in the right way, as proposed by the Commission. The following year, the Commission's AGS assesses the extent to which Member States have to fulfil the recommendations (Marlier – Nataly, 2010). However, the European Semester, however, compared with the Lisbon Strategy, brought one big change, namely the position of the Commission and its role. In the past the Commission acted mostly retrospectively, through publishing annual progress reports which rated the reform process in Member States. Nowadays, the Commission may make recommendations to Member States and, consequently, assess the level of their fulfilment. In this aspect, the Commission's position has been greatly strengthened (Weishaupt – Lack, 2011).

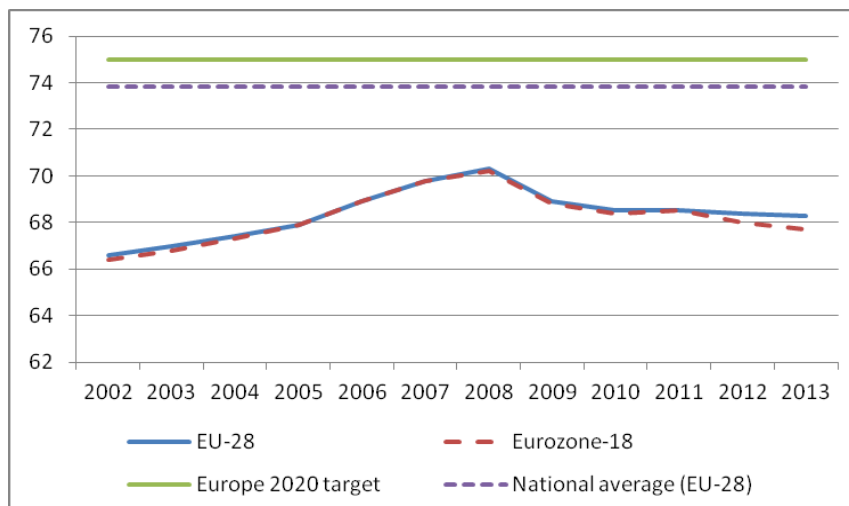


Figure 2. Employment rates in EU-28 and Eurozone, Europe 2020 employment target and National average (EU-28)
 (Source: Eurostat, own processing) Note: age group 20-64

3 Employment and job creation support

The Europe 2020 has set a target for the employment rate in 2020 of 75% for the age group 20-64 years. This objective was adopted with the strategy in June 2010. The employment rate of the mentioned age group in 2010 in the EU-27 was 68.4%, in 2011 it increased only slightly by 0.1 percentage points (pp) to 68.5%, so it more or less stagnated. In 2012, however, the rate began to decline, which was a clear signal especially for the Commission to respond. In 2012, the average employment rate in the EU-27 was only 68.0%, it means much less than in the pre-crisis period, when it stood at 70.2% (2008). Taking into account that in 2012 only minimal increase was expected for the years 2013 and 2014, between 2015 and 2020 it would have to grow by about 6 pp, which is really only on the level of theory, and only to get closer to the level of 75% will require extra effort. Despite the shared commitment of 75% for the whole of the EU-27 (in average), Member States have announced their own targets for employment rates by 2020, in their National Reform Programmes in 2011. They, however, differ substantially across the EU-27. Malta has set a target level of employment rate of age group 20-64 years at 62.9%, while Denmark and the Netherlands at 80%, and Sweden at even more than 80%. Some countries such as Cyprus, Ireland, Austria and Italy have set a target range rather than a precise level, and the UK has not set a national goal. The choice of individual national targets has important implications for the overall objective for the EU-27. An interesting feature is that if Member States achieve their defined goals for 2020 and bring the lower value of the target range, the average employment rate would be 73.7% (if higher value of the target range, 74.0%). So even with the implementation of specific national targets in the final, target employment rate will still miss from 1.0 to 1.3 pp. (EC, 2012b).

In order to respond to the continuing high unemployment and low employment rate in the EU, in April 2012 the Commission introduced a set of measures with a clear objective, namely to promote job creation, entitled Employment Package. The Employment Package is a set of documents outlining the options to link employment policy at the EU level with a number of other policies to promote smart, sustainable and inclusive growth. It identifies potential areas of job creation and the most effective ways to create them within the EU. The Commission proposed measures in the following areas (EC, 2012a):

- a) Support job creation;
- b) Restore the dynamics of labour markets;
- c) Enhance the EU governance.

Although it is clear that all three areas, thus the measures within them, are important, and their combination could achieve a synergic effect, in the next section, the contribution will be paid and there will be highlighted measures to promote job creation, because this area is critical in terms of fulfilling the most important objective of the Europe 2020 strategy, which is to increase the employment rate of the age group 20-64 in 2020 to a level of 75%.

In the area of promoting job creation, the measures can be divided into three sub-areas: (a) stepping up job creation in all sectors of the economy fostering labour demand, (b) exploiting the employment potential of key sectors, and (c) mobilisation EU funds for job creation.

Table 2. Measures to support job creation

Section	Measures
Stepping up job creation in all sectors of the economy by supporting labour demand	• Targeting hiring subsidies to new hiring • Reducing the tax wedge on labour in a budgetary neutral way • Supporting self-employment, social enterprises and business start-ups • Transformation of informal and undeclared work into regular employment • Boosting ‘take home’ pay • Aligning wages and productivity
Exploiting the employment potential of key sectors	Job growth in sectors: • Green economy • Health and social care • ICT
Mobilisation of EU funds for job creation	Using funds: - The European Social Fund (ESF) - The European Regional Development Fund (ERDF) - The European Progress Microfinance Facility - The European Globalisation Adjustment Fund (EGF) - The European Agricultural Fund for Rural Development (EAFRD)

Source: European Commission (2012a), own processing.

Employment policy helps to create conditions with favourable effect on job creation. The emphasis within the Employment Package is primarily on the direction of subsidies for recruitment. Currently they are increasingly used in Member States and are usually focused on disadvantaged groups in the labour market, such as young people or long-term unemployed. In this context, it is necessary to add that subsidies are effective only if they are focused on recruiting new workers, in other words, they should only be used to create those jobs that would otherwise have been avoided. The Commission also recommends reducing the tax burden, with no budgetary impact, which is to be achieved by increasing the environmental taxes, consumption taxes and property taxes. Using this measure should have a positive impact in the long term, particularly in the case of the most vulnerable groups in the labour market and low-income workers. An example of a combination of the two above-mentioned recommended actions and their implementation in the Slovak Republic are two national projects. They are designed to promote job creation for young people. They were launched in 2012 and are mainly funded by ESF:

- National project XX – Support the recruitment of the unemployed in the municipality;
- National project XXI – Promoting job creation.

The priority target group includes unemployed people aged up to 29 years inclusive, who are among job seekers and have been registered as jobseekers for at least three months. The project *Supporting the recruitment of the unemployed in municipality* requires to create new jobs in the company, a contribution is from six to nine months. Subsequently, the employer has an obligation to keep the supported job after the expiry date of receiving the contribution, so that the retention time of jobs created must conform at least to the supported period. The project *Promoting job creation* supports job creation in selected employers who operate in the field of road transport, including both

passenger and freight transport¹. The requirement is to employ the jobseeker from the target group into employment on a full-time basis, for a minimum period of 18 months. In this case, it is supported during the 12-month period. The second option is to create a full-time position for a driver or co-driver, for a period of at least 30 months, in that case the supported period is 9 months (ÚPSVaR, 2013).

The Europe 2020 strategy states that the EU is currently facing deep structural changes, in particular the transition to ecological, low-carbon and resource-efficient economy, demographic ageing and the rapid technological progress. That is why in the AGS 2012 there were identified only the following three main areas, each of them having a considerable future potential for job creation: (a) green economy, (b) health and social care, and (c) ICT (EC, 2011). The Commission notes that only the energy efficiency and renewable energy sectors could create five million jobs by 2020. However, the challenge remains to adapt skills to new technologies, especially for low-skilled workers and older workforce. Nowadays, employment in the health and social care within the EU is growing fast as a result of population ageing, as well as because of an expansion of services to better meet quality requirements and rising demand for personalised care and professional social services. The third area of job creation potential is the area of information and communication technologies. The demand for ICT professionals continues to grow and the demand for labour force exceeds supply (EC, 2012a).

4 National Reform Programme of the Slovak Republic 2013 and 2014

The NRP is a set of policies designed to overcome the current crisis and promote economic and employment growth. Structural measures are a response to the need for economic recovery and ensure long-term growth. Short-term instruments for avoiding loss of capacity of industry and state where ‘surviving’ firms cannot invest in increasing their own competitiveness. It is also necessary to prevent the loss of skills of the workforce through maintaining of employment and upgrading skills of people who have difficulties to find a job (NRPSR, 2014).

The process of coordinating the Europe 2020 strategy, the European Semester, begins with the AGS, which contains an analysis of the EU economy and sets out the key priorities for reforms in the macro- and micro-economic area, as well as labour market reforms. Member States put AGS priorities in their strategic materials containing concrete measures for the development of the economy - the National Reform Programmes (NRPs) (NRPSR, 2013).

In order to promote growth and employment and the ability to respond to fiscal, macroeconomic and structural challenges is an urgent task completion and implementation of a framework for better economic governance and strengthen the links between different policies. For example between cohesion policy and the economic governance of EU, macro-regional strategies. Due to the fact that many of the problems in the European economy persist, priorities in Annual Growth Survey for 2014 are the same as in the previous year. These are:

- Differentiated growth-friendly fiscal consolidation;
- Restoring normal lending to the economy;
- Promoting growth and competitiveness now and in the future;
- Fighting unemployment and social impacts of the crisis;
- Modernisation of public administration.

The NRP is the main strategic document of the Government of the Slovak Republic in the field of economic development and structural policies. It presents national measures to achieve sustainable economic growth, employment growth and to improve quality of life. At the international level the material presents measures to achieve the objectives contained in the Europe 2020 strategy. It creates a medium-term framework for shaping the growth potential of the Slovak economy and employment. It represents a set of policies designed to overcome the crisis and promote economic and employment

¹ Jobs outside the driver and co-driver.

growth. Structural measures are a response to the need for economic recovery and ensure long-term growth. Economic growth measured by GDP growth and enhancing quality of life are interrelated objectives because economic growth is a prerequisite for sustainable immaterial progress of countries.

Three components require attention within the labour market. The first is the employment rate of young people, between 2001 and 2012 was significantly reduced and moved away the EU15 average. However, it is more than compensated by growth in participation in tertiary education that will have a positive impact on labour productivity in future. The second important component is the employment rate of older that is due to an increase in the retirement age, but still lags far behind the EU15 average. The third component is the unemployment rate, which has remained relatively high in last few years. The European Social Fund (ESF) will continue to support projects to create new jobs for jobseekers up to 29 years, by contributing to the employer to cover part of labour costs. Promoting job creation for young people under 29 is financed through the Structural Funds in the Operational Programme Competitiveness and Economic Growth.

However, the possibility of promoting economic growth of the Slovak Republic through an increase in dynamics of domestic demand is limited by the ongoing consolidation of public finances. A limiting factor of such measures is the fact that the Slovak Republic is a small open economy and GDP growth in the short term is more dependent on foreign demand. In the medium and long term, for the growth in labour productivity and capital stock, the most important structural measures are to improve the business environment and thus the productivity and profitability of all economic activities (NPRSR, 2013).

The NRP pays greater attention to issues of education and productivity of the population, which have an indirect impact on employment. The labour supply is also affected by the focus and quality of employment services, for example through counselling, education or graduate practice. The state may also interfere with the functioning of the labour market through the Labour Code, the tax burden, business support, wage or targeting incentives to encourage disadvantaged groups. The most effective instrument to increase income of population, domestic consumption and economic growth is to increase employment, and therefore the area of social inclusion and poverty reduction is included in the employment and social inclusion area of priorities.

One of the key areas to ensure the efficiency of the labour market is an active labour market policy (ALMP). The amendment to the Act on Employment Services (Act No. 5/2004 Coll.) improves the efficiency and effectiveness of active labour market policy. Through the reduction in the number of instruments (the amendment cancelled eleven, mostly duplicate instruments), the system has become simpler and administrative requirements on ALMPs implementation have been reduced. More emphasis is placed on marginalized groups of job seekers in order to increase employment of young people, the long-term, low-skilled unemployed, older people and the disabled. It also replaced seven obligatory ALMP benefits claimable under the law by optional instruments to which there is no legal entitlement. The aim of this measure was to improve effectiveness based on the real utilisation and prevention of the misuse of these instruments.

ALMP instruments in the Slovak Republic concentrate on the following areas (NPRSR, 2013):

- Support for self-employment activities;
- Support for employment of marginalised job seekers;
- Support to retain jobs;
- Support for labour force mobility;
- Practical training for graduates;
- Information and counselling services, professional counselling;
- Education and training for the labour market;
- Projects and programmes.

Changes in ALMPs aimed at improving their efficiency and effectiveness will ensure better inclusion of marginalised applicants in the labour market, along with more effective utilisation of

existing instruments, and create good conditions to encourage employment of marginalised groups.

The Slovak Republic spends roughly 0.23% of GDP on ALMPs, while the average EU spending in this area represented approximately 0.7% of GDP in 2010. ALMP instruments that receive the largest funding in the EU and OECD (more than one third of expenditures in EU countries on average) include educational and training programmes and activities which considerably contribute to reintegration of the unemployed into working life. The Slovak Republic spends less than 10% of its total ALMP expenditures on this particular type of instruments. From the medium-term perspective, it is therefore advisable to increase the share of educational and training programmes and ensure their effectiveness in line with OECD recommendations. In order to increase their effectiveness, education and training need to be better linked to the needs of local employers and the local demand for education needs be monitored and projected.

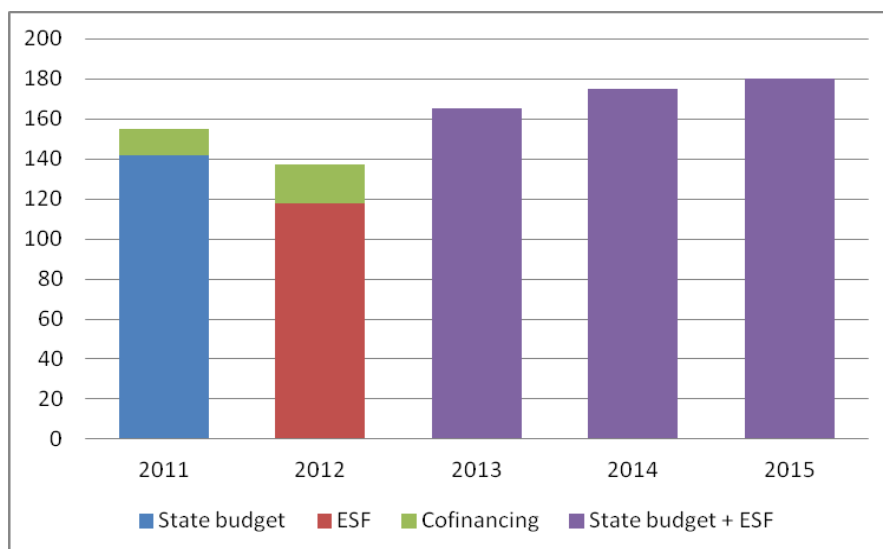


Figure 3. ALMP expenditures in the Slovak Republic (in EUR million) (Source: Central Office of Labour, Social Affairs and Family; Ministry of Labour, Social Affairs and Family) Note: the expenditures for the years 2013-2015 are expected.

The quality and productivity of human capital is an important factor influencing economic growth and quality of people’s life. Educated workforce boosts labour productivity and is able to respond more flexibly to the increasing labour requirements and changes in demanded skills. According to quantitative indicators, the Slovak Republic has a relatively good position when compared to the EU average. It has a very low school drop-out rate and the share of young people with completed tertiary education is quickly approaching the EU average. But the quality of education is where the Slovak Republic clearly falls behind. The education system cannot respond flexibly enough to the needs of the labour market, which turns out to be one of the causes of high structural unemployment. Moreover, the labour market will increasingly demand higher-level skills which will call for an enhanced flexibility of the educational system. Despite the reform measures in 2012 aimed at improving the quality and relevance of education for labour market needs, the transition from school to work remains challenging and educational system does not respond promptly to the needs of the labour market (Council, 2013).

5 Conclusion

Considering the high interdependence of EU economies is more effective when the actions of all Member States in structural policies are coordinated at EU level. Member States may also be inspired by examples of successful countries. Within the EU there is a consensus on the general direction of economic and employment policies of the Member States.

While the Lisbon Strategy was criticized during its second phase because of the failure to reduce poverty and inequality despite the significant economic growth, in the process of creating new Europe 2020 strategy, the emphasis was placed on how to remedy these deficiencies. On the one hand, the EES promotes so-called smart growth in jobs. It is trying to balance the needs of workers by minimizing labour market segmentation and supports the transition between jobs. On the other hand, the EES could launch a sustainable job growth in the "green" economy, which is considered one of the key sectors with potential for job creation, together with the sectors of health and social care and ICT sector.

Higher employment, productivity and economic growth are not the only sustainable sources of growth in living standards, but they can also contribute significantly to the sustainability of pension systems and the consolidation of public finances. Adequate, effective tax burden, smart regulation of the labour market and flexible markets for goods and services are prerequisites for higher employment and productivity.

6 Acknowledgement

The paper is the outcome of scientific project VEGA No. 1/0103/12 ‘Labour market in relation to economic growth in the context of socio-economic changes’.

References

- [1] European Commission (EC), 2011. *Priorities at EU level: the Annual Growth Survey 2012*. [online]. [2014-04-29]. Available from: http://ec.europa.eu/europe2020/making-it-happen/annual-growth-surveys/index_en.htm.
- [2] European Commission (EC), 2012a. *Employment Package*. [online]. [2014-04-27]. Available from: <http://ec.europa.eu/social/main.jsp?catId=1039&langId=en>.
- [3] European Commission (EC), 2012b. *Key areas: comparing Member States' performances*. [online]. [2014-06-02]. Available from: http://ec.europa.eu/europe2020/making-it-happen/key-areas/index_en.htm.
- [4] European Commission (EC), 2013a. *Europe 2020* [online]. [2014-04-28]. Available from: http://ec.europa.eu/europe2020/index_en.htm.
- [5] European Commission (EC), 2013b. *Making it happen: the European Semester*. [online]. [2014-04-26]. Available from: http://ec.europa.eu/europe2020/making-it-happen/index_en.htm.
- [6] European Commission (EC), 2013c. *European employment strategy*. [online]. [2014-05-03]. Available from: <http://ec.europa.eu/social/main.jsp?catId=101&langId=en>.
- [7] Marlier, E. and D. Natali, 2010. *Europe 2020: Towards a More Social EU?* Brussels: P.I.E. Peter Lang, pp. 18-24.
- [8] National Reform Programme of the Slovak Republic 2013 (NRPSR), 2013. [online]. [2014-04-29]. Available from: <http://www.finance.gov.sk/en/Default.aspx?CatID=450>.
- [9] National Reform Programme of the Slovak Republic 2014 (NRPSR), 2014. [online]. [2014-05-21]. Available from: http://ec.europa.eu/europe2020/making-it-happen/country-specific-recommendations/index_en.htm.
- [10] The Council of the European Union (Council), 2013. *Council Recommendation of 9 July 2013 on the National Reform Programme 2013 of Slovakia and delivering a Council opinion on the Stability Programme of Slovakia, 2012-2016*. [online]. [2014-04-05]. Available from: <http://eur-lex.europa.eu/JOHtml.do?uri=OJ:C:2013:217:SOM:EN:HTML>.

- [11] ÚPSVaR. 2013. *Národný projekt XX – Podpora zamestnávania nezamestnaných v samospráve; Národný projekt XXI – Podpora vytvárania pracovných miest*. [online]. [2014-03-29]. Available from: <http://www.upsvar.sk/>.
- [12] Weishaupt, T. and K. Lack, 2011. *The European Employment Strategy: Assessing the Status Quo*. [online]. [2014-05-04]. Available from: <http://connection.ebscohost.com/c/articles/63696876/european-employment-strategy-assessing-status-quo>.

CROSS-BORDER BANKING ACTIVITY IN EMU - INCENTIVES, CONSEQUENCES

Pavel Knotek

*University of Economics, Prague, Department of World Economy, nam. W. Churchilla 4, 130 67 Prague 3, Czech Republic
email: xknop05@vse.cz*

Abstract

Euro area is not homogeneous area from the beginning of own existence. We can observe two blocks inside European monetary union, if we discuss trade and capital flows. Some countries generate constant deficits of current accounts which are parts of balance of payments, some countries are export oriented and do not have problems with trade deficits. Financial crisis meant also turning point in capital flow directions. Banks are important participants of financial markets and also can have significant influence on capital flows through cross-border interbank lending. Interbank credits, or providing liquidity, should be analysed from basic views such as yield, liquidity and risk, which should be main determinants of interbank lending. Trade and capital flows and of course macroeconomic environment have impact on banking sectors. This paper has main aim to analyse main incentives for cross-border interbank lending and to deal with possible consequences for banking sector, mainly using Greek example.

Keywords

Capital Flows, Currents Accounts, Banks, Interbank Credits, Yields.

JEL Classification

E51, F34, G21.

1 Introduction

European monetary union (EMU), or also euro area, has been functioning more than ten years. The creation of monetary union on area of Europe, represented one of turning points in European integration, which lasts more than few decades. We have observed argument already at the beginning of common currency project, when on one side we see supporters of common currency euro, who see in EMU membership mainly advantages. On the other hand, opponents point out problems and risks, which are connected with euro adoption, for more detail see Baldwin and Wyplosz (2012). This paper has no ambition to participate in this argument and to bring answer, whether euro area project is successful and viable or not. The main aim is to analyse processes, which appeared inside EMU as a result of trade and capital flows (which is one of the most discussed euro area imbalance) in connection to banking sector (with major focus on Greece and Germany examples).

2 Capital flows in form of foreign banking credits

Euro area represents today heterogeneous unit of eighteen EU countries. We can see heterogeneity in various characteristics (level of economy¹, structure of economy, position on business cycle) and we can state EMU is not optimal currency area as is defined by economic theory². We could observe a lot of events during last ten years. Individual euro zone member countries experienced different economic development (measured by key macroeconomic variables as real GDP growth rate, inflation rate, unemployment etc.) and previous assumption, that if a country before euro adoption fulfils Maastricht nominal convergence criteria, then there will be convergence between individual euro area countries, remained unsatisfied.

Different economic development in individual European countries led to creation of imbalances in block of countries which uses common euro currency. If we do not consider debt crisis, which lasts few years, one of the most discussed problems remains balance of payment imbalance. We observed situation that some EMU countries had and still have permanent surpluses and other countries have

¹ Measured by e.g. GDP per capita in PPS (Purchasing Power Standards), Eurostat methodics.

² Characteristics for countries, which should be involved in monetary union, were analysed mainly by Mundell (1961), McKinnon (1963), Kenen (1969).

permanent balance of payments deficits - if we discuss trade balance or current account balances (CA) as parts of balance of payments.

High share of intra-trade, it means internal trade between individual euro zone countries, is typical for EMU. Increase in trade volumes or in trade intensity between new country in monetary union and rest of countries which should have positive influence on economic performance and GDP growth, is one of the most emphasized positive effects of euro adoption. Higher trade intensity can be result of few factors, but mainly of exchange rate risk disappearance, higher price transparency, reduction of transaction costs, which are also positive effects of euro adoption. But what is the exact effect of increase in trade intensity of individual country with rest of monetary union? It can be subject of discussion, if exports exceeds imports and balance of current account will improve or this process will go in opposite way. This topics were not considered seriously in period 1999-2008.

Distribution of euro area into countries with permanent current account surpluses or deficits we can confirm using data. Positive current account balances in period 2002-2012 we could observe in Germany, Netherlands, Finland, but also in Austria. On the other hand we see second group of countries, which are marked as PIGS, which stands for Portugal, Ireland, Greece and Spain, also usually connected with Italy. Distribution of countries is shown in next graph.

View at the dynamics of current accounts is also very interesting. Increase in current account differences was obvious until 2007. While Germany or Netherlands faced growth of surpluses until 2007, in countries, which belong to southern wing of euro area, the situation was totally different. After 2008 we observe correction of this imbalance as result of economic slowdown. Part of research literature sees main reasons of this current account imbalance in different development of competitiveness (wage growth divergence) and in different fiscal policies of member states, as stated in e.g. Abad et al. (2012).

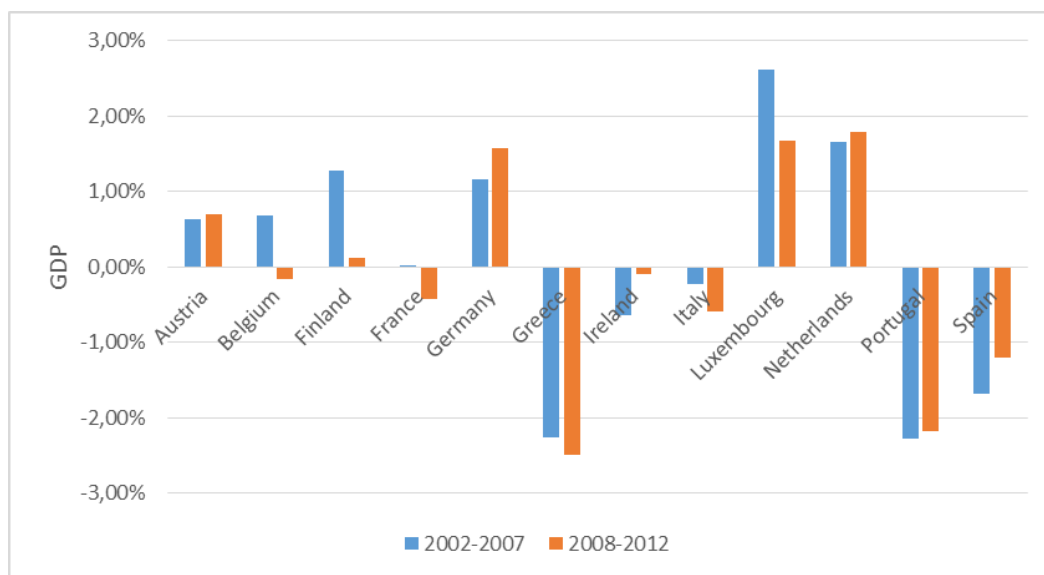


Figure 1. Average Current Account Balance in EMU Countries as % of GDP before and after Financial Crisis
 (Source: own calculation) Note: quarterly data, arithmetic mean (CA and GDP).

Balance of payment balance (ΔBP), as a flow variable, we can simply define with formula:

$$\Delta BP = \Delta CA + \Delta FA, \quad (1)$$

where ΔCA means current account balance and ΔFA means financial account balance. Theoretically, if we speak about balance of payment in equilibrium (or when it's balance equals to zero), current account deficit should be compensated by financial account surplus and vice versa. It means that *ceteris paribus* countries with permanent current account surpluses (e.g. Germany, Netherlands or Finland) should be exporters of capital and countries of southern euro area wing should be importers of capital. The capital could be exported in various form, from balance of payments perspective we distinguish:

- Foreign direct investments (FDI),
- Portfolio investments,
- Other forms of investments.

Healthy and functional banking sector is one of the most important sectors in each economy, which prepares conditions for next economic growth. From one point of view, banks operate also on interbank market and especially, if speak about banking sectors in EMU countries, one big banking sector using common currency was created by gradual euro adopting. Banks are on this market cooperating, especially it is a source of funding for some of them. This credit connections, if a bank provides credit (liquidity) to a foreign bank (i.e. cross-border transaction) should also influence items in balance of payments as an export or import of capital. Credits (claims) on interbank market could be marked as a form of an investment.

We can observe different development of foreign claims variable from moment, when cash euro circulation started, i.e. from 2002 year. Germany, as country with permanent and growing current account surpluses, faced in period from 2002 to 2008 increase in value of foreign interbank claims. Spain was one of the biggest receivers of German liquidity (involvement reached nearly 300 billion USD in 2008). When financial crisis started, after 2008 in global economy centres, we see significant decrease of German banking sector exposures against foreign banks of euro area countries which suffered from the biggest problems after 2008. Reasons for this scenario were growth of risk and uncertainty on global financial markets, when banks cut down funding between each other. There was significant correlation between volume of credits from German banks to countries with the biggest problems (PIGS).

On the other hand, there was different development in Greek banking sector. Greek banks started to limit their claims (provided funding) against rest of euro area from 2003. Although it was not huge fall, decreasing trend toward 2008 year was obvious. In other economies, which suffered from current account deficits (e.g. Spain or Portugal), we did not observe decrease of exposures against foreign banks, but we also can show boom of cross-border transactions as in German banking sector. We can carefully and partly state, that countries with surpluses in current accounts increased their foreign claims, when banking sectors in countries with negative current account balances limited them or hold them on the same level.

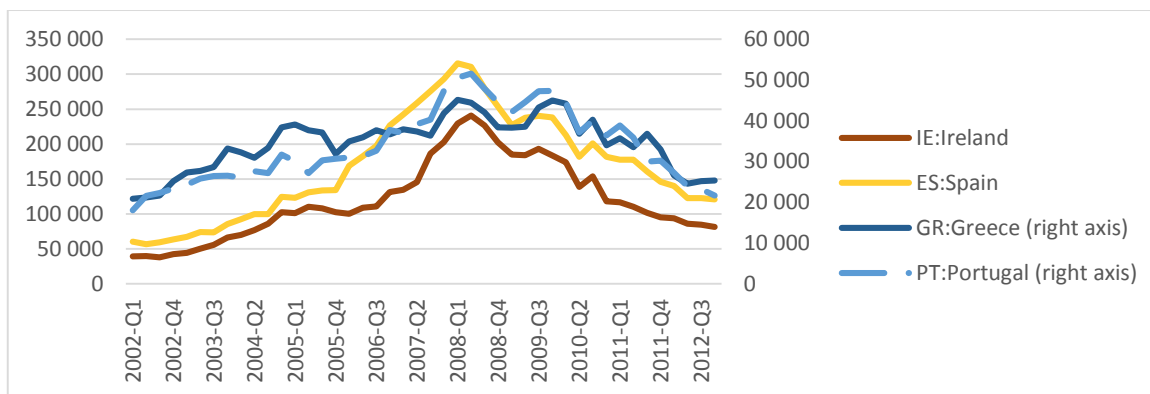


Figure 2. Foreign Banking Claims of German Banks against Selected Countries, in mil. USD
 (Source: own calculations)

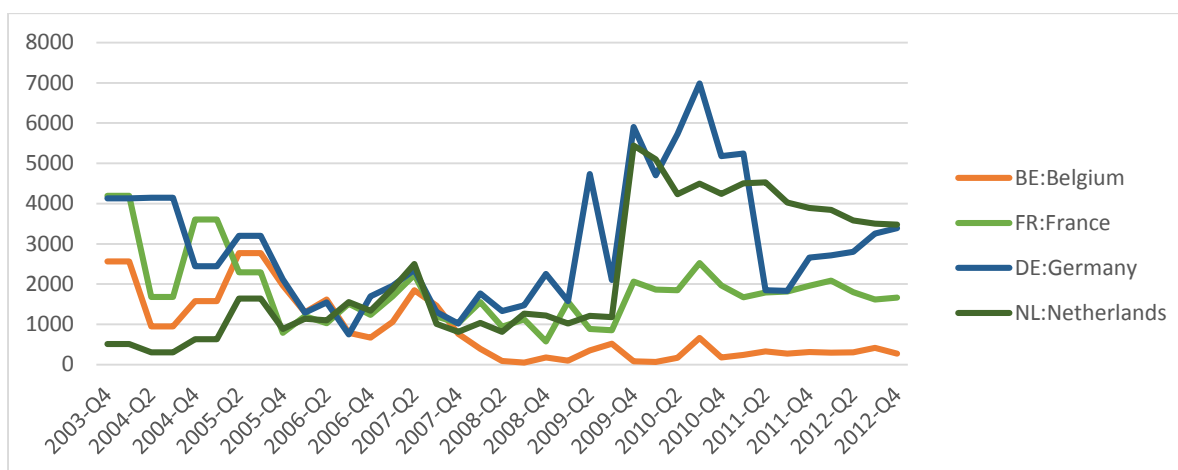


Figure 3. Foreign Banking Claims of Greek Banks against Selected Countries, in mil. USD
 (Source: own calculations)

3 Interbank credit (claims) determinants

Fact, that banks are lending money into each other and create cross-border positions must have some reasons. Every bank acts as another investor, who wants to maximize own yield in connection with accepted rate of risk and liquidity. We can also use optics of financial theory, that investors, in our case banks, assess three factors - yield (return), risk level and liquidity. If we discuss liquidity, this variable is *ceteris paribus* on interbank markets at the highest levels in comparison with other types of assets. Possible exception represents only periods of financial crises, when traded deposit volumes fall as reason of increase in general credit risk. Banks during period of increased stress and uncertainty do not know the exact situation of counterparties on the asset side or level of devalued assets (bonds which lost value or values of non-performing loans) and the general volume of problems to which is a bank facing.

Further important component in investing is risk, when bank or another investor must perceive possibility that investment (in our case credit) can turn into unexpected scenario, i.e. counterparty default happens (partial or full) and credit or investment will not be paid off. Quantified risk level have not only fundamental dimension, when counterparty is analysed on the data basis, but also psychological dimension. Financial economics try to evaluate rate of risk with help of measured volatility.

Level of general risk, or uncertainty at the moment, on financial markets could be approximated with index VIX or in Europe with index VDAX, which, if we simplify, can be used for interbank market. Logically, in times of higher stress and risk, activity should be lower on financial markets,

also on interbank markets. Period of lower risk levels, according to mentioned indexes, was between 2002 and 2006. After 2008 we see, that level of perceived risk and uncertainty, remains at high levels. Movement of capital, in form of interbank lending, corresponded to this situation. In 2002-2006, rise in volume of interbank claims was evident, e.g. in case of Germany, as country which exports capital. High level of VDAX and VIX indexes after 2009 also respond to European events, such as Greek default or problems with nonperforming loans in some euro area banking sectors.

Table 1. Risk Measured by VIX and VDAX - Standard Deviations in Individual Years

YEAR	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
σ_x (VIX)	0.058	0.039	0.049	0.053	0.060	0.088	0.080	0.057	0.075	0.088	0.062
σ_x (VDAX)	-	-	-	0.410	0.892	1.004	2.825	1.405	1.373	1.776	1.073

Source: own calculations, data from CBOE, finance.yahoo.com.

However, yield (or expected return to a bank or investor) should be the key variable which influences capital allocation. Literature, e.g. Lane (2013) with reference to Geanakoplos (2009), who dealt with capital flows inside EMU, say, that interest rate (yield) is not sufficient variable which can explain capital flows (or cross-border credit flows). Adoption of euro clearly eliminated exchange rate risk, so if a bank provides credit (liquidity) abroad within euro area in euro currency, the value (yield) of investment is not influenced by exchange rate fluctuations.

We could observe disparities also in rates of inflation in individual euro area countries. Inflation directly influences real yield of credit. Logically, a bank from EMU should allocate capital in those areas, where the highest yield (interest rate) is offered and then a bank confronts this yield with domestic rate of inflation. And here we can find reason, why capital (also bank credits) moved from Germany to EMU periphery. Nominal level of interest rates on banking markets or government bond yields or yields from other assets in Greece or Spain were higher than in Germany.

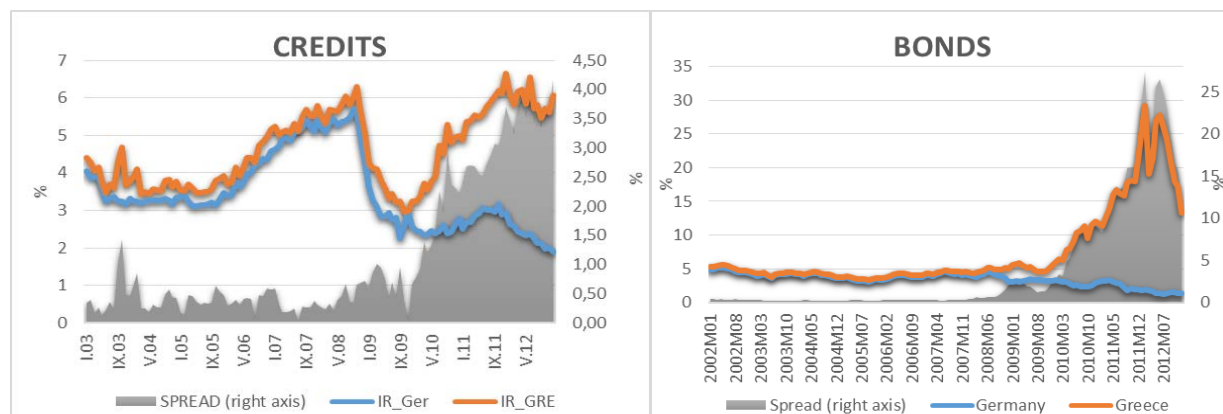
From a German's bank position, if the bank lends money to Greek subject (bank) for nominal interest rate, which is usual on Greek market due to higher inflation, but from German point of view is nominally higher, then after adjustment by German inflation, will reach higher real yield. And that was case of 2008 year.

If we focus on banking market, interest rates on credit side were nominally higher in Greece, what probably indicates higher interest rates also on deposit side. German bank could lend money to Greek counterparties at rate:

$$IR = EURIBOR\ 12M + \xi, \quad (2)$$

where IR means interest rate (required rate of return) of German bank for lending money sources, which consists of usual rate on interbank market (e.g. EURIBOR with 12 months maturity) and possible specific surcharge ξ , which can take into account increased risk. This value should be then adjusted by domestic (German) inflation rate. Credit interest rates were strongly correlated until 2008, they are also based on EURIBOR.

Interesting scenario we could observe on bond market. Convergence of government bond yields in case of Germany and Greece was obvious until beginning of financial crisis in 2008. Investors demanded comparable yields in case of government bond yields of Germany and Greece, level of spread was too low. Adoption of euro as own currency was perceived as evidence of economic quality, regardless to other macroeconomic fundamentals, within EMU. Widening of yield spreads started after 2008, when Greece experienced default in public debt, which was solved with help of external institutions such as ECB, IMF. In general we can state, that level of yields (returns) was on Greek asset market higher.



Note: IR_Ger means interest rates from new credits provided by German banks, IR_GRE means interest rates from new credits provided by Greek banks, segment is credits to non-financial corporations over 1 mil. EUR with maximum one year fixation. Spread = IR_GRE - IR_Ger. Bond yields are calculated due to methodics for long-term yields calculation (convergence purposes).

Figure 4. Interest Rates on Credits, Government Bond Yields, Germany and Greece
 (Source: own calculations and charts)

Rise in price levels (measured by HICP) can be shown as an example of variable, which faced different values in EMU countries. We have definitely in mind, it is practically impossible to set such monetary policy, which could completely suit to all countries of monetary zone. Different growth rates of price levels affect real interest rates in individual countries. Within EMU, it is advantageous, from low-inflation economy point of view, to invest capital in regions with higher inflation, because these regions will probably have also higher nominal interest rates. We observed positive interest spread in period from 2002 to 2011 between Greece and Germany. Greek inflation rate was continuously and significantly above German rate of inflation.

Table 2. Inflation Differential between Germany and Greece, Measured by HICP, Annual Changes in %

YEAR	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Germany	1.4	1.0	1.8	1.9	1.8	2.3	2.8	0.2	1.2	2.5	2.1
Greece	3.9	3.4	3.0	3.5	3.3	3.0	4.2	1.3	4.7	3.1	1.0
Spread	2.5	2.4	1.2	1.6	1.5	0.7	1.4	1.1	3.5	0.6	-1.1

Source: own calculations, data from Eurostat.

4 Consequences for banking sectors - TARGET2 and Greece

Banks from EMU countries use payment system TARGET2, which is interbank payment system for cross-border payments between banks from different countries. Few years ago, German economists pointed out imbalances in payment system TARGET2, e.g. discussed in Sinn and Wollmershaeuser (2011) or in Abad et al. (2011). The main reason of this imbalance is that some countries have permanent surpluses in their balance of payments (in current accounts) and some countries have deficits. Following reason are cross-border capital operations, in which also interbank credits. Capital through payment transactions thus flowed from countries with current account deficits to banks with surpluses. Banks, which had to fulfil and perform transactions demanded by their clients, were under liquidity pressure and were using refinancing operations from ECB through own national central bank. After that, total amount of uncovered (unsecured) debt, of one part of euro area to another part, occurs. This mechanism is described in Garber (2010).

Problems with imbalance in TARGET2 (which is connected with balance of payments) was not discussed until 2008, because deficits in current accounts in problem countries were balanced by capital inflow (deposits, bonds purchases, etc.). However situation has changed after 2008. We still see deficits in current accounts of certain countries, despite their decrease, but massive inflow of capital stopped (also in form of interbank credits). Mentioned processes were in some countries

strengthened by deposit withdrawals from banking sectors. Reason was also increased level of risk by speculations connected with exit from euro area (e.g. Greece).

Mentioned imbalance is real situation, which has visible consequences. Firstly, volume of claims and liabilities grows against TARGET2 (i.e. ECB) and it is questionable if these volumes are risky and could be ever paid off. Secondly, some central banks changed positions to their banking sectors from creditors to debtors. Finally, in some banking sectors across EMU we observe relative surpluses of liquidity, caused by capital inflow connected with surpluses in current or financial accounts, other banking sectors suffers from lower liquidity levels and they use financial sources from ECB. Some economists consider imbalance in TARGET2 system as not significant without any serious negative implications for EMU. Data also shows decrease in TARGET2 balances and fall in current account deficits of southern EMU countries.

Let's use above mentioned processes and trends on example of Greece. Greek economy faces problems with competitiveness and current account deficit. These deficits were compensated by capital inflow, more precisely by portfolio investments (also by interbank lending from other EMU countries). Aggregated banking balance sheet shows classic structure, which means that main business is in accepting deposits and providing credits. Structure and development of banking sectors in EU is analysed precisely in Liikanen et al. (2012).

The main item on asset side are credits to non-financial corporations. Greek banks provided increased volume of credits until 2007, which could be also explained by liquidity inflow from other countries and following effort to place it on financial markets. Increased volumes of new credits supported GDP growth. Claims against central bank were on very low levels during observed period.

Accepted deposits from retail and corporate clients were the main item on liability side. With data from Greek banking sector we can confirm their significant decrease as result of huge withdrawals after 2008, which had several reasons. Firstly, people started to withdraw their deposits because of higher unemployment and economic slowdown, simply they used previously saved money for purchases of goods and services for usual consumption. Secondly, there was huge fear about future of Greece in EMU and about possible exit from this monetary union. Doubts about these topics and about stability of banking sectors supported deposit withdrawals. People held more cash and started to move their deposits to foreign banks, which were considered safe. In this problematic period for banks, funding from central banks rose. Liquidity from central bank replaced client's deposits, which decreased as result of capital outflow (deposits in bank) and negative current account balance.

Table 3. Aggregated Balance Sheet of Banking Sector in Greece (Relative View)

ASSETS	2002	2005	2008	2011
Cash (held by credit institutions)	0.74%	0.68%	0.51%	0.37%
Claims on Bank of Greece	0.69%	1.37%	1.48%	0.78%
Claims on other MFIs	16.79%	13.86%	24.29%	30.78%
Claims (Loans) on non MFIs	42.00%	51.24%	43.82%	42.71%
Securities	25.65%	20.95%	17.92%	14.39%
Other assets	14.13%	11.90%	11.99%	10.97%
LIABILITIES	2002	2005	2008	2011
Liabilities to Bank of Greece	1.22%	0.76%	7.57%	19.95%
Liabilities to other MFIs	20.82%	15.41%	22.58%	23.89%
Deposits and repos of non MFIs	54.18%	59.28%	52.57%	36.76%
Debt securities issued	0.80%	0.18%	0.57%	0.24%
Capital and reserves	8.87%	7.35%	5.41%	8.48%
Other liabilities	14.11%	17.02%	11.31%	10.68%

Source: own calculations, data from Bank of Greece.

5 Conclusion

Euro area could be divided into few blocks from the perspective of real flows (i.e. trade in goods and services) and financial flows (capital movements), which also give evidence about its heterogeneity. We have still observed countries with significantly different position in their current accounts of their balance of payments. Countries with current account surpluses tended to export capital, also in form of interbank funding, to other countries, which helped to finance their deficits in balance of payments. Capital flows from “surplus” countries were motivated by absence of exchange rate risk and especially higher foreign nominal yields, which in times of different inflation in various regions gave under lower domestic inflation higher real yields.

Capital movements and current account balances are also reflected in payment system TARGET2 positions. Some countries from euro area faced current account deficits and capital outflow after 2008, which made pressure also on banking sector in form of deposit withdrawing and deterioration in liquidity. On Greek example was proved, that deposits of clients significantly decreased after 2008 in banks. Banking sector compensated deposit outflow by liquidity from central bank (i.e. ECB), when item liability to central bank rose.

6 Acknowledgment

This research was financially supported by Faculty of international relations, University of economics, Prague project under title “New governance directions in light of financial and debt crisis”, grant NO. F2/7/2014.

References

- [1] Abad, J., A. Loeffler and H. Zemanek, 2011. *TARGET2 Unlimited: Monetary Policy Implications of Asymmetric Liquidity Management within the Euro Area*. CEPS Policy Brief No. 248.
- [2] Abad, J., A. Loeffler, G. Schnabl and H. Zemanek, 2012. *Fiscal divergence, Current Account and TARGET2 Imbalances in the EMU*. Universität Leipzig Working paper No. 105.
- [3] Baldwin, R. E. and Ch. Wyplosz, 2012. *The economics of European integration*. 4th Ed. London: McGraw-Hill Higher Education.
- [4] Garber, P. M., 2010. *The mechanics of Intra Euro Capital Flight*. Deutsche Bank Global Markets Research Economics Special Report.
- [5] Geanakoplos, J., 2009. The leverage cycle. *NBER Macroeconomics Annual* 24, pp. 1-66.
- [6] Kenen, P., 1969. The Theory of Optimum Currency Areas: An Eclectic View. In *Monetary Problems of the International Economy*, University of Chicago Press, pp. 41-60.
- [7] Lane, P. R., 2013. *Capital Flows in the Euro Area*. European Commission economic papers 497.
- [8] Liikanen L. et al., 2012. *High-level expert group on reforming the structure of the eu banking sector*. European Commission.
- [9] McKinnon, R. I., 1963. Optimum Currency Areas. *The American Economic Review*, Vol. 53, issue 4, pp. 717-725.
- [10] Mundell, R. A., 1961. A Theory of Optimum Currency Areas. *The American Economic Review*, vol. 51, issue 4, pp. 657-665.
- [11] Sinn, H. W. and T. Wollmershaeuser, 2011. *Target Loans, Current Account Balances and Capital Flows: The ECB's Rescue Facility*. NBER Working Paper No. 17626.

PROFITABILITY OF EU SUBSIDY FOR THE FORESTATION PLAN IN THE CZECH REPUBLIC

Pavína Kóhler¹, Jaromír Ventruba², Lenka Přečková³

¹*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: haltofova@opf.slu.cz*

²*Self-employed person, Opavska 261, 793 68 Dvorce, Czech Republic
email: jarys.v@centrum.cz*

³*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: preckova@opf.slu.cz*

Abstract

European Union funds represent an important financial source and unique opportunity in many fields of the Czech economy. Applicants receive subsidy from the EU related to forestry through The *State Agricultural Intervention Fund*, which is an accredited paying agency and administrator. The aim of this paper is to calculate profitability of a subsidy for the forestation plan. Financial effect could be significantly higher compared to other possibilities, which foresters have. One authentic example of subsidy use for forestation of a property with its costs and incomes was calculated and compared to other possibilities, using the property in a time period of 16 years. It is the time period of the forestation plan. Net present value (NPV) of cash flows from forestation plan was compared with present value from renting the property for the same time and as well as for infinity. Internal rate of return 2% p.a. was used for calculations. Results prove that initial investment for foresting was paid back already in the first year by subsidy and the NPV of forestation plan is more than 111 thousands CZK per 1 ha (4,044 EUR) what is almost 2 times higher, compared to renting this property for market price.

Keywords

EU Funds, Forestry, Net Present Value, Czech Republic.

JEL Classification

G31, H5, O44, Q23.

1 Introduction

Forestry is supported with state subsidies or grants to increase biodiversity of forest ecosystems, their stability and to decrease their sensitivity to biotical and abiotical causal agents which could damage the forests. The subsidies are provided for planting of ameliorating species (MZD) to eliminate higher costs for their planting and growing. Bartoš et. al (2007) wrote that within forest regeneration with high MZD composition (spruce 30%, oak 30%, beech 30%, larch 10%) it was possible to gain profit of more than 46,000 CZK from one hectare, which was 5 times more than in case without MZD and as well as without the subsidy.

Subsidies for forestations are provided too. Less productive lands in mountains and sub montane areas are more demanded for forestations. In addition it makes job opportunities in rural areas. Forestation has positive influence on soil and water regime, fresh air, as well as on esthetical, landscape and recreation functions. Last but not least future forest is resource of wood; renewable resource. Despite all these positives of subsidies for forestation named above many owners or foresters could be scarred of difficult legislative process of agricultural land – forest conversion. Topka (2003) points out some possible threat of important large environmental encroachment. That is why he urges caution and responsible practise in localities where the forestation should be evaluated all-embracing view to the esthetical, soil protection, hydrological, land evaluation and negative influence of biotical and abiotical factors.

Subsidies for forestry can support investment into this sector. Investment into forests is an unattractive, not very profitable with approximately 2% annual rate of profit in long-term period.

However the use of subsidies can increase the profit rate and make it more attractive. Then investment into agricultural property with its subsequent forestation could be suitable and a long-term asset within investor's portfolio. Moreover, it is presently profitable.

Regard to the fact that development of wood prices do not follow inflation rate and investment into forests are long-term, it is almost impossible to estimate future prices of wood after rotation from current forestation (from planting to harvest).

Aim of the research is an evaluation of investment efficiency into forestation of agricultural land by use of subsidies. On concrete example demands of costs and possible incomes from subsidy provided by The State Agricultural Intervention Fund (SZIF) are demonstrated. The hypothesis was set that subsidies could represent higher revenues than investments into other assets or another use of agriculture land; e.g. renting.

2 Methodology

Profitability of two different uses of agricultural land is compared. First the land is rented for agricultural purpose and second it is used for forestation in an actual example property in the Czech Republic.

Cash flows of forestation are compared as well as with investments into state bills with average rate of profit 2% p.a. with low rate of risk. This could be equal to saving money in a bank account. The percentage is used for calculations of present value of cash flows too.

In both cases of the two different uses the investor is the owner of the property. Because of a 16 years period, demanded by SZIF subsidy condition, the investment is evaluated in this period.

2.1 Forestation

Forestation is a process of planting forest on previous agricultural land. It was made on a concrete land from the year 2012 of an area of about 30 ha. Paid costs were noted down. Due to restricting requirements of the land owner more specifications are not given and all costs and incomes are calculated on 1 ha. In view of this fact some costs could be higher in case of smaller land for forestation project.

For all concrete calculations registered areas must be used. The areas are registered in The Land Parcel Identification System (LPIS) according to the Government Regulation No. 239/2007 Coll., Afforestation of agricultural land, as amended. The land areas are usually lower than area in the land register because of its reduction by tree projections. Direct costs are planting costs and future forest tending including fence. The target tree composition must be in agreement with appendix No. 6 of Public Notice No. 139/2004 Coll., which establishes transfer details of forest-tree seeds and seedlings, origin registration of reproductive material and details of forest reproduction and reforestation of lots pronounced lands for performance of forest function. Planting costs depend on type of trees and their amount which relates to their spacing. Incomes are cash flows from subsidy, given in EUR. For recalculation the exchange rate from the moment of writing the grant application was used, which was 25.218 CZK/EUR.

2.2 Net present value method (NPV)

Net present value of all costs and incomes in case of subsidy as well as in case of renting the land within 16 years was calculated. This time is period demanded for the sustainability of a forestation project. Alternative costs are 2% p.a. what is equal to the interest rate of an investment with minimum risk.

$$NPV = C_0 + \sum \frac{C_n}{(1+i)^n} \quad (1)$$

C_0 – investment

C_n – cash flows

n – number of years of project duration

i – demanded rate of profit, alternative costs, internal rate of return

3 Results

Two investment strategies for future subsidy applicant of two different use of agriculture land are compared. In the first phase real costs and incomes from the forestation project are calculated. It is practical, because it gives information about real cash flows and can give important hints for investors who are not foresters. Costs are prices for products and services provided by entrepreneurs. Some other demands of forestation application are described below.

3.1 The forestation project

First, the applicator must specify the agricultural land of interest with its area from the land register and compare this with the area in LPIS. The LPIS area represents true conditions and is important for forestation project and provided subsidy. For the paper all calculations are re-counted on one hectare area.

According to the locality of the land and its stand type the target tree composition of main species (ZD), MZD, admixed and associated species (PVD) (tab. 1) must be determined. All must be in agreement with appendix No. 6 of Public Notice No. 139/2004 Coll., which establishes transfer details of forest-tree seeds and seedlings, origin registration of reproductive material and details of forest reproduction and reforestation of lots pronounced lands for performance of forest function. Tree composition has a direct influence on forestation costs since calculated tree prices differ according to tree species.

Table 1. Tree Composition According to the Target Stand Type

Target Stand Type	Main Species	MZD	PVD
55	SM	BK, JD, JV, JL, LP, JS, JDO, TR	MD, JR, DG
57	SM	BK, JD, JDO, BR, OS	BO, MD, OL, JR
29	OL, JS	JV, OL	SM
59	SM	BK, JD, JV, OL, OS	BR
51	JV, JS	BK, JL, LP, JD, JV	SM, OL

Note: SM (spruce), BK (beech), MD (larch), OL (alder), JS (ash), JV (maple), JD (fir), LP (lime), JDO (Colorado white fir), TR (cherry), BR (birch), JL (elm), BO (pine)

Source: appendix No. 6 of Public Notice No. 139/2004 Coll.

Minimal amount of plants was set according to appendix No. 6 (mentioned above) where amount of beech MZD plants was adequately decreased. Use of container planting stock allows another 20% decrease of the plant amount. Forestation was made in two phases; in spring and in autumn (tab. 2, 3). Price of plants differs, depending on type of plants, tree species and amount per ha.

Table 2. Species Composition and Amounts for Spring Planting per ha

Tree Species	Type of Trees	Species Composition (%)	Amount	Spacing (m)	No. of Plants
SM	ZD	28	4,000	2x1.3	1,120
OL	ZD	25	3,200	2x1.5	800
BK	MZD	28	4,000	2x1.3	1,120
MD	PVD	19	2,400	2x1.3	456
Total		100	-	-	3,496

Note: ZD – main trees, MZD - ameliorating species, PVD - admixed and associated species; SM – spruce, OL – alder, BK – beech, MD – larch

Source: according to the methodology and appendix No. 6 of Public Notice No. 139/2004 Coll.

Table 3. Species Composition and Amounts for Autumn Planting per ha

Tree Species	Type of Trees	Species Composition (%)	Amount	Spacing (m)	No. of Plants
SM	ZD	34	3,200	2x1.5	1,088
OL	ZD	10	3,200	2x1.5	320
BK	MZD	34	4,000	2x1.5	1,360
MD	PVD	22	2,400	2x1.5	528
Total	-	100	-	-	3,296

Note: ZD – main trees, MZD - ameliorating species, PVD - admixed and associated species; SM – spruce, OL – alder, BK – beech, MD – larch

Source: according to the methodology and appendix No. 6 of Public Notice No. 139/2004 Coll.

Alders were planted on some wet localities and around streams. Places with bush of willow were left as a forest-free area. On drier places spruce-larch line is rotated with beech-larch line. Origin of plants must be documented according the law. Before forestation the whole area must have been prepared. Natural seedlings must have been removed.

3.2 Calculation of Forestation Costs

Costs of plants include transporting costs too. Numbers of plants were calculated from demands of spring and autumn planting, where in each phase half of the land was planted. Total costs were 23,340 CZK per ha (tab. 4).

Table 4. Costs of Plants Including Their Transport

Tree Species	No. of Plants per ha	Species Composition	Price (CZK)	Total Price (CZK)
SM	3,580	33	7.00	8,270
OL	3,200	18	5.50	3,168
BK	4,000	33	7.30	9,636
MD	2,400	16	5.90	2,266
Total	13,180	-	-	23,340

Note: SM – spruce, OL – alder, BK – beech, MD – larch

Source: realized costs.

Row-tree machine aggregated with tractor Zetor 7245 was used for forestation of spruce, beech and larch. Three people were a crew of the machine. Wetter places were forested by slit planting. Total costs for planting of one hectare were 9,236 CZK (tab. 5).

Table 5. Costs of Planting

Kind of Planting	No. of Plants per ha	Price (CZK)	Total Price (CZK)
mechanised	2,887	2.80	8,084
split planting	576	2.00	1,125
Total	3,463	-	9,236

Source: realized costs.

Costs of fence building were 50 CZK on 1 m, calculated for whole forestation land. The forestation project was made on an area of about 30 ha, therefore costs of fence building were recalculated on one hectare and 5,043 CZK respond to it. In case of smaller land the respective costs will be higher.

After forestation there are calculated costs for subsequent forest tending until established planting. Plants will be scythed two times a year for the next three years and then only once next two years. Altogether it is 8 times which equals 8 ha. Because of tableland the machine Crossjet 4x4 could be used. Conifers will be painted against game browsing in autumn on 14 % of forested area for next 5 years. In case of plants fading, the blanks will be filled. The calculation is based on about 500 plants per ha for an average price of 7 CZK.

Total costs of subsequent forest tending are 16,032 CZK (tab. 6).

Table 6. Costs of Subsequent Forest Tending

Year	Scything		Painting			Costs of Filling (CZK)	Total (CZK)	Total with VAT (CZK)
	Area (ha)	Price per ha (CZK)	Total (CZK)	Area (ha)	Price per ha (CZK)	Total (CZK)		
1	2.00	1,000	2,000	0.14	2,500	350	3,500	5,850
2	2.00	1,000	2,000	0.14	2,500	350		2,350
3	2.00	1,000	2,000	0.14	2,500	350		2,350
4	1.00	1,000	1,000	0.14	2,500	350		1,350
5	1.00	1,000	1,000	0.14	2,500	350		1,350
Total	8.00		8,000	0.7		1,750	3,500	13,250

Source: realized costs.

Total costs with and without value added tax (VAT) are in tab. 7. Total costs for forestation project are 59,611 CZK per hectare.

Table 7. Total Costs of Forestation Project

Item	Costs without VAT (CZK)	Total Costs with VAT (CZK)
Plants	23,340	28,241
Planting	-	9,236
Fence	5,043	6,102
Subsequent forest tending	13,250	16,032
Total	-	59,611

Source: realized costs.

3.3 Subsidy on forestation in year 2013

Subsidy amount for broadleaves was 2,590 EUR/ha, in Less Favoured Areas (LFA) it was 2,961 EUR/ha and for coniferous it was 1,954 EUR/ha, in LFA it was 2,233 EUR/ha.

For a forestation project a higher amount for LFA is used, if more than 50% of forested area is located in LFA. There is not any reduction of area because of forest-free areas used as a road or compartment line, if they are not wider than 4 m.

Subsidy amount for subsequent forest tending was 437 EUR/ha per year.

There is a compensation subsidy for land which was before forestation registered in LPIS as a land with meadow, agricultural land and the like. In case of our example the amount of this subsidy for the entrepreneur, who was not an agricultural businessman, was 149 EUR/ha. In the opposite case it could be 294 EUR/ha, if they were.

Table 8. Subsidy on Planting

Trees	Amount of Subsidy (EUR/ha)	Area (ha)	Subsidy (EUR)	Exchange Rate CZK/EUR	Total Subsidy (CZK)
coniferous	2,233	0.49	1,094	25.218	27,589
broadleaves	2,961	0.51	1,510	25.218	38,079
Total		1.00	2,604		65,668

Source: calculations using subsidy sum from SZIF.

Table 9. Subsidy on Subsequent Forest Tending and Compensation

Year	Amount of Subsidy for Subsequent Forest Tending (EUR/ha)	Compensation (EUR/ha)	Total (EUR)	Total (CZK)
1	437	149	586	14,778
2	437	149	586	14,778
3	437	149	586	14,778
4	437	149	586	14,778
5	437	149	586	14,778
6		149	149	3,757
7		149	149	3,757
8		149	149	3,757
9		149	149	3,757
10		149	149	3,757
11		149	149	3,757
12		149	149	3,757
13		149	149	3,757
14		149	149	3,757
15		149	149	3,757
Total	2,185	2,235	4,420	111,460

Note: For EUR-CZK conversion the exchange rate 25,218 CZK/EUR was used.

Source: calculations using subsidy sum from SZIF.

3.4 Net present value of cash flows from forestation project

First, the cash flows in particular years were calculated and then their present values and net present value of the project according to the formula (1) (tab. 10). The applicant is the owner of the property, so an initial investment in purchasing the land is not necessary. Internal rate of return is 2% p.a.

Table 10. Calculation of Present Value of the Forestation Project

Year	Incomes (CZK)	PV of Incomes (CZK)	Costs (CZK)	PV of Costs (CZK)	NPV (CZK)
0	65,668	65,668	- 43,579	- 43,579	22,089
1	14,778	14,488	- 7,078	- 6,939	29,638
2	14,778	14,204	- 2,844	- 2,734	41,109
3	14,778	13,926	- 2,844	- 2,680	52,354
4	14,778	13,653	- 1,633	- 1,509	64,498
5	14,778	13,385	- 1,633	- 1,479	76,404
6	3,757	3,336	0	0	79,740
7	3,757	3,271	0	0	83,011
8	3,757	3,207	0	0	86,217
9	3,757	3,144	0	0	89,361
10	3,757	3,082	0	0	92,443
11	3,757	3,022	0	0	95,465
12	3,757	2,962	0	0	98,427
13	3,757	2,904	0	0	101,331
14	3,757	2,847	0	0	104,179
15	3,757	2,792	0	0	106,970
Total	177,128	165,890	- 59,611	- 58,919	106,970

Source: according to the methodology above.

Net present value of the project is already positive in the first year. Subsidy provides higher amount of money than demanded costs for planting. NPV of 16 years project is 106,970 CZK.

3.5 Net present value of agricultural use of the land

If the land is not forested, but is used agriculturally, it could be rent for common price, what is about 4,000 CZK after tax in the locality where the project was realised. Net present value was calculated for 16 years period and internal rate of return 2 % p.a. was used (tab. 11). Net present value is 55,397 CZK.

Table 11. Calculation of Present Value of Renting the Land

Year	Cash Flows (CZK)	PV of Cash Flows (CZK)	NPV (CZK)
0	4,000	4,000	4,000
1	4,000	3,922	7,922
2	4,000	3,845	11,766
3	4,000	3,769	15,536
4	4,000	3,695	19,231
5	4,000	3,623	22,854
6	4,000	3,552	26,406
7	4,000	3,482	29,888
8	4,000	3,414	33,302
9	4,000	3,347	36,649
10	4,000	3,281	39,930
11	4,000	3,217	43,147
Year	Cash Flows (CZK)	PV of Cash Flows (CZK)	NPV (CZK)
12	4,000	3,154	46,301
13	4,000	3,092	49,393
14	4,000	3,032	52,425
15	4,000	2,972	55,397
Total	64,000	55,397	55,397

Source: according to the methodology above.

4 Conclusion and discussion

Topic of the paper is the evaluation of subsidy profitability provided for forestation of agricultural land. Its efficiency was compared with alternative use of the land as suitable investment possibility. In the first example the subsidy from SZIF was the income for the investor and in the second example the incomes were common rents of the land.

Real prices of suppliers' services and product were used for calculations. Amount of subsidy and exchange rate were used as actual in year 2013. NPV was calculated for both examples. Internal rate of return 2% p.a. was used. It responds to current possible interest rate in savings accounts or rate of profit from state bills.

From the results it is obvious, that initial costs are repaid already in the first year and net present value from 16 years forestation project is higher, it is 106,970 CZK per hectare, than in case of renting the land for the same time, NPV would be 55,397 CZK per hectare. Costs in forestation project are almost one third of incomes. The nominal value of the result is influenced by the exchange rate of CZK and EUR and it could differ a bit in different times.

The comparison of two expenditures of agriculture land within the time period of 16 years results in a better and profitable use of the land as a forest with subsidy under the condition of land ownership. As well as with forestation the value of the land will increase.

Forestation is very interesting for foresters as well as for investors especially on localities in LFA, where subsidy is higher. Quite difficult could be the gaining of unused agricultural lands, which are limited.

Despite the fact that the forestation is profitable, many owners are scared off by long-term process, lack of forestry knowledge and legislative.

5 Acknowledgement

This paper was supported by the Ministry of Education, Youth and Sports within the Institutional Support for Long-term Development of a Research Organization in 2014 (School of Business Administration in Karvina, Silesian University in Opava).

References

- [1] Bartoš, J., F. Šach, D. Kacálek and V. Černohous, 2007. Ekonomické aspekty druhového složení první generace lesa na bývalé zemědělské půdě. *Zprávy lesnického výzkumu*, vol. 52, issue 1, pp. 11 – 17.
- [2] Government Regulation No. 239/2007 Coll., Afforestation of agricultural land, as amended. (Nařízení vlády č. 239/2007 Sb., o stanovení podmínek pro poskytování dotací na zalesňování zemědělské půdy).
- [3] Public Notice No. 139/2004 Coll., which establishes transfer details of forest-tree seeds and seedlings, origin registration of reproductive material and details of forest reproduction and reforestation of lots pronounced lands for performance of forest function. (Vyhláška č. 139/2004 Sb., kterou se stanoví podrobnosti o přenosu semen a sazenic lesních dřevin, o evidenci o původu reprodukčního materiálu a podrobnosti o obnově lesních porostů a o zalesňování pozemků prohlášených za pozemky určené k plnění funkcí lesa.).
- [4] Frame forest management guidelines (*Rámcové směrnice hospodaření*) PLO 29 – Nízký Jeseník.
- [5] SZIF, The State Agricultural Intervention Fund (SZIF). [online]. [2013-09-30]. Available from: <http://www.szif.cz/cs>.
- [6] Topka, J., 2003. *Zalesňování zemědělských půd a vyhotovení projektu*. [online]. [2013-09-15]. Available from: <http://www.ckolh.cz/zempudy/zalLesPrace.pdf>.

A REVIEW OF CENTRAL BANK INDEPENDENCE

Martin Kolář

*University of Economics in Prague, Faculty of International Relations, nam. W. Churchilla 4, 130 67 Prague 3, Czech Republic
email: xkolm903@vse.cz*

Abstract

For nearly a quarter of a century, the majority of economic experts have accepted the opinion that central banks should conduct their monetary policies independently of the influence of local governments. This article gives an overview of the main currents of thought on the independence of central banks, and describes a conceptual approach to the design of individual indexes and measuring tools. The term "central bank independence" itself is often defined differently using different arguments, which makes comparison of the results of studies concerning central bank independence difficult. The topic of central bank independence in the context of the financial crisis is very up-to-date, especially with regard to prolonged financial problems of developed countries (USA, EU members, Japan). Different financial results from individual regions or countries all over the world create a suitable pretext for the ongoing debate, which has also resulted in an increasing number of studies dedicated to this topic.

Keywords

Central Bank Independence, Monetary Policy.

JEL Classification

E52, E58.

1 Introduction

Central banks were generally founded to form the structure of the financial system and its stability or regulation which was also closely related to efforts to currency stability. Central banks were also created for the funding needs of the states - more than twenty years ago, central banks operated all over the world mostly as branch offices of the Ministries of Finance with the task of being helpful to governments in managing unemployment and economic output. In the last twenty years, the orientation of central banks has focused more on a new goal - to stabilize the price level. The change of the central banks' behaviour led to the situation in which the economists started to look at ways of achieving the goal which resulted in considerations of the independence of central banks and their subsequent institutional heading towards this framework. The first working papers which analysed the issue of central banks independence, were primarily written by the authors Alesina, Summers (1993) and others, which gradually contributed to the transformation of central banks to independent institutions. This transformation began to be used as an institutional mechanism allowing to control inflation.

Since the central banks have mostly been set up by the executive or legislative power of the countries, or they have existed within the legal framework defined by these authorities, there will always be some kind of relationship between the central bank and government or legislative body. For these reasons it is not possible to separate the central bank completely from the other influences and therefore it is appropriate to consider the degree of separation.

The aim of this article is to provide a basic overview in the area of the central bank independence especially from the point of view of the attitude towards the issue of independence, its measurement, tools used and pointing out difficulties which are mentioned by some of the authors.

2 Central bank independence

The first publications and the pursuit of independence of central banks were reported as part of the monetarist theories that favoured an independent central bank that did not perform active monetary policy with a fixed exchange rule (Friedman, 1968). Other stream of ideas preferring the independence of the central bank are devoted to the theory of economic and political cycle.

Defenders of this stream assumed the dependence of macroeconomic variables development on the electoral cycle and resulting, among others, in volatile price level (Nordhaus, 1975; Hibbs, 1977). The proposed solution of such a relationship was separating of fiscal and monetary policies that would form an independent central bank monetary policy preventing abuse of political leaders seeking re-election.

The theory of time inconsistency of economic policy is considered to be the main theoretical basis for advocating an independent central bank. In this theory decisions are considered as time-inconsistent if the best decision *ex ante* is not optimal *ex post*, even if no new information has been obtained. Nowadays Nobel laureates, Kydland and Prescott (1977) belong among the pioneers of this stream. The basic model of theory of time inconsistency is based on short-term Phillips curve extended by the expectations and the bank loss function. Its main premise is the inequality of long-term optimal level of output and the long-term equilibrium level of output, the optimum amount being bigger than the equilibrium.

Other authors examining the issue of central bank independency were:

- Calvo (1978) - the issue of credibility in a dynamic model of monetary policy,
- Obstfeld (1996) - a fixed exchange rate and the use of credibility of the central banks,
- Rogoff (1985) - analysis of central banks, led by the conservative banker,
- Walsh (1995) and Persson and Tabellini (1993) – the use of principal-agent problem on the time inconsistency of economic policy,
- Backus and Driffill (1985), Barro and King (1984) and Tabellini (1985) - models reputation of central bank under conditions of uncertainty of policy makers preferences in relation to inflation and unemployment.

2.1 Central bank independence - Causes

In the past century, especially during the seventies and eighties there occurred a period in developed economies when the countries found themselves in a constant state of high inflation for almost twenty years. This unsatisfactory situation elicited many questions and, among others, the one that asked for an explanation of the central banks, why they let this state happen. A possible explanation was presented by Barro and Gordon (1983), who pointed out that if the central bank's target is above or below the natural equilibrium level or politicians simply prefer a higher output level, discretionary policy can lead to distortion of inflation, even though real output of the economy is not affected in the long term, but the average inflation rate is inefficiently high.

Such an explanation of inflation, however, raised the question: Why do central banks prefer an economic expansion? Why do they have unrealistic output targets? The explanation was, and many economists pointed that out: political pressures - the elected representatives of the people, the politicians can prefer a short-term economic expansion due to the preference of short-term election aims, which has inflationary consequences in the long-term run due to the expansionary policy. Starting economists Bade and Parkin (1984), much research focused on the relationship between the central bank and the elected power as a key factor in inflation and these studies were based on the hypothesis saying that: if politicians are able to influence the goals of monetary policy and thus its results, then in countries whose central banks are (relatively) independent and have the ability to withstand such a pressure, the inflation rate should be lower. The main reason for the independence of the central banks became the opportunity to tie government hands in the effort to promote short-term objectives or use inflation to relax fiscal restrictions (Kydland and Prescott, 1977; Barro and Gordon, 1983; Rogoff, 1985).

Research published in the first half of the nineties became the principal argument for central bank independence. Many works, Alesina (1988), Grilli, Masciandaro, and Tabellini (1991), Cukierman (1992), Alesina and Summers (1993), Eijffinger and De Haan (1996) have shown a negative correlation between central bank independence and average inflation. Cukierman, Webb and Neyapti (1992) pointed that this relationship did not apply to developing countries, but over the

time and thus by the further development of some developing economies, others (Arnone, Laurens and Segalotto 2006, Crowe and Meade 2008.), however, marked this relationship for developing countries as being similar. Crowe and Meade (2008) fully confirmed the inverse relationship in developing countries in Central Europe, those ones which had undergone a transformation.

2.2 The independence of the central bank's objectives and tools

Most publications examining the independence of central banks focused on two key approaches when assessing their independence. The first one is the institutional characteristics that isolate the central bank from political influence in defining its policy goals. The second approach are all the aspects that allow the central bank to decide freely when implementing of its policy in order to achieve monetary policy objectives. Grilli, Masciandaro and Tabellini (1991) called these two approaches as a political or possibly economic independence. However, more common terminology was introduced by DeBelle and Fischer (1994), who called these two approaches as the goal or possibly tool independence.

Goal independence refers primarily to the central bank's decision-making in determining monetary policy goals without the direct influence of the fiscal authority. The independence tool applies only to the central bank's freedom in the choice of policy instruments to achieve the goals of monetary policy.

2.3 Other views of central bank independence

One of the many views on the division of the different approaches to the independence of central banks is offered by Ahsan, Skully, Wickramanayake (2006) who view the central bank among other things from the governance point of view and they examine the whole issue from the legal and political perspective, price stability, exchange rate policy, monetary policy and debt financing, and ultimately from the transparency and responsibility points of view.

Before the financial crisis in 2007 and beyond, there was a broad consensus that central bank independence is an appropriate tool for achieving the monetary policy objective of price stability. Since the beginning of the crisis, however, a hot topic has appeared in particular the possibility of extending the mandate of the central bank for financial stability. This expansion, however, brings more questions about the need for such additional instruments for the central bank, validity of foundations of central bank independence or whether a broader mandate should impair the independence? Staff of the International Monetary Fund (Bayoumi et al., 2014) are trying to find answers to these questions and other questions in their book. An interesting finding is e.g. the evidence that if the central bank gives up its goal independence and retain tool independence only, it has almost no effect on the deviation from the inflation target (difference in diameter deviations from the inflation target of just 1.48 percentage points).

Although it would be appropriate for the independence of the central banks with regard to financial stability to be studied more, yet it is happening less than with the price stability. However, there are arguments similar to those used in the case of price stability. Governments may be tempted to use regulation to disrupt the supply side in order to change bank financing of government debt and also may be reluctant to tighten macro-prudential regulations if it would be politically costly. Any objections relating to the scope of the mandate of the central bank, endowed with powers ranging from adjusting the level of interest rates for blanket regulation of financial markets, are certainly appropriate. Research (Bayoumi et al., 2014) of the potential consequences of a broader mandate suggests that the average inflation rate is somewhat higher in countries where central banks are responsible for banking supervision than in countries where the central banks are responsible only for the price stability and the difference in the level of inflation is less noticeable if the specimen is limited to the inflation-targeting countries.

3 Measurement of central bank independence

For the case of central bank independence being measured or assessed, a large number of indices was created. Their authors are mainly:

- Bade a Parkin (1988),
- Alesina (1988, 1989),
- Grilli, Masciandaro, Tabellini (1991),
- Cukierman (1992),
- Alesina a Summers (1993),
- Eijffinger a Schaling (1993),
- Cukierman a Webb (1995).

Empirical measurement of central bank independence was based on two basic types of studies for which individual authors have developed a following methodology:

- evaluating the independence de jure (evaluation of independence provided by the legislative regulation of the activity of the bank),
- evaluating de facto independence (evaluation based on other than legal factors).

The first index for evaluation of independence de jure was probably created by Bade and Parkin (1988), who focused on the evaluation of the area of the appointment of the board and the autonomy for the execution of monetary policy. The index does not require the compliance of price stability as the main objective.

Grilli, Masciandaro and Tabellini (1991) further modified the index of authors Bade and Parkin and expanded it by political independence which was defined by them as the ability of central banks to determine the main goal of monetary policy. In their index they deal with three main areas:

- the method of appointment of the board,
- the act of establishing the relationship that connects a central bank and government in the formulation of monetary policy,
- formal responsibility of the central bank's monetary policy.

Alesina and Summers (1993) created an index measuring central bank independence, which assesses both political and economic spheres. Index is based on the work of Bade and Parkin (1988) modified by Alesina (1988, 1989) and the index by Grilli, Masciandaro and Tabellini (1991); the calculation is based on an arithmetic average of the two indices mentioned above.

Index by Eijffinger and Schaling (1993) is also based on the index Grilli, Masciandaro and Tabellini (1991) and can be used for evaluation of the political independence of the central bank and its ability to identify the main goal. Loungani and Sheet (1995) later modified it for evaluation of transition economies.

In its work Banaian (2008) divides central banks in the evaluation of independence de jure in two main streams. First stream is represented by authors and their successors around Grilli, Masciandaro and Tabellini (1991) who used the binary system for evaluation, having weight of individual indicators fixed. The second direction is mainly represented by Alex Cukierman (1992), who used for evaluation the weight which he added to the individual partial evaluations.

Cukierman (1992) first realized the possible existence of a significant difference between the formal autonomy (the legislation) and the real independence of the bank and he came to conclusion that central bank independence may be affected not only by the level of independence de jure, but also other factors such as informal agreements or practices as well as personalities leading the central bank or the government (de facto). For the evaluation of central bank independence Cukierman (1992) used the evaluation of the rate of turnover of the governor, which he added to the index based only on the legislative definition of central bank operations. Later Cukierman and Webb (1995) constructed an index that attempted to measure the political vulnerability of the central bank. Cukierman and Webb (1995) added to their evaluation the evaluation of the probability of the central bank governor leaving the office in the period following the change of the

government or following other significant political change. A detailed breakdown of the various indices of central bank independence was summarized e.g. by Eijffinger, de Haan (1996), Arnone, Laurens, Segalotto (2006), Banaian (2008).

4 Criticism of central bank independence and its measurement

Most of the studies or surveys measuring the independence of the central bank stated that they found a statistically significant inverse correlation between central bank independence and inflation. These results are also now widely accepted and become part of the common presentations of topics of central bank independence and macroeconomic textbooks or monetary economics textbooks. Some studies trying to review these results and statistical data suggest that the empirical basis may not be entirely correct or possibly could be wrong.

Cargill and O'Driscoll (2012) in their thesis refer to the five discrepancies or possibly incorrect assumptions that may affect the incorrect evaluation of the relationship between central banks independence and macroeconomic indicators:

- *The correlation between the degree of de jure independence and inflation lacks sufficient statistical robustness*

The authors mention a study Posen (1998) which for example points out that the correlation between central bank independence and inflation may just have the opposite meaning; this means that the commitment to price stability can generate the independence of central banks. They as well refer to their own calculations, but also calculations done by other authors, who point to the lack of statistical robustness.

- *The rate of de jure independence of central banks is not what is generally claimed*

In the case of the Bank of Japan the authors point out that although according to Alesina and Summers (1993) Japan's central bank is the fourth least dependent bank of the world (on the chart being lower than central banks of Germany, Switzerland and the United States) in fact, Bank of Japan is according to the foundation charter of 1882 (including later amendments of 1912 and 1942), which did not change from 1942 to 1997, one of the most formally dependent central banks of the world.

- *The rate of de jure independence is not a reliable indicator for the evaluation of monetary policy*

When comparing the inflation of Japan and the United States in the period of 1980 - 1990 it is possible to observe a contradiction with the generally presented statements concerning the relationship between central bank independence and inflation. While in the 80s The Federal Reserve System was de jure independent (according to relevant sources) and responsible for the high inflation, on the contrary Bank of Japan, as one of the most dependent de jure world central banks, achieved an impressive price stability.

- *The rate of de jure independence is an unreliable indicator of de facto independence*

De jure relationship between the central bank and the government can often be very misleading indicator for assessing the de facto relationship. The authors Cargill and O'Driscoll (2012) refer to a quarter-century old publication (Mayer, 1976) that mentioned the difference between de jure and de facto independence a long time ago. Mayer (1976) is considered to be one of the first to point out that formal rules specified in the charter of the central bank may, at the best, the relationship between the central bank and the government make ideal only, on the contrary in the worst case the rules can be very misleading - the relationship de jure, which is mentioned in the founding instruments or laws and other statutory instruments, is not able to capture fully the informal relationships that exist between the central bank and the government.

- *The current level of de facto independence has limited use in estimating the correlation between inflation and central bank independence*

According to the above-cited authors, most of the statistical correlations were incorrectly based on the de jure approach to measure central bank independence. Cukierman (1992) and Cukierman,

Webb and Neyapti (1992) were among the few who statistically dealt with the difference between *de jure* and *de facto* independence (the use of fluctuation in leading of the central bank as an agent for *de facto* independence). However, Cargill and O'Driscoll (2012) point to the fact that it may not be the appropriate way to deal with the problem because the low turnover rate may also mean e.g. submission to the government and the high turnover rate may in turn be caused by other unrelated factors such as e.g. scandals. The authors Cukierman et al. (1992) are blamed for having a small sample of countries studied and the short period of time.

Cukierman et al. (1992) as well as Fry et al. (2000) methodology to measure *de facto* central bank independence is based on a better methodology than their predecessors who were doing research on the relationship built on *de jure* independence, but according to Cargill and O'Driscoll (2012) this methodology is for identification of the statistical relationship between central bank independence and inflation inappropriate. They think that there may be considerable distortion due to the fact that self-assessment of individual central bankers is involved.

Hayo and Hefeker (2001) offer an alternative way to think about central bank independence. Their reflection is based on the belief that society should make two decisions of its monetary policy. First, to decide how important it is to fight against inflation. Second, to decide what the best institutional organization is to achieve the objective of price stability with respect to the current political, legal and economic situation. According to Hayo and Hefeker (2001) the first decision arises from the statement that central bank independence is not a sufficient condition for the price stability because it is not the main cause, but only one tool of many to achieve this goal. According to the authors the second decision arises from the statement that central bank independence is not a necessary condition for price stability in general, although it may be in some cases, for some countries the right solution. Hayo and Hefeker (2001) believe that using the two-step procedure can help use wide range of knowledge on monetary policy and central bank independence described in the literature compared to what is offered by the conventional approach.

Crowe and Meade (2008) draw attention to the limits in the context of the independence which are relevant for the performance of monetary policy or the position of the central bankers or the problems related with subsequent measurements. They mention as well the problem of the independence of the European Central Bank as a supranational institution which was established under an agreement ratified by 15 national parliaments and at present any change to its statute will require the agreement of all members of the European Union, which can certainly be described as a considerable complication.

5 Conclusion

While many countries have granted their central banks more independence, the idea that central banks should be completely independent, has often become the target of criticism, which focuses primarily on the risk that a central bank that is independent will not be responsible. Although maintaining low and stable inflation is an important social goal, it is not only the macroeconomic goal; monetary policy does not have to be, and usually has no long-term effect on real economic variables, but can be, and usually has a significant impact on the real economy in the short term.

Central bank independence is above all a question of responsibility, which in turn is closely linked with confidence. It was probably best expressed by the former European Commission President Jacques Delors in 1992: "Not all Germans believe in God, but all believe in the Bundesbank." To achieve such a state, it would be appropriate that if possible there would not be any uncertainties concerning the goals, instruments and monetary policy transmission mechanism. Such a requirement appears to be less probable and therefore the central bank should be able to convince the government and the public about it by its consistent performance in achieving the goals. However, it is difficult for the majority of the public to accept the full independence of an unelected institution so to guarantee responsibility, the majority of the state and professionals stick to the idea of separation the goal and instrumental independence of central banks in the way that the

government would be responsible for setting goals and central banks would be free in the choice of tactics and monetary instrumentation required to achieve the desired goals.

A separate issue is the possible extension of the mandate of central banks in financial stability. It will be very difficult to establish some criteria for execution of such a mandate: the goals of financial stability are vague as well as the tools needed to achieve them. At the same time it will be very difficult to measure financial stability or vice versa reveal its failure including any subsequent enforcement. Finally, the compliance and enforcement of financial stability can encounter resistance among the public due to expected more cautious approach of individual commercial banks.

6 Acknowledgement

This article was written as part of a research project FMV VŠE: “*New Directions of Governance in the Light of the Financial and Debt Crisis*” with the registration number F2/7/2014.

References

- [1] Alesina, A, 1988. *Macroeconomics and politics*. NBER Macroeconomics Annual 3, pp. 13-52. [online]. [2014-06-29]. Available from: <http://dx.doi.org/10.2307/3584936>.
- [2] Alesina, A., 1989. Politics and business cycles in industrial democracies. *Economic Policy*, vol. 8, pp. 55-98. [online]. [2014-06-29]. Available from: <http://dx.doi.org/10.2307/1344464>.
- [3] Alesina, A. and L. H. Summers, 1993. Central bank independence and macroeconomic performance: some comparative evidence. *Journal of Money, Credit, and Banking*, vol. 25, pp. 151-162. [online]. [2014-06-29]. Available from: <http://dx.doi.org/10.2307/2077833>.
- [4] Ahsan, A., M. T. Skully and J. Wickramanayake, 2006. Determinants of Central Bank Independence and Governance: Problems and Policy Implications. *Journal of Administration and Governance*, vol. 1, pp. 47-67. [online]. [2014-06-29]. Available from: <http://ssrn.com/abstract=1402662>.
- [5] Arnone, M., B. J. Laurnenst and J. F. Segalotto, 2006. *The measurement of Central bank autonomy: survey of models, indicators, and empirical Evidence*. Working Paper, No. 227. International Monetary Fund. [online]. [2014-06-29]. Available from: <https://www.bce.fin.ec/documentos/ElBancoCentral/BancaCentral/CBindependence-wp06227.pdf>.
- [6] Backus, D. and J. Driffill, 1985. Rational expectations and policy credibility following a change in regime. *Review of Economic Studies*, vol. 53, pp. 211-222. [online]. [2014-06-29]. Available from: <http://dx.doi.org/10.2307/2297617>.
- [7] Bade, R. and M. Parkin, 1988. *Central Bank Laws and Monetary Policy*. Ontario: University of Western. Unpublished manuscript.
- [8] Barro, R. J. and D. B. Gordon, 1983. A Positive Theory of Monetary Policy in a Natural Rate Model. *Journal of Political Economy*, vol. 91, pp. 589-610. [online]. [2014-06-29]. Available from: <http://www.nber.org/papers/w0807>.
- [9] Barro, R. J. and R. G. King, 1984. Time-separable preference and intertemporal-substitution models of business cycles. *Quarterly Journal of Economics*, vol. 99, pp. 817-839. [online]. [2014-06-29]. Available from: <http://dx.doi.org/10.2307/1883127>.
- [10] Banaian, K. 2008. *Measuring Central bank independence: ordering, ranking or scoring?* Working Paper, No. 2008-10. Saint Cloud State University. [online]. [2014-06-29]. Available from:

http://www.stcloudstate.edu/economics/documents/Measuring_Central_Bank_Independence.pdf.

- [11] Bayoumi, T., G. Dell’Ariccia, K. Habermeier and F. Valencia, 2014. *Monetary Policy in the New Normal*. International Monetary Fund, IMF Staff Discussion Note, Pages 74. ISBN/ISSN: 9781475561784. [online]. [2014-06-29]. Available from: <https://www.imf.org/external/pubs/ft/sdn/2014/sdn1403.pdf>.
- [12] Calvo, G., A. 1978. On the time consistency of optimal policy in a monetary economy. *Econometrica*, vol. 46, pp. 1411-1428. [online]. [2014-06-29]. Available from: <http://dx.doi.org/10.2307/1913836>.
- [13] Cargill, T. F., G. P. O’Driscoll Jr., 2012. *Measuring Central Bank Independence, Policy Implications, and Federal Reserve Independence*. Paper Presented at the 2013 Meeting of the American Economic Association, San Diego, CA, 2012 [online]. [2014-06-29]. Available from: <http://www.aeaweb.org/aea/2013conference/program/retrieve.php?pdfid=100>.
- [14] Crowe, C. and E. E. Meade, 2008. *Central Bank Independence and Transparency: Evolution and Effectiveness*. IMF Working Papers, pp. 1-28. [online]. [2014-06-29]. Available from: <http://ssrn.com/abstract=1153740>.
- [15] Cukierman, A. 1992. *Central Bank Strategy, Credibility, and Autonomy*. Cambridge, Massachusetts: MIT Press.
- [16] Cukierman, A. and S. B. Webb, 1995. Political influence on the CB: international evidence. *The World Bank Economic Review*, vol. 9, pp. 397-423. [online]. [2014-06-29]. Available from: <http://dx.doi.org/10.1093/wber/9.3.397>.
- [17] Cukierman, A., S. B. Webb and B. Neyapti, 1992. Measuring the Independence of Central Banks and Its Effect on Policy Outcomes. *The World Bank Economic Review*, September, vol. 6, issue 3, pp. 353-398.
- [18] Debelle, G. and S. Fischer, 1994. How Independent Should a Central Bank Be? In: J.C. Fuhrer (ed.), *Goals, Guidelines and Constraints Facing Monetary Policymakers*. Federal Reserve Bank of Boston, 195-221. [online]. [2014-06-29]. Available from: <http://www.bostonfed.org/economic/conf/conf38/conf38f.pdf>.
- [19] Eijffinger, S. C. W., J. De Haan, 1996. *The Political Economy of Central-Bank Independence*. Princeton studies in international economics 19, International Economics Section, Princeton University
- [20] Eijffinger, S. C. W. and E. Schaling, 1993. CB autonomy in twelve industrial countries. *Banca Nazionale del Lavoro Quarterly Review*, vol. 184, pp. 49-89
- [21] Friedman, M. 1968. The role of monetary policy. *Political Science Review*, vol. 58, pp. 1-17. [online]. [2014-06-29]. Available from: https://www.unibas.ch/fileadmin/wwz/redaktion/makrooekonomie/intermediate_macro/reader/8/02_Friedman_AER1968.pdf.
- [22] Fry, M., D. Julius, L. Mahadeva, S. Roger and G. Sterne, 2000. *Key Issues in the Choice of Monetary Policy Framework*. In: L. Mahadeva and G. Sterne (eds.), *Monetary Policy Frameworks in a Global Context*, Routledge: London. [online]. [2014-06-29]. Available from: <http://ftp.ny.frb.org/cfcbsweb/fry.pdf>.
- [23] Grilli, V., D. Masciandaro and G. Tabellini, 1991. Political and monetary institutions and public financial policies in the industrial countries. *Economic Policy*, vol. 13, pp. 341-392. [online]. [2014-06-29]. Available from: <http://dx.doi.org/10.2307/-1344630>.

- [24] Hayo, B. and C. Hefeker, 2001. *Do We Really Need Central Bank Independence? A Critical Re-examination (March 2001)*. University of Basel WWZ Working Paper No. 01/03. [online]. [2014-06-29]. Available from: <http://ssrn.com/abstract=264454>. nebo <http://dx.doi.org/10.2139/ssrn.264454>.
- [25] Hibbs, D. A. 1977. Political Parties and macroeconomic Policy. *American Political Science Review*, vol. 71, pp. 1467-1487. [online]. [2014-06-29]. Available from: <http://dx.doi.org/10.2307/1961490>
- [26] Kydland, F. E. and E. C. Prescott, 1977. Rules rather than discretion: the inconsistency of optimal plans. *Journal of Political Economy*, vol. 83, pp. 473-491. [online]. [2014-06-29]. Available from: <http://dx.doi.org/10.1086/260580>.
- [27] Loungani, P. and N. Sheets, 1995. *Central bank independence, inflation and growth in transition economies*. International Finance Discussion Papers, 519. [online]. [2014-06-29]. Available from: <http://www.federalreserve.gov/pubs/ifdp/1995/519/ifdp519.pdf>.
- [28] Mayer, T. 1976. *Structure and Operations of the Federal Reserve System: Some Needed Reforms*. In: Compendium of Papers Prepared for the Financial Institutions and the Nation's Economy Study. Committee on Banking, Currency and Housing, 94th Congress, Second Session, GPO, Washington, June
- [29] Nordhaus, W. D. 1975. The political business cycle. *Review of Economic Studies*, vol. 42, pp. 169-190. [online]. [2014-06-29]. Available from: <http://dx.doi.org/10.2307/2296528>.
- [30] Obstfeld, M. 1996. Models of currency crises with self-fulfilling features. *European Economic Review*, vol. 40, pp. 1037-1048. [online]. [2014-06-29]. Available from: [http://dx.doi.org/10.1016/0014-2921\(95\)00111-5](http://dx.doi.org/10.1016/0014-2921(95)00111-5).
- [31] Persson, T. and G. Tabellini, 1993. Designing institutions for monetary stability. *Carnegie-Rochester Series on Public Policy*, vol. 39, pp. 53-84. [online]. [2014-06-29]. Available from: [http://dx.doi.org/10.1016/0167-2231\(93\)90003-F](http://dx.doi.org/10.1016/0167-2231(93)90003-F).
- [32] Posen, A. 1998. Do Better Institutions Make Better Policy? *International Finance*, vol. 1 (October), pp. 173-205. [online]. [2014-06-29]. Available from: <http://onlinelibrary.wiley.com/doi/10.1111/1468-2362.00009/pdf>.
- [33] Rogoff, K. 1985. The optimal degree of commitment to an intermediate monetary target. *Quarterly Journal of Economics*, vol. 100, pp. 1169-1189. [online]. [2014-06-29]. Available from: <http://dx.doi.org/10.2307/1885679>.
- [34] Tabellini, G. 1985. *Endogenous monetary and fiscal policies under alternative institutional settings - a game theoretical analysis*. Working Paper, No. 368. UCLA Economics Working Papers. [online]. [2014-06-29]. Available from: <http://www.econ.ucla.edu/workingpapers/wp368.pdf>.
- [35] Walsh, C. 1995. Optimal contracts for Central bankers. *American Economic Review*, vol. 85, pp. 150-167. [online]. [2014-06-29]. Available from: <http://people.ucsc.edu/~walshc/MyPapers/OptimalContracts.pdf>.

THE INFLUENCE OF TAX SHOCKS ON THE ECONOMY OF DEVELOPED COUNTRIES

Igor Kotlán¹, Zuzana Machová²

¹ VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: igor.kotlan@vsb.cz

² VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: zuzana.machova@vsb.cz

Abstract

The aim of the paper is to find-out how long the influence of tax changes persists in the economy of developed countries gathered in the OECD. To achieve the goal, a panel VAR model is used to construct impulse-response functions. To measure the level of taxation, two alternative indicators are used. Those are the standard tax quota and the World Tax Index. The analysis is performed for 34 OECD countries in the period 2000-2012. The results show that when a temporary change in taxation is made, that is removed in the next period, there is a temporary decline in the economic growth rate, but over time it stabilizes at its original level. In contrast, in the case of permanent tax changes, the rate of economic growth stabilizes at a new level that persists in the economy even after ten years, although there is also a steady increase in the growth rate of government spending in the economy.

Keywords

Tax Shocks, Tax Changes, Impulse-response Function, Economic Growth, World Tax Index (WTI).

JEL Classification

H20, H30.

1 Introduction

Nowadays, there exist no doubts that taxation significantly affects economic growth, and not only in case of developing countries, but also in case of developed countries, i.e. the countries in a steady-state, as for instance countries gather in the OECD.

Many recent studies by the authors (Kotlán and Machová, 2013a,b, Machová and Kotlán, 2014a, Kotlán, 2013) have shown that the effect of taxation on growth is rather negative in case of all types of taxes (taxes on individual and corporate income, taxes on property, consumption taxes). But there appears a question how long the negative effects persist in the economy and whether it differs in case of temporary and permanent tax changes.

Thus the aim of the paper is to find-out how long the influence of tax changes persists in the economy of developed countries gathered in the OECD. To achieve the goal, a panel VAR model is used to construct impulse-response functions. To measure the level of taxation, two alternative indicators are used. Those are the standard tax quota and the World Tax Index (WTI).

2 The influence of taxation on economic growth

If we want to investigate the persistence of tax changes effects in the economy, it is necessary to explain how taxation theoretically influences economic growth in general. As already stated within the introduction, there is a generally accepted consensus among economists, that taxation has a significant effect on growth and it is rather considered to be negative. However, Kotlán and Machová (2014b) describe the evolution of economic thoughts in this field as follows.

Neoclassical model by Solow (1956) and Swan (1956) presumes that sooner or later, the economy reaches a steady state in which GDP per capita growth is only affected by exogenous factors such as technological progress and population growth rate. According to the conclusions of the model, economies that are already in the steady state are faced with a situation whereby the tax policy is unable to influence the per capita growth rate. Consequently, such a policy affects the growth only temporarily - in the period between steady states. Assuming that especially developed

economies are in the steady state, the tax policy may only have a negligible effect on the rate of per capita output growth. For more details, see e.g. Barro and Sala-i-Martin (2004).

Nevertheless, in latter endogenous growth models presented e.g. by Lucas (1988) or Romer (1986), a different mechanism is used, according to which the tax policy may affect the growth of per capita output not only between steady states but also in the steady state. Therefore, the mechanism has a tier as well as a growth effect. Empirical results based on the models are ambiguous and not all the economists agree with the model conclusions. While Aschauer (1989) suggests that, in a steady state, taxation can have a demonstrable impact on long-term growth, e.g. Kneller, Bleaney and Gemmell (1999), on the other hand, believe that taxation has no significant effect on steady state growth. It is also important to emphasize that the conclusions are based on the analyses performed only for developed democratic countries. In case of different conditions, as explained by Gindin (2013), Morilhat (2013a, b), Coulon (2013a, b), Ridenti (2013), Vargas (2013), Ortiz (2012), Polasek and Sellner (2013), Andreani and Herrera (2013), Couland (2012), or Loewy (2012), the results may be completely different.

In general, we can say that authors of the models that are presented below use two different approaches. The first one can be called a Social Planner Approach. The social planner is a decision-maker who sees the economy from above as a whole and his aim is to achieve the best result for the whole economy - he seeks for maximization of social welfare function. This approach is followed e.g. by Milesi-Ferretti and Roubini (1998), Mendoza, Milesi-Ferretti and Asea (1997), or later by Denaux (2007). On the other hand, the second approach is possible to be used that can be called an Economic Agents Approach. The difference is that using such an approach, different behaviour of different groups of agents is considered - firms seek for maximization of profit, households seek for maximization of utility, etc. This approach is followed e.g. by Barro (1990), Barro and Sala-i-Martin (2004), Kotlán and Machová (2014a), or Machová and Kotlán (2013a, 2014b).

The problem is that none of these approaches shows particular effects of different types of taxes that are applied in developed economies, i.e. taxes on wages, profits, consumption and property, in the model. Thus Kotlán and Machová (2014b) modify the model as follows:

$$\gamma = \frac{\dot{k}}{k} = (1 - \tau_w) \left[\frac{f(\hat{k})}{\hat{k}} - f'(\hat{k}) \right] + (1 - \tau_a) \left[f'(\hat{k})(1 - \tau_\pi) - \delta \right] - (1 + \tau_c) \frac{\hat{c}}{\hat{k}} + \frac{\hat{tr}}{\hat{k}} - x - \frac{\dot{l}}{l}, \quad (1)$$

where γ is the growth rate of the economy, K is physical capital, L is labor (l is per capita labor) δ is the depreciation rate, TR are transfers, x is the technology growth rate, τ_π , τ_w , τ_c , τ_a are tax rates of taxes on profits, wages, consumption and property, respectively. $\hat{L} = Le^{xt}$ is applied, and then $\hat{k} = (K / \hat{L})$, $\hat{c} = (C / \hat{L})$ and $\hat{tr} = (TR / \hat{L})$. For more, see Kotlán and Machová (2014b). The model therefore shows that, according to economic theory, the resulting effect of taxation on growth through all types of taxes, i.e. taxes on profits, taxes on wages, property taxes and consumption taxes, should be negative, which makes the hypothesis for the empirical part of the paper.

Nevertheless, in the analyses below, also government spending is included as suggested e.g. by Kneller, Bleaney and Gemmell (1999), or Bleaney, Gemmell and Kneller (2001), because taxes are in general used to finance it. If a substantial part of the expenditure is used to finance government investments (productive government expenditure), than both government expenditure and taxes may in certain circumstances affect the growth positively, especially in the situation of prevailing part of indirect taxes in the tax mix of an economy.

3 Methodology and data

The analysis is performed for 34 OECD countries in the period 2000-2012. From a methodological point of view, a panel data VAR model is used. Endogenous variables include real GDP per capita (*GDPCAP*), government expenditure to GDP ratio (*EXPGDP*) and a variable for taxation

approximation (see below). Exogenous variables are real investment to GDP ratio (*INVGDP*) and human capital approximation (*HUM*)¹.

The VAR model consists of three equations using real GDP per capita, government expenditure to GDP ratio, and taxation as dependent variables. All the other variables are always independent. All the variables are used in the logarithmic form for better interpretation and comparison of results, as their values are at different scales.

The nature of VAR models clearly suggests that a dynamic panel was used and that a generalized method of moments (GMM) was used for estimation, specifically the Arellano-Bond estimator (see Arellano and Bond, 1991). The below VAR model includes a lag of one period, as is usual in such types of studies (see e.g. Acosta-Ormaechea and Yoo, 2012, and Arnold et al., 2011).

The tax approximation was gradually implemented in two ways. First, using the standard tax quota (*TQ*), that is the share of tax revenues in nominal GDP. With regard to the shortcomings brought about by the tax quota (see, e.g. Kotlán and Machová, 2012a), the analysis uses the World Tax Index (*WTI*) as an alternative to the tax quota. This tax burden indicator combines hard data on taxes available from internationally recognized sources such as the OECD and World Bank databases, with data expressing Qualified Expert Opinion (QEO) that are used as the weight for the hard one. The QEO was gained from a large-scale questionnaire survey conducted in three waves during 2010-2012 among tax specialists from all OECD countries.

Unlike *TQ*, the *WTI* seeks to produce an evaluation incorporating the maximum number of aspects associated with e.g. tax progression, administrative difficulty of tax collection from the perspective of payers, the range of tax exemptions, options concerning the tax deductibility of expenses, etc. For more on the *WTI* construction and its values, see Kotlán and Machová (2012b), and Machová and Kotlán (2013b).

Most of the data used, especially the level of GDP, government expenditure, and taxation (the tax quota) was drawn from the OECD iLibrary Statistics and OECD Factbook Statistics. The hard data that was used to construct the *WTI* and its sub-indices was obtained from the OECD Tax Database and OECD Tax Statistics, additionally also from the World Bank's Doing Business project database.

In terms of methodology, stationarity tests using the panel unit root according to Levin, Lin and Chu (2002), Im, Pesaran and Shin (2003) or Maddala and Wu (1999) were performed first. All the variables were found to be stationary, thus we use the first differences (*D*) of logarithmic forms of the variables. Using a robust estimator in calculating the covariance matrices ensured that the results of standard deviations of parameters and hypothesis tests were correct with regard to a possible occurrence of autocorrelation and heteroscedasticity. This method is called the "White Period" and it is enabled by the econometric software used. The estimates employed the model with fixed effects, which is, according to Wooldridge (2009), more suitable in the case of macroeconomic data as well as in a situation where the cross-sectional units are countries.

4 Results of panel VAR model

With regard to the aim of the paper, we only present the results of the first equation of the model, where economic growth is dependent variable, and taxation, government spending and classical growth variables are independent. Following table (1) shows the results of the equation in two variants; at first using the *TQ* as taxation proxy and the second one using the *WTI*. In the analysis, 34 instruments were used. The validity of the instruments was tested using the standard Sargan test at the 5% significance level (as indicated by J-statistic in the table (1)). All the estimation results presented in the tables below were thus confirmed as correct.

¹ Approximated by an indicator according to Feenstra, Inklaar and Timmer (2013), based on the years of schooling and investment into education.

Table 1. VAR model using the TQ

Dependent variable	D(LOG(GDP))			
Taxation Proxy	TQ		WTI	
No. of observations	340		340	
No. of instrument	34		34	
J-statistics	31,877		30,584	
	Coefficient	t-statistics	Coefficient	t-statistics
D(LOG(GDP(-1)))	0,052	3,380***	0,075	7,142***
D(LOG(INVGDP))	0,431	60,073***	0,400	61,619***
D(LOG(HUM))	-0,022	-0,101	0,009	0,058
D(LOG(EXPGDP(-1)))	0,190	22,572***	0,111	13,895***
D(LOG(TQ(-1)/WTI(-1)))	-0,177	-16,586***	-0,098	-10,542***

Note: t-statistics that are adjusted for heteroscedasticity and autocorrelation are included in parentheses; standard deviations are calculated using robust estimates; *, **, *** stand for significance levels of 10%, 5% and 1%, respectively; fixed effects method. GMM - Generalized Method of Moments is the method used to estimate the dynamic panel.

Source: own calculations.

Concerning the standard growth variables, it is shown that the effect of physical capital accumulation (*INVGD*P) is positive in both models. In case of human capital accumulation (*HUM*), the positive effect was not proved with regard to the statistical significance of the variable.

Above all, the results of the analysis confirm the hypothesis about the negative impact of taxation on the economic growth, irrespective of the taxation proxy that is used in the analysis. On the other hand, the effect of government expenditure is positive, which indicates that most of the expenditure is spent on government investment and not consumption. However, despite this fact, the influence of the taxation as a whole is still confirmed to be negative. This could indicate that in the countries surveyed, there is excessive tax burden in the form of taxes, which do not purport to finance productive expenditure, but only unduly burden the economy. This harms economic growth and leads to the reduction of the positive effects of productive government spending.

5 Impulse-response functions

The essential part of the analysis based on the VAR models is the construction of the impulse-response functions, which also make the most important part of the paper. They are based on the estimated regression coefficients of all the three equations of the model. The functions are, first, the functions of the "impulse" type that simulate the effects of single (temporary) changes (shocks) in independent variables on dependent variable, and the functions of the "step" type that simulate permanent changes in independent variables.

In following figures (1-4), the impacts on taxation are simulated in the first column, impacts on government expenditure in the second column, and impacts on growth in the third column. Analogically, the impacts of changes in taxation are simulated in the first row, in expenditure in the second row, and in growth in the third row.

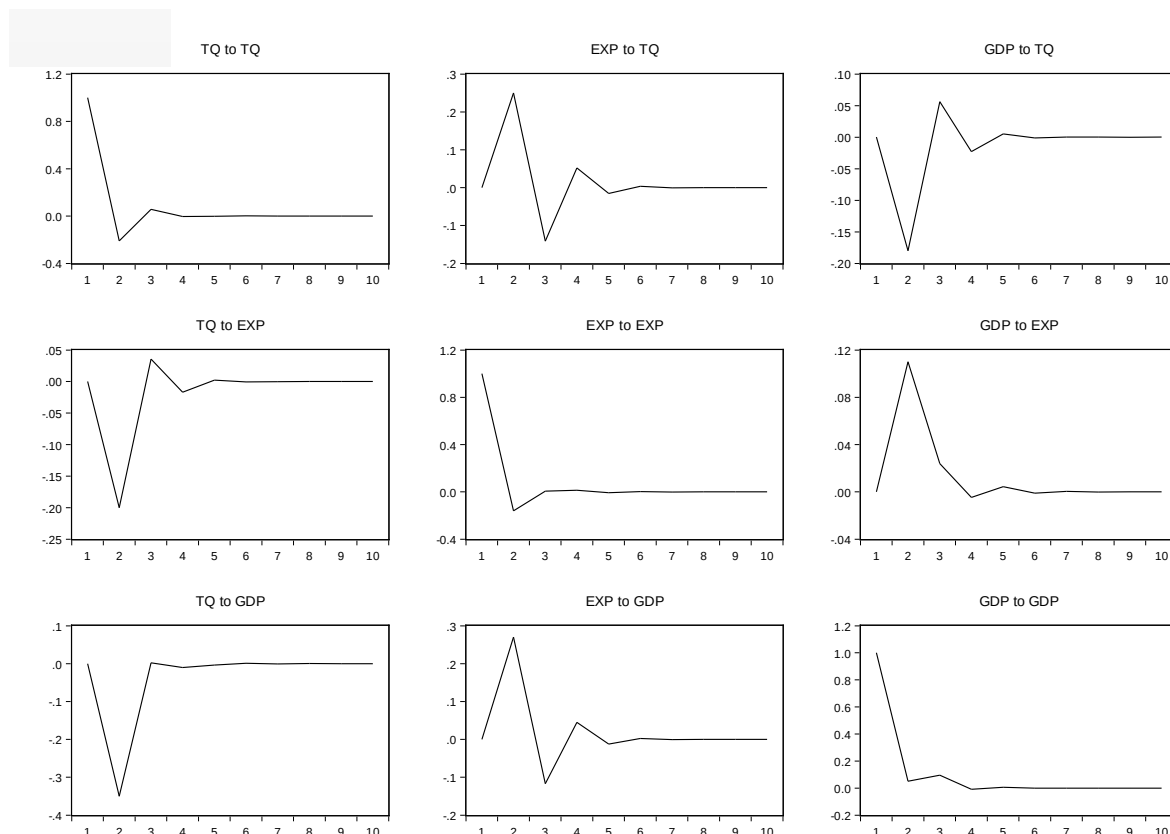


Figure 1. Impulse function for the TQ (Source: own calculations)

Figures (1) and (2) are related to the models including the tax quota as the taxation proxy. With regard to the aim of the paper, the graph in the right top corner of the figure is the most important one (*GDP to TQ*). It shows how the economic growth reacts on the changes in the growth rate of taxation. As in the case of using tax rate, so if using the WTI, seemingly similar results are achieved. When a temporary change of taxation, which is removed in the next period, is made, there is also a temporary decline in the economic growth rate, but over time it stabilizes at its original level.

The reaction of growth rate of government expenditure (*EXP to TQ*) is similar. In the second period there is an increase in response to the increase in the tax rate, then there is a significant decline and a gradual return to the initial level.

In the second row, the graphs that show the response of individual variables on a temporary change in the growth rate of government spending are shown. The first graph (*TQ to EXP*) shows how changes in government spending affect the tax quota. Its growth rate is declining at first, but then there is a reversion to the original level. The quota similarly responds to changes in GDP growth (*TQ to GDP*) as well.

GDP and government spending react similarly to each other. In the second period they increase sharply, which is gradually smoothed (*EXP to GDP*, and *GDP to EXP*).

It can be concluded that the responses to temporary changes in fiscal variables (in case the approximation of taxes through tax quota) and economic growth are relatively strong in the second period after the occurrence of a shock, but the values gradually return back to their initial levels, which takes approximately five years.

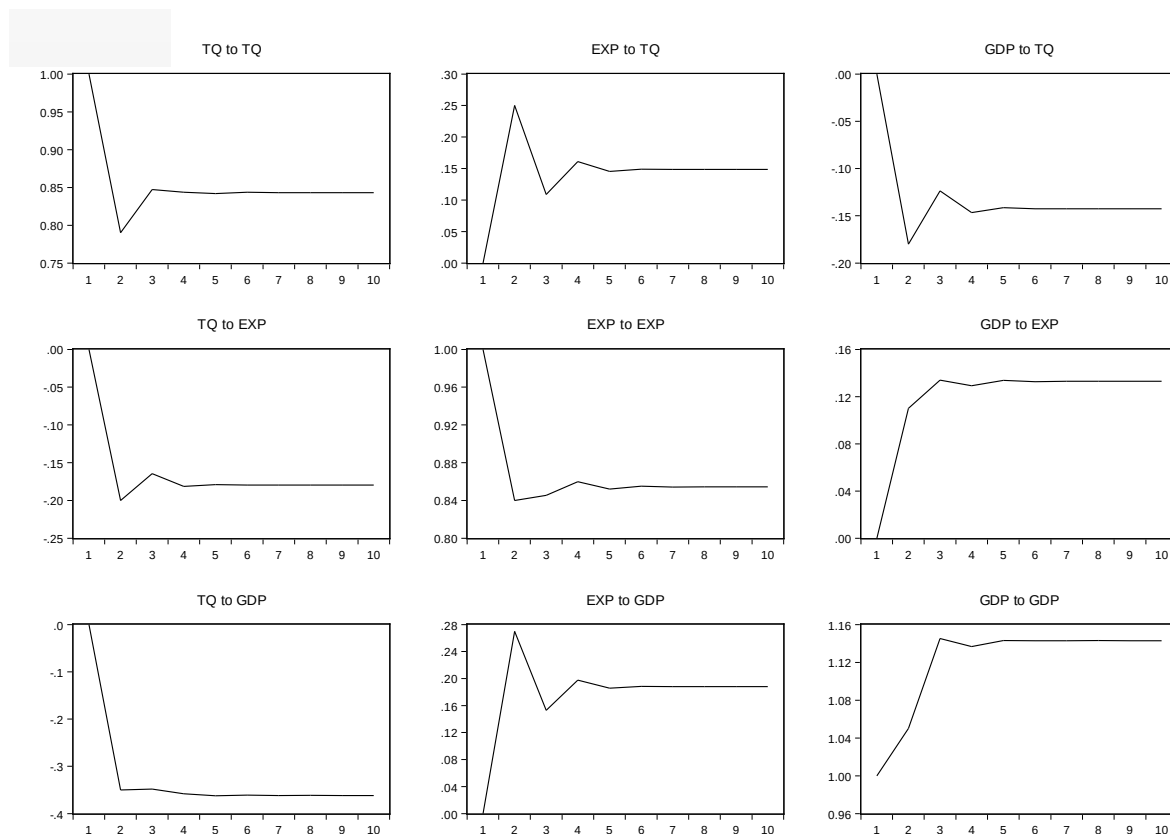


Figure 2. Step function for the TQ (Source: own calculations)

In contrast, in the case of permanent changes in taxation, i.e. a permanent increase in the growth rate of the level of taxation, the rate of economic growth is stabilized at a new level which persists in the economy even after ten years (*GDP to TQ*), even though a permanent increase in the growth rate of government expenditure occurs in the economy, as shown in the graph (*EXP to TQ*).

Growth rate of tax quota is stabilized at a new, significantly lower level in case of a permanent change (increase) of the rate of growth of government spending (*TQ to EXP*), but also of the rate of economic growth (*TQ to GDP*).

In contrast, the relationship between economic growth rate and the growth rate of government expenditure (*EXP to GDP*, *GDP to EXP*) is positive. Also in this case, the positive effects persist in the economy even after ten years.

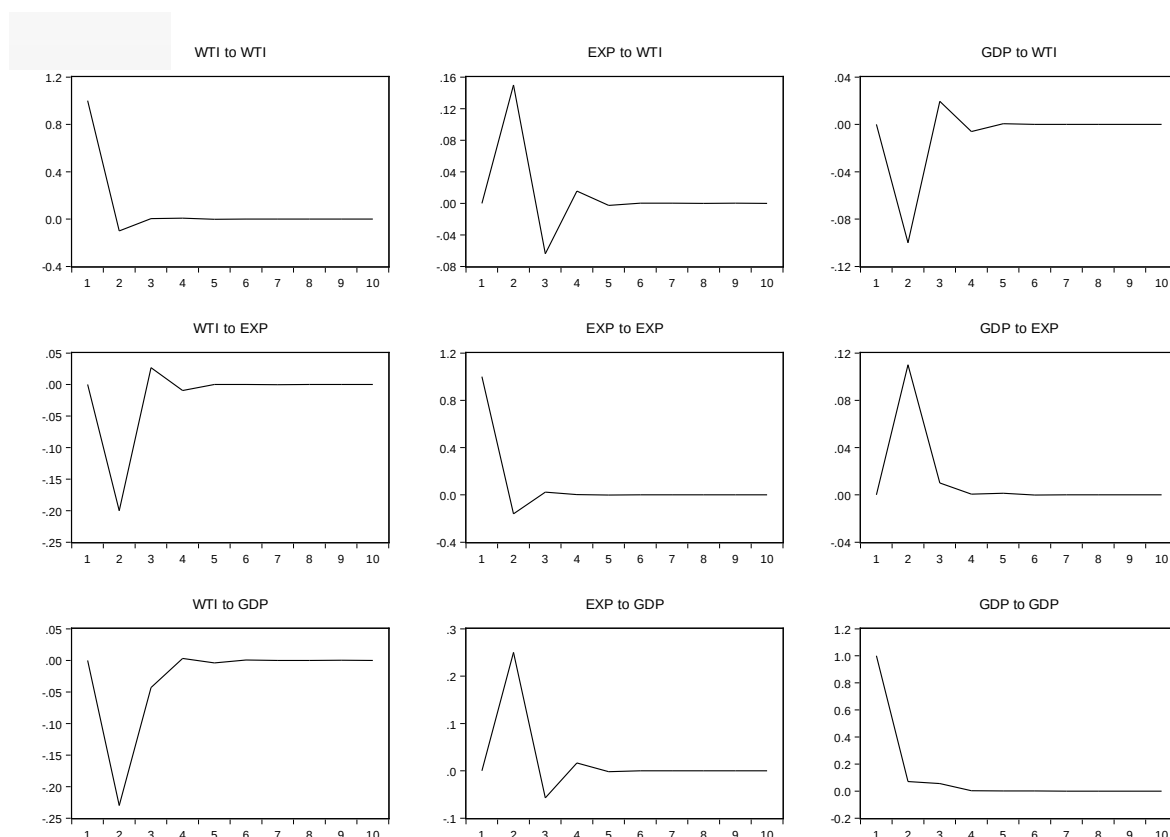


Figure 3. Impulse function for the WTI (Source: own calculations)

Figures (3) and (4) show the impulse-response functions resulting from the model where the WTI was used as a taxation proxy. Even in this case, growth rates of GDP and fiscal variables react quite sharply to each other in the second period, but then the situation relatively quickly returns to baseline values, and the initial level is reached at the latest after five years.

Taxation causes a positive shock in GDP and government spending growth rate, which is shown in graphs (*GDP to WTI*, *EXP to WTI*). Negative shocks are caused in the area of taxation in case of temporary change (increase) of the rate of growth of both government expenditure and GDP (*WTI to EXP*, *WTI to GDP*). Growth rates of GDP and expenditure react positively on each other (*EXP to GDP*, *GDP to EXP*).

Also in case of the model including the WTI, permanent changes in the growth of the variables cause significant changes in the growth rate of other variables which persist in the economy even after ten years.

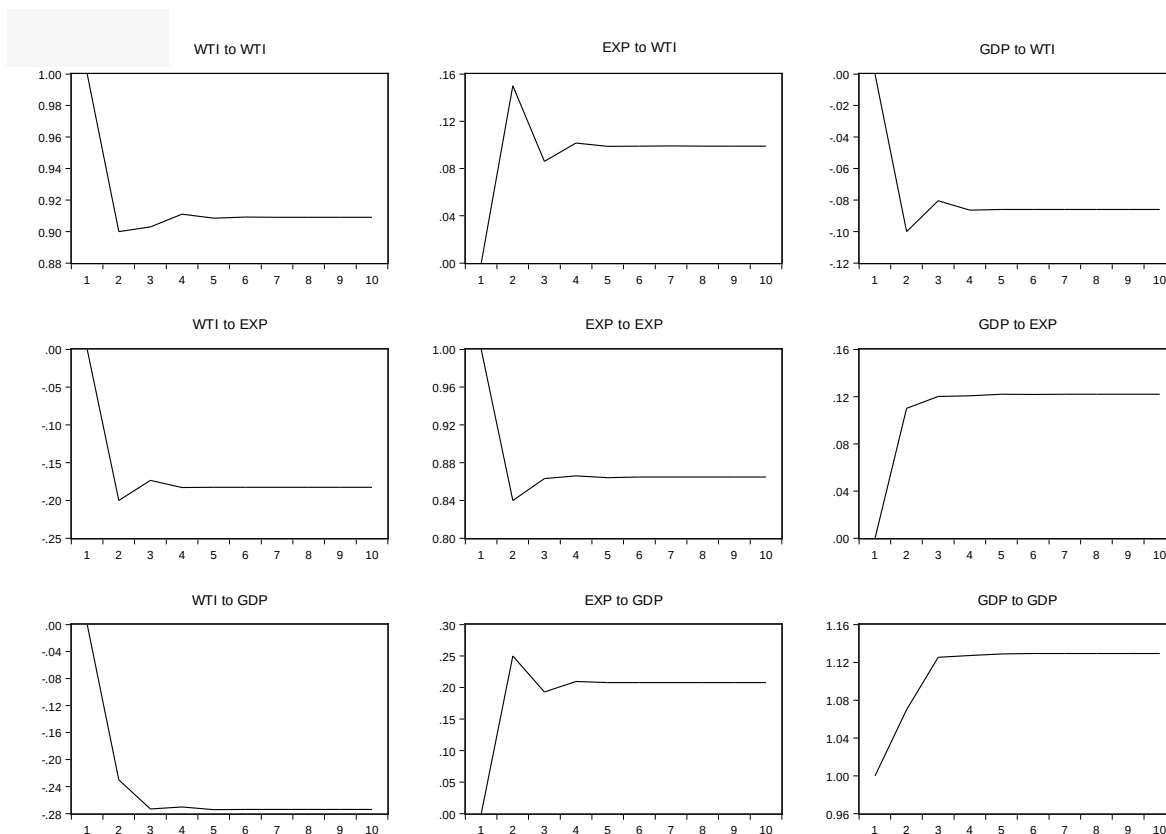


Figure 4. Step function for the WTI (Source: own calculations)

6 Conclusion

The aim of the paper was to find-out how long the influence of tax changes persists in the economy of developed countries gathered in the OECD. To achieve the goal, a panel VAR model was used to construct impulse-response functions. To measure the level of taxation, two alternative indicators were used - the standard tax quota and the World Tax Index (WTI). The use of VAR model clearly suggests that a dynamic panel model and the generalized method of moments (GMM) were used for the estimation.

Substantial conclusions concerns the persistence of effects of taxation on economic growth. It has been shown that when a temporary change in taxation is made, that is removed in the next period, there is a temporary decline in the economic growth rate, but over time it stabilizes at its original level. In contrast, in the case of permanent tax changes, the rate of economic growth stabilizes at a new level that persists in the economy even after ten years, although there is also a steady increase in the growth rate of government spending in the economy.

7 Acknowledgement

This paper was financially supported within the grant project No. SP2014/145.

References

- [1] Acosta-Ormaechea, S. and J. Yoo, 2012. *Tax Composition and Growth: A Broad Cross-Country Perspective*. Working Paper No. WP/12/257. IMF.
- [2] Andreani, T. and R. Herrera, 2013. Financial System and ‘Chinese-style Market Socialism’. *Pensée*, vol. 373, issue Jan-Mar.

- [3] Arellano, M. and S. Bond, 1991. Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *Review of Economic Studies*, vol. 58, pp. 277-297.
- [4] Arnold, J., 2008. *Do tax structures affect aggregate economic growth? Empirical evidence from a panel of OECD countries*. Working Paper No. 643. Paris: OECD Economics Department.
- [5] Aschauer, D. A., 1989. Is Public Expenditure Productive? *Journal of Monetary Economics*, vol. 23, pp. 177-200.
- [6] Barro, R. J., 1990. Government Spending in a Simple Model of Endogenous Growth. *The Journal of Political Economy*, vol. 98, issue 5, pp. 103-125.
- [7] Barro, R. and X. Sala-i-Martin, 2004. *Economic Growth*. Cambridge and London: MIT Press.
- [8] Bleaney, M., N. Gemmell and R. Kneller, 2001. Testing the Endogenous Growth Model: Public Expenditure, Taxation, and Growth over the Long Run. *Canadian Journal of Economics*, vol. 34, issue 1, pp. 36-57.
- [9] Couland, J., 2012. Socialist Experiences in Africa 1960-1990. *Pensée*, vol. 369, issue Jan-Mar, pp. 174-175.
- [10] Coulon, P., 2013a. Intellectuals and Communist Strategy. *Pensée*, vol. 375, issue Jul-Sep, pp. 172-172.
- [11] Coulon, P., 2013b. Communism: A Mosaic! *Pensée*, vol. 375, issue Jul-Sep, pp. 125-133.
- [12] Denaux, Z. S., 2007. Endogenous growth, taxes and government spending: Theory and evidence. *Review of Development Economics*, vol. 11, issue 1, pp. 124-138.
- [13] Feenstra, R. C., R. Inklaar and M. Timmer, 2013. *The Next Generation of the Penn World Table*. NBER Working Papers 19255. National Bureau of Economic Research, Inc.
- [14] Gindin, C., 2013. About Communists' Communism. *Pensée*, vol. 375, issue Jul-Sep,
- [15] Im, K. S., M. Pesaran and Y. Shin, 2003. Testing for Unit Roots in Heterogeneous Panels. *Journal of Econometrics*, vol. 115, pp. 53-74.
- [16] Kneller, R., M. Bleaney and N. Gemmell, 1999. Fiscal Policy and Growth: Evidence from OECD Countries. *Journal of Public Economics*, vol. 74, pp. 171-190.
- [17] Kotlán, I., 2013. Level and Volatility of Taxes. In: Z. Machová, ed. *Proceedings of the 3rd International Scientific Conference „TAXES IN THE WORLD“*. Ostrava: VŠB-TU Ostrava, pp. 69-82.
- [18] Kotlán, I. and Z. Machová, 2012a. The Influence of Corporate Taxation on Economic Growth: The Failure of Tax Quota? *Politická ekonomie*, vol. 60, issue 6, pp. 743-763.
- [19] Kotlán, I. and Z. Machová, 2012b. World Tax Index: Methodology and Data. *DANUBE: Law and Economics Review*, vol. 3, issue 2, pp. 19-33.
- [20] Kotlán, I. and Z. Machová, 2013a. The Impact of the Tax Burden on the Living Standard. *Ekonomický časopis*, vol. 61, issue 9, pp. 951-962.
- [21] Kotlán, I. and Z. Machová, 2013b. The Issue of Using Tax Quota in the Growth Empiricism. In: Tvrdohň, M., Majerová, I., eds. *Proceedings of the 10th International Scientific Conference Economic Policy in the European Union Member Countries: Selected Papers*. Karviná: Silesian University in Opava, School of Business Administration in Karviná, pp. 145-160.

- [22] Kotlán, I. and Z. Machová., 2014a. Tax Policy Horizon in the OECD Countries. *Politická ekonomie*, vol. 62, issue 2, pp. 161-173.
- [23] Kotlán, I. and Z. Machová., 2014b. Modern Thought and Integration of Taxation into Economic Growth Models. *Pensée*, vol. 76, issue 6.
- [24] Levin, A., C. F. Lin, and C. Chu, 2002. Unit Root Tests in Panel Data: Asymptotic and Finite-Sample Properties. *Journal of Econometrics*, vol. 108, pp. 1-24.
- [25] Loewy, M., 2012. Austrian Communism. *Pensée*, vol. 371, issue Jul-Sep, pp. 153-155.
- [26] Lucas, R. E., 1988. On the Mechanics of Economic Development. *Journal of Monetary Economics*, vol. 22, pp. 3-39.
- [27] Machová, Z. and I. Kotlán, 2013a. Interaction of Taxation, Government Expenditure and Economic Growth: Panel VAR Model for OECD Countries. *Politická ekonomie*, vol. 61, issue 5, pp. 623-638.
- [28] Machová, Z. and I. Kotlán., 2013b. World Tax Index: New Methodology for OECD Countries, 2000-2010. *DANUBE: Law and Economics Review*, vol. 4, issue 2, pp. 165-179.
- [29] Machová, Z. and I. Kotlán., 2014a. Do Taxes Matter for Long-Run Growth? Still Actual Problem of Fiscal Policy. *Actual Problems of Economics*, vol. 151, issue 2.
- [30] Machová, Z. and I. Kotlán, 2014b. Fiscal Policy Lags in the OECD. *Pensée*, vol. 76, issue 1, pp. 127-137.
- [31] Maddala, G. S. and S. Wu, 1999. A Comparative Study of Unit Root Tests with Panel Data and A New Simple Test. *Oxford Bulletin of Economics and Statistics*, vol. 61, pp. 631-652.
- [32] Mendoza, E. G., G. M. Milesi-Ferretti and P. Asea, 1997. On the Ineffectiveness of Tax Policy in Altering Long-Run Growth?: Harberger's Superneutrality Conjecture. *Journal of Public Economics*, vol. 66, pp. 99-126.
- [33] Milesi-Ferretti, G. M. and N. Roubini, 1998. Growth Effects of Income and Consumption Taxes. *Journal Money, Credit and Bankig*, vol. 30, issue 4, pp. 721-744.
- [34] Morilhat, C., 2013a. Communism is Back among Philosophers. *Pensée*, vol. 375, issue Jul-Sep.
- [35] Morilhat, C., 2013b. The World State. Liberalism, Socialism and Communism on a Global Scale. *Pensée*, vol. 375, issue Jul-Sep, pp. 176-177.
- [36] Ortiz, J., 2012. The ‘Socialism of the 21th Century’ in Latin America. *Pensée*, vol. 371, issue Jul-Sep.
- [37] Polasek, W. and R. Sellner, 2013. Does Globalization Affect Regional Growth? Evidence for NUTS-2 Regions in EU-27. *DANUBE: Law and Economics Review*, vol. 4, issue, 1, pp. 23-65.
- [38] Ridenti, M., 2013. Jorge Amado, the French Press and International Communism. *Pensée*, vol. 375, issue Jul-Sep, pp. 153-163.
- [39] Romer, P. M., 1986. Increasing Returns and Long-Run Growth. *Journal of Political Economy*, vol. 94, issue 5, pp. 1002-1037.
- [40] Solow, R. A., 1956. Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics*, vol. 70, issue 1, pp. 65-94.
- [41] Swan, T. W., 1956. Economic Growth and Capital Accumulation. *Economic Record*, vol. 32, pp. 334-361.

- [42] Vargas, Y., 2013. Marx: From Criticism of Capitalism to the Democratic Invention. *Pensée*, vol. 373, issue Jan-Mar, pp. 180-181.
- [43] Wooldridge, J. M., 2009. *Introductory Econometric: A Modern Approach*. Mason: South-Western Cengage Learning.

COULD ECONOMIC CRISES CHANGE ECONOMIC POLICY UNCERTAINTY IMPACT ON ECONOMIC GROWTH AND INVESTMENT IN INNOVATION?

Eva Kotlánová

*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: koltanova@opf.slu.cz*

Abstract

Innovation is a central driver of economic growth and development. It is the key that enables firms to successfully compete in the global marketplace, and the process by which solutions are found to social and economic challenges. Every country (firm) should be interested in investment in innovation. Nevertheless this area was affected too by economic crises (recession) significantly. Another important factor which impact innovation progress is stably, continual economic policy without repeated and strong fluctuations. This policy leads to higher investment rate and economic growth. How changed crisis the perception of predictability of economic policy? The aim of this paper is to find out (on the example of five largest European economies), how changed the perception of economic policy before crises and over the period of crises and its impact on investment, innovation and economic growth.

Keywords

Economic Growth, Economic Policy Uncertainty, Innovation, Panel Analysis Regression.

JEL Classification

C22, E60, D80, G18, O31.

1 Introduction

If the economy does not counter consequences of any special problems, the government keeps to its program under which it acquired the confidence of parliament. The main goal of government is to make a continual growth politics through clearly defined steps as the public investments or tax system are. Then this stable environment forms good conditions for firms which could invest e. g. in innovation and their development. However in economic crisis period governments are obligated to take special measure to counter the crises consequences, eventually to prevent its deepening.

Each European country coped with recession in Europe, which started in 2007 in the United States and which is already known as crisis, differently. Nevertheless member countries of European Union were forced to limit government spending and increase budget revenues resulting in investment reduction and tax rate hikes, thus failing to contribute to kick-starting the economy and having rather the opposite effect. It was declared that these instruments should be used just for necessary time. If these steps are made transparently, are clear for economic subjects and its force is time-limited, they could be accepted from economic subject.

The problem is, when the government acts vaguely, when it is not enough strong in order to get its concepts through parliament, when it has to negotiate with opposition about concepts approval, when the government does not have clear conception and it changes it very often. In these cases economic policy uncertainty grows and economic subjects postpone investment decisions. This fact should become evident in innovation area too. The aim of this paper is to find out (on the example of five largest European economies), how changed the perception of economic policy before crises and over the period of crises and its impact on investment, innovation and economic growth. There will be used a method of panel regression. (cf. remarks on section headings, below).

2 Literature Review

Relationship between policy uncertainty and technological innovation was the area of interest of Marcus (1981), when he comes to the conclusion, that without certainty about government policies, business decision makers are unable to assess risk and opportunity and make the trade-offs

necessary for investment in new technologies. Manso (2011) illustrated the relative importance of policy versus policy uncertainty in determining innovation.

The negative impact of policy uncertainty has been long discussed (Friedman, 1968; Pindyck, 1991; Rodrik, 1991; Higgs, 1997), but there has been no tool how to measure the quantity. This was only changed by Baker, Bloom and Davis (2013), who has recently published a working paper describing the construction of an index measuring Economic Policy Uncertainty (EPU) in the United States and several other selected countries. The higher is the value of index, the higher is the economic policy uncertainty. Their work builds on two views of the impact of uncertainty on economic performance (Baker, Bloom and Davis, 2013). The first is the literature on the impact of general economic uncertainty on investment; postulated that uncertainty with regard to the economy leads firms to postpone investment decisions (Higgs, 1997). Another reason why uncertainty is seen as a negative phenomenon is that it pushes up the costs of finance (Gilschrist, Sim and Zkrajsek, 2010), and it increases managerial risk aversion (Pastor and Veronesi, 2012).

The other group of authors (Friedman, 1968; Bernanke, 1983; Rodrik, 1991; Higgs, 1997; Hasset and Metcalf, 1999) works with policy uncertainty. They consider the detrimental effects of monetary, fiscal and regulatory policy uncertainty on an economy. As policy uncertainty we can classify political instability too (Alesina et al, 1996). These topics are closely related. Political instability means that the government changes very often so its policy is not continual and it is perceived as uncertain.

3 Indicators in Selected Countries

The most important indicators for this analysis were selected to demonstrate their progress before and over the crisis period in 5 largest European economies (Germany, the United Kingdom, France, Italy and Spain).

The economic crisis began in 2007 in the United States and with subsequently spilled over the Europe with the lag. The breaking point is September 15, 2008 when Lehman Brothers declared bankruptcy.

3.1 Real Economic Growth and Investment

In Figure 1 there is illustrated a progress of real GDP in 5 largest European economies. It is clear, that before September 2008, GDP per Capita in US Current PPPs increased and after Lehman failure it declined sharply in all economies.

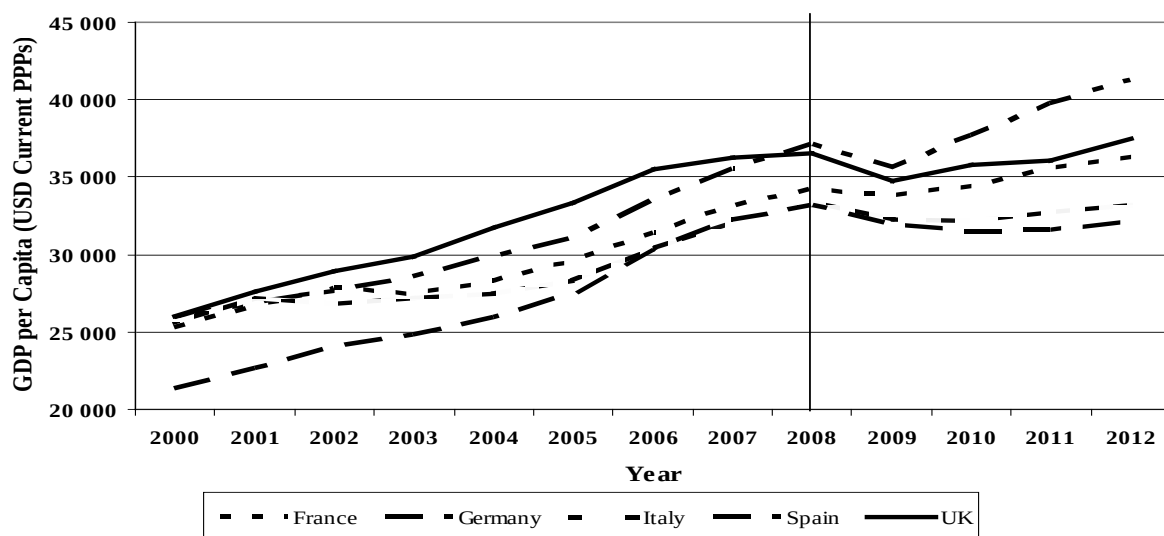


Figure 1. GDP per Capita in 5 largest European Economies (2000-2012) (Source: OECD)

In Figure 2 there is illustrated a progress of real investment rate relative to real GDP. As could be expected investments copy the GDP trend. This fact is not surprising. The original neoclassical Solow model and its further extension toward endogenisation of technological progress use real investment as one of the independent variables.

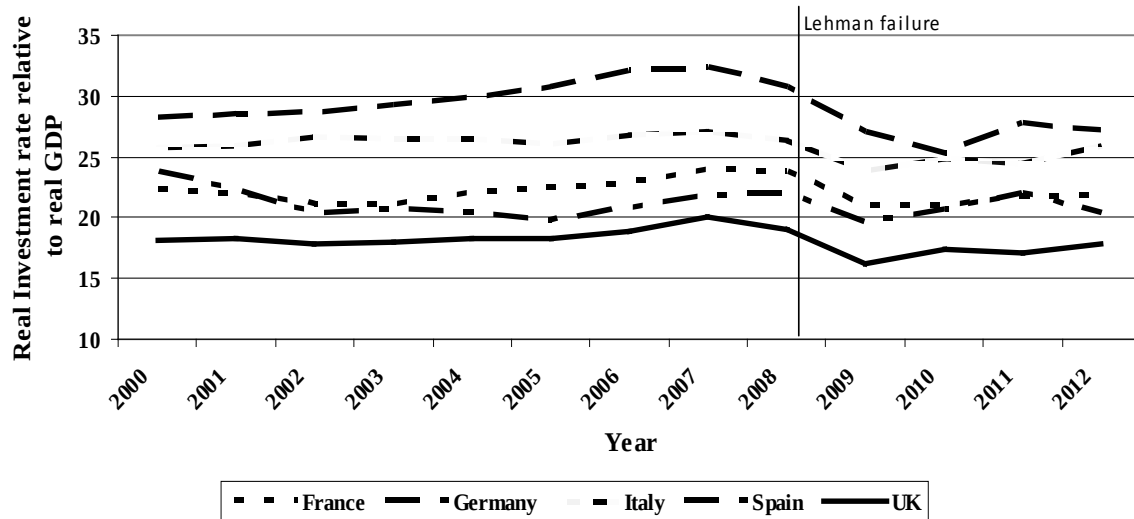


Figure 2. Real Investment rate in 5 largest European Economies (2000-2012) (Source: OECD)

3.2 Economic Policy Uncertainty

This index is produced by Scott Baker, Nicholas Bloom and Stephen Davis (henceforth BBD) for measuring economic policy uncertainty. Primarily it was constructed for US economy and consequently for some European countries.

Index for US is constructed from three types of underlying components (Baker, Bloom and Davis, 2013). First component quantifies newspaper coverage of policy-related economic uncertainty. Second one reflects the number and size of federal tax code provisions set to expire in future years and the third component uses disagreement among economic forecasters about policy relevant variables as proxy for uncertainty.

In Europe authors selected 5 largest European economies (Germany, the United Kingdom, France, Italy and Spain). Given that the legislation in the area of taxation in the European Union is not uniform, and that it is very extensive in each of the countries, it was not possible to use the second component in the construction of the index for European countries, or Europe as a whole. Thus, the authors based their overall policy uncertainty indices on 50% newspapers searches and 50% forecaster disagreement. To construct the first component, two newspapers from each of the countries were used, which include El Pais, El Mundo, Corriere della Sera, La Repubblica, Le Monde, Le Figaro, the Financial Times, The Times of London, Handelsblatt and FAZ.

As well as for the US version of the index, the authors analysed a number of newspaper articles containing specific selected terms (uncertain or uncertainty, economic or economy) as well as policy-relevant terms, which include: policy, tax, spending, regulation, central bank, budget and deficit. All searches are done in the native language of the newspaper in question. Each paper-specific series is normalized to standard deviation 1 prior to 2011 and then summed. The series is normalized to mean 100 prior to 2011. The higher is the index value, the greater the uncertainty of economic policy.

To measure the second part of the index (forecaster disagreement), the Consensus Economics forecast database of public expenditure for each European country was used. For each country, BBD use data on individual forecast for the following calendar year of Consumption Price Index (CPI) and federal budget balances. The problem of seasonality is corrected with using interquartile ranges. So for the CPI disagreement measure BBD use the raw values. For the budget balance, they

scale by a country's GDP. Index of each country is then scaled to standard deviation and summed to create a single European-wide index.

Figure 3 which shows the development of European Policy Uncertainty Index, clearly shows where the index reaches extreme values. These fluctuations can be assigned specific events. The first significant increase was reached in mid-1997, with the Asian crisis culminating at this time, followed by the Russian crisis in the second half of 1998. In 2001, the index rose sharply to a value of 170 due to the September attacks on the World Trade Center in New York. In 2003, war in the Gulf broke out (Treaty of Accession and Gulf War II). In 2010, the Greek economy gets into trouble (Greek Bailout Request, Rating Cuts). The index reaches its highest values in 2011, involving a downgrade of Italy and after the Greek Prime Minister Papandreou stepped down after an unsuccessful referendum on Greek Eurozone exit.

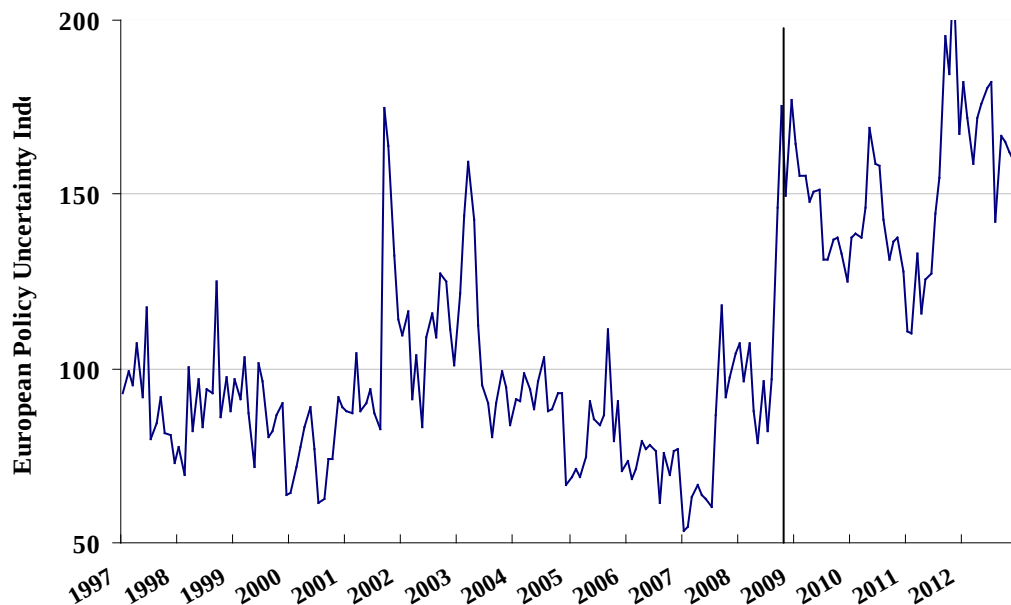


Figure 3. European Policy Uncertainty Index (1997-2012) (Source: BBD)

3.3 Innovation Index

There are created many indexes which try to measure innovation potential, so one of the best known was chosen. It is Global Innovation Index (GII). The Global Innovation Index (Insead and Wipo, 2012) relies on two sub-indices, the Innovation Input Sub – Index and the Innovation Output Sub-Index, each built around pillars. Each pillar is divided into three sub – pillars and these are composed of individual indicators (total of 84 indicators).

The Innovation Input Sub-Index has 5 enables pillars:

- Institutions,
- Human Capital and Research,
- Infrastructure,
- Market Sophistication,
- Business Sophistication,

which define aspects of the environment conducive to innovation within an economy. Institutions providing good governance and the correct levels of protection and incentives are essential to innovation. The level and standard of education and research activity in a country are the prime determinants of the innovation capacity of a nation. That is why Human Capital and Research are so important. Higher education is crucial for economies to move up the value chain beyond simple production processes and products. A good and ecologically friendly

communication, transport, and energy infrastructure facilitates the production and exchange of ideas, services, and goods and feeds into the innovation system through increased productivity and efficiency, lower transaction costs, better access to markets, and sustainable growth (Infrastructure). The availability of credit, investment funds, and access to international markets are crucial for businesses to prosper, so Market Sophistication includes indicators like Credit, Investment or Trade competitions. The last pillar (Business Sophistication) tries to capture the level of business sophistication to assess how conducive firms are to innovation activity.

Innovation outputs are the results of innovative activities within the economy. Although the Output Sub-Index includes only two pillars, it has the same weight in calculating the overall GII scores as the Input Sub-Index. There are two output pillars:

- Knowledge and technology outputs
- Creative outputs.

Knowledge and technology outputs pillar covers all those variables that are traditionally thought to be the fruits of inventions and innovations. The role of creativity for innovation is still largely underappreciated in innovation measurement. In Table 1, there is shown the GII progress in time.

Table 1. Global Innovation Index (2007 -2012)

	2007	2008	2009	2010	2011	2012
France	4.32	4.35	4.20	4.71	4.92	5.18
Germany	4.89	4.99	4.32	4.85	5.49	5.62
Italy	3.48	3.65	3.47	3.68	4.07	4.45
Spain	3.38	3.81	3.74	3.98	4.38	4.72
UK	4.81	4.82	4.42	4.97	5.56	6.12

Source: INSEAD and WIPO.

In all countries values of GII fell down in 2009 which is a consequence of the economic crisis and economic policy uncertainty. When the governments took measures to solve the crisis, the innovation index increased again.

Other indexes, which are used for measuring level of the innovation, are Knowledge Index (KI) and Knowledge Economic Index. These indexes are built by World Bank by using knowledge assessment methodology (Worldbank, 2013).

Knowledge Index (KI) measures a country's ability to generate, adopt and diffuse knowledge. This is an indication of overall potential of knowledge development in a given country. Methodologically, the KI is the simple average of the normalized performance scores of a country or region on the key variables in three Knowledge Economy pillars – education and human resources, the innovation system and information and communication technology.

The Knowledge Economy Index (KEI) takes into account whether the environment is conducive for knowledge to be used effectively for economic development. It is an aggregate index that represents the overall level of development of a country or region towards the Knowledge Economy. The KEI is calculated based on the average of the normalized performance scores of a country or region on all 4 pillars related to the knowledge economy - economic incentive and institutional regime, education and human resources, the innovation system and information and communication technology.

4 Data and Methodology

In this part panel regression will be used to prove or disprove the hypothesis about impact of EPU on economic growth.

In the regression analysis performed, the neoclassical model was used in its basic form, as recommended (Barro, 1996). The theory of long-term economic growth is mainly based on the

original neoclassical Solow model (Solow, 1956) and its further extension toward endogenisation of technological progress (Romer, 1986; Lucas, 1988).

The dependent variable was real GDP per capita in USD adjusted by purchasing power parity (PPP) and the independent variables were standard growth variables, understood as a control variable – the level of real investment relative to real GDP (INVESTMENT) and the variable describing the degree of uncertainty in economic policy (UNCERTAINTY).

The GDP per capita and the share of investment in GDP were obtained from the OECD iLibrary Statistics. The data approximating the level of uncertainty in economic policy was obtained from www.policyuncertainty.com, and are freely available, including the methodology of calculation. The periods under analysis were two: First before economic crisis in Europe 2001-2007 and second 2008-2012, which could ensure almost complete and reliable time series of economic crisis in France, Germany, Italy, UK and Spain.

The method used was the panel regression. Given the relatively small number of countries and the relatively short time series, the combination of time and cross-country data is absolutely essential. This makes the presented statistics more reliable. The software used was E-Views, version (7).

The regressions aimed to verify the hypothesis arguing the negative impact of economic policy uncertainty on economic growth.

In the first phase, the stationarity tests were performed using the “panel unit root test” according to Levin, Lin, Chu (2002). Only the UNCERTAINTY variable was found to be non-stationary. Its stochastic instability was removed in subsequent analyses using first differences. In terms of interpretation, it was also necessary to use the first differences for other variables. The problem of autocorrelation and heteroscedasticity was resolved by using a robust estimator which, when calculating the covariance matrices, ensures the correctness of the results of standard deviations of parameters and hypothesis tests with regard to a possible occurrence of autocorrelation and heteroscedasticity (White period).

The estimates employed the model with fixed effects, which is, according to Wooldridge (2009), more suitable in the case of macroeconomic data. This procedure also relied on support of Hausman test.

5 Empirical Analysis

Full results of the regression for the reference period 2001-2007 are shown in Table 2. The analyses suggest that with a relatively high coefficient of determination (25%) and at 5% level of model significance, a statistically significant (1% significance level) negative impact of economic policy uncertainty on economic growth was demonstrated in 2001-2007 in the developed EU economies. The effect of the control growth variable expressing the share of investment relative to GDP was, in line with common papers, described as positive (at 1% significance level).

Table 2. Full Results of Regression.

Dependent Variable: D(GDP)				
Method: Panel Least Squares				
Sample: 2001 – 207				
Periods Included: 7				
Cross-section Included: 5				
Total Panel (balanced) observation: 34				
White Period Standard Errors & Covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.143351	0.003595	-39.87567	0.0000
D (EPU)	-0.009864	0.003086	-3.196326	0.0035
D(INV)	0.191087	0.071458	2.674125	0.0126
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.352205	Mean dependent var	-0.135655	
Adj. R -squared	0.244917	S.D. dependent var	1.128307	
S.E. of regression	0.980448	Akaike info criterion	2.979626	
Sum squared res.	25.95449	Schwarz criterion	3.293877	
Log likelihood	-43.653654	Hannan-Quinn criter.	3.086794	
F-statistic	2.783971	Durbin-Watson stat	2.849129	
Prob (F-statistic)	0.030708			

Source: own calculation.

The second period was 2008-2012, when the European countries countered the consequences of the recession. Full results of the regression are shown in Table 3.

Table 3. Full Results of Regression.

Dependent Variable: D(GDP)				
Method: Panel Least Squares				
Sample: 2008 – 2012				
Periods Included: 5				
Cross-section Included: 5				
Total Panel (balanced) observation: 25				
White Period Standard Errors & Covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.342662	0.274468	1.248460	0.2279
D (EPU)	-0.030066	0.014764	-2.036421	0.0567
D(INV)	0.311142	0.065058	4.782542	0.0001
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.743738	Mean dependent var	-0.305557	
Adj. R -squared	0.658317	S.D. dependent var	3.952442	
S.E. of regression	2.310347	Akaike info criterion	4.744168	
Sum squared res.	96.07864	Schwarz criterion	5.085454	
Log likelihood	-52.30210	Hannan-Quinn criter.	4.838826	
F-statistic	8.706758	Durbin-Watson stat	2.576876	
Prob (F-statistic)	0.000155			

Source: own calculation.

The analyses suggest that with a high coefficient of determination (66%) and at 1% level of model significance, a statistically significant (1% significance level) negative impact of economic policy uncertainty on economic growth was demonstrated in 2008-2012 in the developed EU economies. The effect of the control growth variable expressing the share of investment relative to GDP was, in line with common papers, described as positive (at 1% significance level) and the effect of investment was quantitative higher than before economic crises.

6 Conclusion

Despite the impact of Economic Policy Uncertainty (EPU) being previously mentioned by some authors, a larger debate on this topic started only during the economic recession in the United States (2007-2009) which subsequently spilled over the Europe. Is there any difference between economic policy uncertainty in crisis period and without crisis? Could have economic policy uncertainty impact on economic growth and innovation? The answer is yes.

The analyses suggest that impact of crises on economic policy is negative. In first period 2001-2007 the impact of economic policy uncertainty on economic growth was negative too but not as strong as in crisis period. The coefficient of determination is in second period (2008-2012) much higher (66%) than in the first one (25%) and the significance level of model is better in second period too. The crisis period analyses higher quantitative relations.

In crisis period the government is obligated to take special measure to counter the crises consequences, eventually to prevent its deepening. Approved steps not have to be direct and effective, that is why they should be often changed. And additionally the government is not able to specify time of their validity. All these aspects increase Economic Policy Uncertainty. If economic subjects perceive economic policy uncertain, they could react differently than they were supposed to. They delay their entry decision and reduce firm investment, contracts etc, which could have negative impact on innovation.

7 Acknowledgement

This paper was supported by the Ministry of Education, Youth and Sports within the Institutional Support for Long-term Development of a Research Organization in 2014.

References

- [1] Alesina, A., S. Ozler, N. Roubini and P. Swagel, 1996. Political Instability and Economic Growth. *Journal of Economic Growth*, vol. 1, no. 2, pp. 189-211.
- [2] Baker, S., N. Bloom and S. Davis, 2013. *Measuring Economic Policy Uncertainty*. NBER Working paper No. 83. [online]. [2014-06-07]. Available from: <http://www.policyuncertainty.com/papers.html>.
- [3] Barro, R. J., 1996. *Determinants of Economic Growth: A Cross-Country Empirical Study*. NBER Working Paper No. 5698. [online]. [2014-06-07]. Available from: http://www.nber.org/papers/w5698.pdf?new_window=1.
- [4] Bernanke, B., 1983. Irreversibility, Uncertainty and Cyclical Investment. *Quarterly Journal of Economics*, vol. 98, issue 7, pp. 85-106.
- [5] Friedman, M., 1968. The Role of Monetary Policy. *The American Economic Review*, vol. 58, no. 1, pp. 1-17.
- [6] Gilschrist, S., J. W. Sim and E. Zkrajsek, 2010. *Uncertainty, Financial Friction and Investment Dynamics*. [online]. [2014-06-08]. Available from: <http://www.policyuncertainty.com/papers.html>.

- [7] Hasset, K. and G. E. Metcalf, 1999. Investment with Uncertain Tax Policy: Does Random Tax Policy Discourage Investment? *Economic Journal*, vol. 109, issue 457, pp. 372-393.
- [8] Higgs, R., 1997. Why the Great Depression Lasted So Long and Why Prosperity Resumed After the War. *The Independent Review*, vol. 4, no. 1, pp. 561-590.
- [9] INSEAD and WIPO, 2012. *The Global Innovation Index 2012*. [online]. [2014-06-08]. Available from: <http://www.globalinnovationindex.org/userfiles/file/GII-2012-Report.pdf>.
- [10] Levin, A., C. F. Li and C. Chu, 2002. Unit Root Tests in Panel Data: Asymptotic and Finite-Sample Properties. *Journal of Econometrics*, No. 108, pp. 1-24.
- [11] Lucas, R. E., 1988. On the Mechanics of Economic Development. *The Journal of Monetary Economics*, vol. 22, issue 1. [online] [2014-06-08]. Available from: <http://www.parisschoolofeconomics.eu/docs/darcillon-thibault/lucasmechanicseconomicgrowth.pdf>.
- [12] Manso, G., 2011. Motivating innovation. *Journal of Finance*, vol. 66, issue 5, pp. 1823-1860.
- [13] Marcus, A. A., 1981. Uncertainty and Technological Innovation. *Acad Manage Rev*, vol. 6, no. 3, pp. 443-448.
- [14] OECD. *OECD Factbook 2013*. [online]. [2014-06-08]. Available from: http://www.oecd-ilibrary.org/economics/oecd-factbook-2013_factbook-2013-en;jsessionid=2535t5o98q4uh.x-oecd-live-01.
- [15] Pastor, L. and P. Veronesi, 2012. Uncertainty about government policy and stock prices. *The Journal of Finance*, vol. 67, no. 4, pp. 1219-1264.
- [16] Pindyck, R. S., 1991. Irreversibility, Uncertainty, and Investment. *Journal of Economic Literature*, vol. 29, issue 3. [online]. [2014-06-07]. Available from: <http://www.jstor.org/stable/2727613>.
- [17] Rodrik, D., 1991. Policy Uncertainty and Private Investment in Developing Countries. *Journal of Development Economics*, vol. 36, no 2, pp. 229-242.
- [18] Romer, P. M., 1986. Increasing Returns and Long-run Growth. *Journal of Political Economy*, vol. 94, no. 5, pp. 1002-1037.
- [19] Solow, R. A., 1956. Contribution to the Theory of Economic Growth. *Quartely Journals of Economics*, vol. 70, issue 1. [online]. [2014-06-07]. Available from: http://faculty.lebow.drexel.edu/LainczC/cal38/Growth/Solow_1956.pdf.
- [20] Wooldridge, J. M., 2009. *Introductory Econometric: A Modern Approach*. Mason: South-Western Cengage Learning.
- [21] Worldbank, 2013. *KAM: User Guide, Background*. [online]. [2014-06-07]. Available from: <http://web.worldbank.org/WBSITE/EXTERNAL/WBI/WBIPROGRAMS/KFDLP/EXTUNIKAM/0,,contentMDK:20584268~menuPK:1433162~pagePK:64168445~piPK:64168309~theSitePK:1414721,00.html>.

CHANGES OF THE EUROPEAN LABOUR MARKET

Magdalena Kotýnková¹, Vojtěch Krebs²

¹University of Economics in Prague, Faculty of Economics, nam. W. Churchilla 4, 130 67 Prague 3, Czech Republic
email: kotynkov@vse.cz

²University of Economics in Prague, Faculty of Economics, nam. W. Churchilla 4, 130 67 Prague 3, Czech Republic
email: krebs@vse.cz

Abstract

Since the 70s of the last century European labour market has passed gradual changes which are connected with consequences of industrial era dominating in Europe since the second half of the 19th century. Progressive implementation of labour-saving technologies, information and telecommunication technologies changed economic activity and consequently the labour market. The structure and character of economic activity and afterword contents and forms of work were changed as well. The accompanying phenomenon of these changes in the labour market was growing uncertainty and the level of unemployment which have been becoming a commonly solved problem of the EU countries since the 90s. The goal of the paper is to outline basic trends in the development of current changes in the labour market including new forms of the labour market both regarding the content of work and its forms and possibilities of job creation outside private and public sector, namely within social economy.

Keywords

Labour Market, Unemployment, Uncertainty of the Labour Market, Labour-saving Technologies.

JEL Classification

J2, J6.

1 Introduction

Since the second half of the 19th century industrial society dominated in Europe. But in the last decades has made significant changes. The changes have had impact on economic activities and labour market: character of work, structure of production, contents and forms of work have been changing. A side effect of the changes is unemployment which has become a commonly discussed problem in the EU countries. The call for a common fight against unemployment was firstly published in 1994 by the European Commission in the document *Growth, competitiveness, employment – challenges and ways forward for the 21th century* (European Commission, 1994).

2 Changes in dependence between economic growth, volume and quality of workforce

From the long-term view, unemployment and insecurity of the labour market started to grow at the beginning of the 70s last century when labour-saving technologies appeared. These technologies weakened relations between economic growth and job creation. Owing to that, the world of work changed dramatically, free workforce started to pass from the industry to the service sector. Gradually the whole structure of the economy has changed, services are becoming dominant namely both in the share in GDP and in employment. With the time production of material property stopped being crucial for the economic growth, but production of knowledge and algorithms together with flows of information and their application have been becoming the most important. This caused a change in the relation between the capital and paid work.

If there had been a relation of mutual dependence between economic growth and volume and quality of workforce typical of the industrial society, in the post-industrial society the interconnection does not go anymore (Baumann, 1998). The factor of work was becoming marginal in relation to the economic growth. The relation between economic growth and labour was separated which can be proved with the fact that the economic growth in the second half of the 20th century started to be reached even when the number of vacancies stagnated or increased very slowly (European Commission, 1994). Similarly the International Organisation of Labour states that 1%

economic growth encourages increase in new workplaces by 0.3% while the relation keeps weakening (ILO, 2013).

Even demographic factors contributed to the tension in the labour market in the 70s since the amount of jobseekers was increasing. At the time, the economic theory accepted a conception of so called natural unemployment rate where unemployment was considered being a natural phenomenon. The conception of the natural unemployment rate supposes the existence of the lowest long-term sustainable unemployment rate corresponding with a potential product. There is the question of such unemployment rate which is typical of the economy at a certain stage of development. Efforts to reduce the natural rate by means of demand oriented economic policy of the government or the Central Bank will lead to the rise in inflation (Friedman, 1968).¹

But in the course of time it seems that the natural rate of unemployment keeps increasing which might be caused not only by labour-saving technologies, but also by the overall change in the type and organisation of labour (move from the importance of material production to nonmaterial one). It expels not only low-skilled workers, but also profession with higher qualification which is nowadays visible.

3 Changes in character of work and job description

Unemployment and uncertainty in the labour market which have become a consequence of insufficient job creation have been increasing together with changes in the character of work in post-industrial societies. Rapidly applied scientific inventions and findings help labour-saving technologies enter the work process and replace manual workers. Information and communication technologies (“ICT”) prefer processes aimed at the reshape of mass to work with information. ICT application brings automation of work activities, improved management, acceleration of internal and external communication etc.

Changes in the character of work cause the growth in the dynamics of sector changes. Traditional branches are suppressed and new branches based on new technologies are developing. The era when industrial enterprises fully provided the whole production process is gradually disappearing owing to outsourcing and offshoring (moving industrial production and services from domestic to host countries). Both these processes refer to a connection between industry and services and changes in the geography of industry (Dvořáček, 2007). On one hand the work performance is moving from closed premises to the field, closer to customers and clients. On the other hand, services owing to ICT are concentrated and carried out far from customers outside the territory of the state in economically more suitable areas with cheap labour force (Asian zones).

4 Changes in forms of work

Together with changes in the character and contents of work, forms of work are changing as well. Since the 70s a pressure on the rise in flexibility of the labour market as a consequence of fast changing environment where innovation and rapid change of production programmes can be noticed. To enforce higher flexibility of the labour market, employers are motivated by competitive pressure and effort for the highest effectiveness of invested funds.

It is possible to ask a question how to define the term flexibility of the labour market, but it is difficult to find an unambiguous answer. The definition of the term might be found in many publications, e.g. Nešporová and Cazes (2003): *The conception flexibility of labour market is so complicated as its ideological interpretations. Flexibility in wider sense of the word means*

¹ Milton Friedman by the criticism of Philips curve, which comes from mutual dependence of unemployment and inflation (unemployment can be reduced despite higher inflation), stated that the dependence is true only for a short-term. In the long term, the Philips curve is stabilised at a level of natural unemployment.

adaptability in contrast with rigidity.” Flexibility of the labour market means ability to adapt to changes in the commodity and services market, but its growth is often connected with the loss of employees’ securities and the loss of stable work places. Currently, in the labour market we can see a decline in the importance of traditional occupational relations and an increase of diversities, individualization and uncertainty of work relations.

Flexibility and uncertainty of the labour market are reflected in the conception of the dual labour market which was accepted in the 70s of the last century, similarly like a conception, which was originally worked out by American economists Piore and Doeringer (1971). They divide the labour market into primary and secondary:

- Workplaces created in *the primary sector of the labour market* distinguish themselves by high protection of workplaces, possibilities of a future carrier development and good working conditions. They provide high wages, extra bonuses, status, possibility of trainings and bigger chances in the labour market in the case of a job loss. It concerns workplaces set up in compliance with implementing more a more demanding technologies which are connected with the pressure on maximal use of highly specialised and qualified workforce.
- Workplaces created in *the secondary sector of the labour market* are insecure, have worse working conditions, lower work and legal protection of employees, poorer wage prospects, low possibility of personal development and also repetitive and long-term unemployment. In the secondary labour market there are mainly disadvantaged groups of inhabitants such as low skilled workers, handicapped people, mothers with children and the like.

Other circumstances of changes in job descriptions are formal changes of the work which are reflected in a growth of insecure contracts of employment. Share of employees in nonstandard workload such as forward and short term contracts, employing people by job agencies, work conditioned by trade licence and other atypical forms of employment is rising. These forms of work are in individual countries differently protected with the legislation from the risk of an insecure job. “*Economic and social mechanisms which are in the background of dualism of labour market are quite complete.*” (Sirovátka, 2009). There are above all innovations, modernization and technological development requiring life-long learning, retraining and adaptation of skills which disadvantage nonqualified work. Amount of people threatened by the unemployment and job insecurity was gradually increasing and since the 90s of the last century has been showing unchanged high share of the long-term unemployment in the total unemployment.

Unemployment and job insecurities in the labour market have become a part of social and economic reality of Europe together with developing disadvantaged groups of population in the labour market. These are characterised by the experience with repetitive or long-term unemployment. They do not have an access to a better job.

5 Czech labour market

Since the second half of the 20th century many significant changes have occurred in the Czech labour market. The amount of employed people in the labour market has increased because since the 60s women have been entering the working process which initiated feminization of work. The sector employment has changed: share of people in the primary sector (agriculture) fell at only 3% (about 150,000 people) in total amount of the employed at the time. On the other hand share of people employed in the secondary (industry and construction) and tertiary sector (services) was going up to the year 1980, then a radical change happened and the share of people employed in the secondary sector started to fall at 38% (about 1,850 thousands of people) while in the tertiary sector the share of people employed keeps rising up to 59% (about 2,850 thousands) in the total amount currently employed people. The long-term trend in the sector economy characteristic of the reduction in the agriculture share and since the 80s even of the share of industry and at the same time growing role of services is reflected in the redeployment, see Fig. 1.

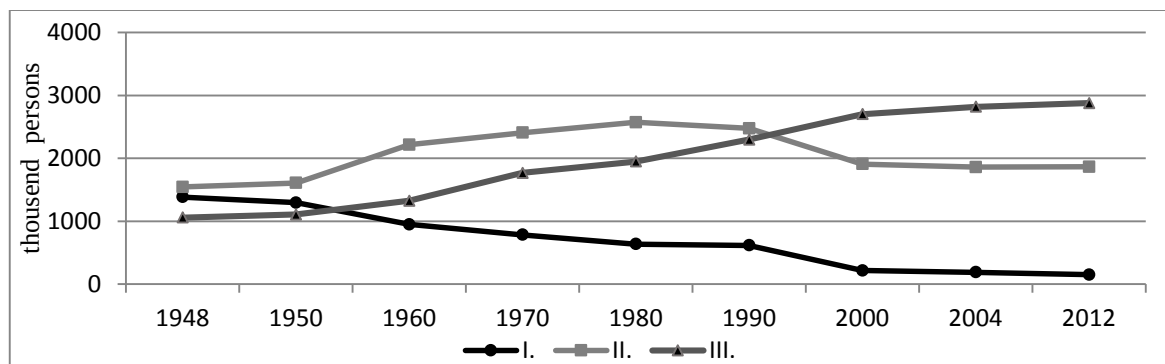


Figure 1. Development in the number of the employed in primary, secondary and tertiary sector in years 1948 – 2012
 (Source: Czech Statistical Office)

The character of work is changing. The proportion of manual work is reducing, the proportion of intellectual work is rising. According to the classification of work (CZ-ISCO)² in 2012 the share of mostly manually working people (farmers, craftsmen, repairmen, machinery operators, unskilled workers) accounted for 38% in the number of totally employed and 62% mostly intellectually working people (clerks, technicians, specialists, lawmakers, executives, employed in services and sale).

The role and position of high-tech branches in the economy is often considered as a sign of the maturity of the society. In international comparisons, the share of people employed in high-tech jobs³ in the Czech labour market is low in 2008-2010: there were 3.2% people employed from the overall amount (about 160,000 employed).

The character of work has been changing from physically towards psychologically demanding work. Requirements for workforce are rising, mainly for innovating and new technologies including information and communication technologies. The ability to learn, communicate, analyse, solve problems, change current knowledge into new one is a source of a competitive advantage.

Lifelong occupation is on decline. Work as a core of the life is losing its strength. A part of the employed have a part-time job and fixed-term job. These jobs are even carried out by the self-employed (so called hidden self-employment). Work is also bought from so called agency employers, it means from employers who have – according to the law No. 435/2004 Coll. on employment – a closed employment contract or made an agreement with a work agency which will temporarily assign the employee to a final user on the basis of a written agreement on so called a temporary allocation of employees. When having difficulties in selling the production, the employee can be easily dismissed. Owing to the form of employment, needed workforce is flexibly recruited when the demand for production is growing and on the other hand if it is lower, the workforce is operatively dismissed, because these workers are their employees.

The share of part-time jobs account for about 5.5%⁴ from the total of the employed (in the EU27 on average nearly 20% employed). The share of fixed-term jobs is about 9% from the total of the

² Classification CZ-ISCO is national statistical classification of occupations made by the Czech Statistical Office to the fullest extent of international standards – International Standard Classification of Occupations.

³ Economic activities of high-tech sector are defined with a branch access by means of Classification of Economic activities (CZ-NACE) and is divided into two main categories: high-tech manufacturing industry and high-tech services. High-tech services involve audio-visual and information activities, activities in the area of ICT and research and development. High-tech manufacturing industry involves pharmaceutical production, production of computers and electronic parts, consumer electronics, optical apparatus, measuring, testing and navigational appliances, aeroplanes, spaceships and their facilities.

⁴ Economic activities of high-tech sector are defined with a branch access by means of Classification of Economic activities (CZ-NACE) and is divided into two main categories: high-tech manufacturing industry and high-tech services. High-tech services involve audio-visual and information activities, activities in the area of ICT and research and development. High-tech manufacturing industry involves pharmaceutical production, production of computers and

employed (in the EU27 on average 14% employed). The share of agency employees in the year 2011 accounted for 4% from the total of the employed, at the time of economic expansion (2005-2008) the share accounted for more than 5% (just like the average in the EU27). The high share in total number of the employed show the self-employed. In years 2000-2012, number of the self-employed in the total employment was fluctuating between 14.2 – 17.2% where the self-employed without employees predominated (the share accounted at the time for 10-14%). In the developed EU countries (Germany, France, Austria) the share of the self-employed in the total number of the employed reached 5 -10%. It is possible to state that low flexibility in the Czech labour market connected with a low number of part-time and fixed-term does not reflect the real labour market flexibility. From statistical data on the self-employed it is not possible to distinguish exactly who really performs a job and who performs a hidden work activity and consequently to set an amount of workers whose position in the labour market is insecure.

The development in the unemployment rate in the long-term shows that the unemployment rate which in the year 1999 exceeded 8% decreased at the time of economic expansion (in 2008 by 4%), but since the year 2009 has been again at the level of about 7%. It is proved that the paid job is becoming a valuable property. The labour market shows unchanged instability in the long-term, a disproportion between supply and demand for workplaces above all in the area workforce qualification of has been escalating. Even though the data of the sample survey of workforce (Czech Statistical Office: Labour Force Survey) during the year 2013 confirmed a slight increase in the total employment, the results of companies' statistics show a constant decrease in registered number of employees (regular workforce). It proves that the rise in employment takes place only in marginal areas of the labour market (Czech Statistical Office: Comments, 2014).

Insecurities in current labour markets are individually diversified but at the same time it is possible to identify their common impact on members of the whole social groups. Vulnerable groups of population moving in the secondary labour market are handicapped persons, mothers coming back from maternity leave, persons above 55, young people under 20 without work experience whose insecurity in the labour market has been increasing during last years (Sirovátka et al., 2009).

6 Will social business become a solution of the unemployment?

Changes taking place in the labour market are showing continually high unemployment and increase of uncertainties coming from transformation of work forms and contents in post-industrial societies. They cause necessity to look for alternative solutions for of job creations because the people are still dependent on incomes from work. A social business which even arises from the definition of social economy and social business for the Czech Republic itself can become a suitable alternative: *“It is about a summary of autonomous private activities provided by different types of organisations which are targeted at a service to their members or local communities mainly by means of business. Social economy is aimed at a solution of employment issues, social cohesion and local development.”* (Mészáros, 2008). The most significant Czech researcher and most productive author in the area of social policy Magdalena Hunčová considers social economy as an alternative solution of a crisis of the social state (Hunčová, 2004). But the crisis of the social state is a part of general social transformations, primarily of the fact that the workforce stop being a factor of economic growth.

7 Acceptance of the conception of social economy by Czech society

Ability of the Czech society to understand the conception of social economy is strongly influenced by its history. The core of social economy might be found in self-help communities, voluntary and public beneficial activities which became a part of the Czech culture already during the 19th century. For example Women’s production society established in 1871 with the help of Karolína Světlá and headed by Eliška Krásnohorská. They offered work to widows of soldiers killed in wars which provided them with a job opportunity and means of support. There is a question whether the historical example was a background of present occupation and integration social businesses in our country both with regard to social integration (people socially in need) of widows and possibility of income which the Women’s production society provided. Historically it is possible to continue rich history of Czech co-operative societies whose beginning can be dated already since the year 1847 (the first Czech co-operative society was the Prague food and saving society). Development of mutual self-help social policy deals with was interrupted in the 20th century when quite strong social state was established. After 1989, social and economic development was significantly influenced by liberalistic ideology based on the belief in self-regulating market mechanism and in individualism. That is why the concept of social economy based on mutual help was accepted by the society only indifferently which is confirmed by the survey on the acceptance of social economy in the CR in comparison with other EU countries, see Table 1.

Table 1. Acceptance of the concept of social economy by individual EU countries

	Public authorities	Subject of social economy	Academic and scientific community
Austria	*	**	**
Belgium	**	**	***
Czech Republic	*	**	*
Denmark	*	**	**
Estonia	**	*	*
Finland	**	**	**
France	***	***	***
Ireland	**	***	**
Italy	**	**	***
Cyprus	**	**	**
Lithuania	**	*	*
Latvia	*	***	**
Luxembourg	**	**	**
Greece	**	**	**
Great Britain	*	*	**
Hungary	*	*	*
Malta	**	***	**
Germany	*	*	**
The Netherlands	*	*	*
Poland	**	**	**
Portugal	***	***	***
Slovakia			
Slovenia	*	**	**
Spain	***	***	***
Sweden	**	***	**

Note: Acceptance level of the concept of social economy is in the table marked with a number of stars in compliance with the master copy when *** means the highest and * the lowest score of acceptance. Missed stars means the state when the situation in the country is not known.

Source: Ávila and Monzón (2007).

8 Conclusion

The world has dramatically changed. It is confirmed that the paid work has been becoming the valuable assets. The labour market have instability in the long-term, competition for workplaces has been intensifying. In the Czech labour market registered number of employees keeps falling even together with the growth in total employment. This demonstrates that employment is only growing in marginal parts of the labour market. (Czech Statistical Office: Comments, 2014).

The development both in the European labour market and in the Czech labour market has been showing gradual trends in the character of work from physically towards psychologically demanding. The share of employees in nonstandard workload, such as fixed-term jobs, short-term employment contracts, employing people by work agencies, work based on trade licence, contract of work and other untypical forms of employment has been rising.

Lifelong occupation is on decline, work as a core of the life is losing its strength, but people are still dependent on incomes from gainful employment and so the necessity to search for alternative solutions of job creations not only in business but also in public sector has been arising. A social entrepreneurship can become a suitable alternative.

The development in the Czech labour market and above all development in the unemployment rate is a social and economic but also political indicator since the high unemployment can increase a social tension in the society and weaken social cohesion. Current social development, mainly big shift towards values of liberalism which is based on self-regulating market mechanism, but does not stimulate warm acceptance of the conception of social economy by the Czech society. Although it is possible to recognise mentioned changes in the labour market and gradual destruction of social state, public authorities – academic and scientific communities warn about the low intensity in the acceptance of the conception of social economy in comparison with other European countries.

9 Acknowledgement

The paper resulted from the grant – financial support of the Internal grant agency of the University of Economics, Prague IGS F5/15/2014.

References

- [1] Ávila, R. Ch. and J. L. C. Monzón, 2007. *The Social Economy in the EU*. The European Economic and Social Committee. [online]. [2014-06-12]. Available from: http://www.eesc-europe.eu/resources/docs/a_di_ces97.
- [2] Baumann, Z., 1998. *Work, Consumerism and The New Poor*. Oxford: Oxford University Press.
- [3] Cazes, S. and A. Nesporová, 2003. *Labour Markets in Transition: Balancing Flexibility and Security in Central and Eastern Europ*. Geneva: ILO.
- [4] Czech Statistical Office, 2014. *Labour Force Survey*. [online]. [2014-06-05]. Available from: http://www.czso.cz/csu/redakce.nsf/i/zam_cr.
- [5] Czech Statistical Office, 2014. *High-tech sector*. [online]. [2014-06-10]. Available from: http://www.czso.cz/csu/redakce.nsf/i/high_tech_sektor.
- [6] Czech Statistical Office, 2014. *Czech Statistical Office: Coments: Labour Market in the year 2013*. [online]. [2014-06-10]. Available from: <http://www.czso.cz/csu/csu.nsf/informace/cpmz031114analyza14.docx>.
- [7] Dvořáček, J., 2007. The development of the Czech industry in the early 21st century. *Acta Oeconomica Pragensia*, vol. 16, issue 2, pp. 6-16.

- [8] European Commission, 1994. *White Paper: The Challenges and ways forward into the 21st Century*. Brussel: European Commission.
- [9] Eurostat, 2014. *Employment in Europe*. Luxembourg: European Commission. Publications Office of the European Union. [online]. [2014-06-05]. Available from: <http://ec.europa.eu/social/keyDocuments.jsp?type=0&policyArea=0&subCategory=0&country=0&year=0&advSearchKey=empleuropereport&mode=advancedSubmit&langId=en>.
- [10] Friedman, M., 1968. The Role of Monetary Policy. *American Economic Review*, vol. 58, issue 1, pp. 1-21.
- [11] Hunčová, M., 2004. *The economic dimension of civil society*. Ústí nad Labem: University of J. E. Purkyně.
- [12] ILO, 2013. *World of work*. Geneva: ILO
- [13] Piore, M. J. and P. Doeringer, 1971. *Internal Labor Markets and Manpower Adjustment*. New York: D.C. Heath and Company.
- [14] Mészáros, P, 2008. *Social business: 10 Successful examples from Europe*. Praha: Nový Prostor.
- [15] Sirovátka T., J. Winkler and M. Žižlavský, 2009. *Uncertainties in the labor market*. Brno: František Šalé-Albert.
- [16] Act No. 435/2004, Coll. on employment.

SKILL AND REGIONAL MISMATCH ON THE LABOUR MARKET IN THE CENTROPE REGION

Luděk Kouba¹, Petr Rozmahel²

¹*Mendel University in Brno, Faculty of Business and Economics, Department of Economics, Zemedelska 1, 613 00
Brno, Czech Republic
email: kouba@mendelu.cz*

²*Mendel University in Brno, Faculty of Business and Economics, Department of Economics, Zemedelska 1, 613 00
Brno, Czech Republic
email: petr.rozmahel@mendelu.cz*

Abstract

Eight regions across the borders of Austria, the Czech Republic, Hungary and Slovakia jointly form the CENTROPE region. Due to very heterogeneous labour markets, theoretically, there should be a potential for cross-border cooperation within CENTROPE. In this paper, we focus on skill mismatch and regional mismatch that contribute significantly to unemployment in CENTROPE. The purpose of this paper is to determine what proportion of unemployment in selected occupations could be avoided if the unemployed were perfectly mobile across particular CENTROPE regions. Our analysis is based on a unique dataset, the so-called Labour Market Monitoring Tool in CENTROPE that is a joint project of Mendel University and the CENTROPE Office Czech Republic. As a result, we have identified occupation with a high, medium and low potential for commuting within CENTROPE. The identification of these occupations was executed by two ways of calculation: the Potential percentage of unemployed reduction and the Mismatch index.

Keywords

Mismatch Unemployment, Mismatch Index, Regional Labour Market, CENTROPE.

JEL Classification

J6, J2, R23.

1 Introduction

The CENTROPE region includes eight federal provinces, regions and counties in four Central European states: Burgenland, Lower Austria and Vienna in Austria, South Moravia in the Czech Republic, the Bratislava region and Trnava region in Slovakia and Győr-Moson-Sopron and Vas in Hungary. In this Central European region with around six and half million people, two capitals, Vienna and Bratislava, are located and also two other supra-regional centres, Brno and Győr. Economically, CENTROPE is a dynamic region with a high share of export-oriented industries, globally-networked service hubs and an educated workforce. CENTROPE belongs among the major beneficiaries of EU enlargement, which outperforms the EU average regarding both economic growth and unemployment.

Considering the situation on the labour market in CENTROPE, it is necessary to emphasize a high level of heterogeneity. First of all, according to official Eurostat data, the unemployment rate in 2010 varied from 3.6 in Lower Austria to 12.0 % in Western Slovakia. Furthermore, there is long-lasting divergent development among metropolitan and rural areas which is even more obvious on a sub-regional and local level. Another specific factor that is necessary to take into consideration is the lingering economic difference between Austria and the other three new EU member states. Theoretically, this heterogeneous development provides a potential for cross-border cooperation. In this text, we focus on skill mismatch (different levels of labour supply and demand by skill groups) and regional mismatch (different levels of labour supply and demand across regions) that contribute significantly to unemployment within CENTROPE. In particular, the regional mismatch signals a lack of cross-border mobility.

The purpose of this paper is to determine what proportion of unemployment in selected occupations could be avoided if the unemployed were perfectly mobile across CENTROPE regions. Our analysis is based on a unique dataset, the so-called Labour Market Monitoring Tool in

CENTROPE, which is introduced in the following part, Methodology of regional labour statistics. The analysis itself is divided into four steps.



Figure 1. The CENTROPE region (Source: www.centrope.com)

2 Methodology of regional labour statistics

Analysing regional labour markets, we can use two available datasets: the Eurostat data, based on the Labour Force Survey, and the national statistics, based on registered unemployment rates. However, both of them suffer from serious drawbacks related to the analysis of cross-border effects: either lack of up-to-date data at regional level or incompatibility of the data. We compared the positive and negative features of both sources of regional information in Rozmahel, et al. (2012). The results can be summarized in the following table.

Table 1. Comparison of regional labour statistics methodology between Eurostat and national statistics

	Positives	Negatives
Eurostat	stable and comparable methodology	- most of regional statistics available only at NUTS II level - very low up-to-dateness - only on annual basis
National statistics	- very detailed data often up to NUTS 5 level - high up-to-dateness - on monthly basis	- different methodology, not comparable - often only in local language

Source: own.

Further to these methodological problems, we decided to develop an additional instrument for the analysis of cross-border effects – the Labour market monitoring tool in CENTROPE (LMT in CENTROPE). This tool has been developed as a joint project of Mendel University and the CENTROPE Office Czech Republic within a CENTROPE pilot project “Regional Development

Report” (RDR). A detailed analysis of cross-border effects in CENTROPE belongs to the keystones of the RDR project and the regional labour market with a high cross-border potential is one of its key areas. However, as we described, regional labour market statistics suffer from serious problems. Therefore we decided to deal with both Eurostat statistics and national statistics and focussed on that, to try to develop a specific tool to enable monitoring of the labour market directly in the CENTROPE region as well. The Labour market monitoring tool in CENTROPE, thus, provides a unique and up-to-date dataset on selected vacancies and unemployment at NUTS 3 level.

At an early stage of this LMT in CENTROPE project, 10 occupational groups for labour market analysis were chosen. The main criterion for the selection process was their relevance to the labour market in CENTROPE with cross-border effects potential. Therefore the selection process was realized in cooperation with representatives of regional Labour offices in CENTROPE. The chosen occupations are: cook, waiter, butcher, social worker, CNC operator, welder, bricklayer, IT specialist, driver (bus, truck), and logistics worker. The structure of this occupations group goes across the education structure of the economically active population. It is another comparative advantage of this tool because similar instruments dealing with mobility are often focused on groups with high education (university students, managers) who have traditionally a high mobility potential. At the moment of completing this text, we have the data for 8 quarters in 2010 and 2011 with the exceptions of Q4/2011 in the Czech Republic (not available yet) and Q1/2010 and Q2/2010 in Hungary (because of methodology changes).

The analysis is executed in 4 steps. The first step provides a basic look at unemployment and vacancies in CENTROPE based on our unique dataset. The second step is focused on the unemployment/vacancies ratio across CENTROPE being considered as a key indicator of labour market development. The third and fourth steps offer two alternative ways to how to consider the potential of labour mobility in terms of solution of the unemployment problem in CENTROPE: the Potential percentage of unemployment reduction and the Mismatch index.

Partial results of the LMT in CENTROPE project were presented at the thematic labour market workshop “Monitoring for Better Managing the Shared Labour Market” in October 2011 that was held by the CENTROPE Office Czech Republic under the attendance of the representatives of the Labour offices across CENTROPE and at the CENTROPE workshop held by Mendel University in Brno in March 2012 under the attendance of the representatives of regions and municipalities, Europaforum Vienna, etc. This chapter thus encompasses attendants’ incentives and comments at both workshops.

3 Analysis based on the Labour market monitoring tool in CENTROPE

The structure of our unique dataset enables analysis of the CENTROPE labour market in three dimensions – across occupations, regions and time.

3.1 Basic look at unemployment and vacancies in CENTROPE

Figure 2 provides a basic look at the number of unemployed and vacancies across 8 regions in Q3 2011, and figures 3 and 4 at the number of unemployed and vacancies across 10 occupations in Q3 2011. These figures illustrate the importance of monitored occupations across CENTROPE regions, rough relationships between labour supply and labour demand, crucial disparities as well as particularities such as extraordinarily high demand for CNC operators in the Trnava region.

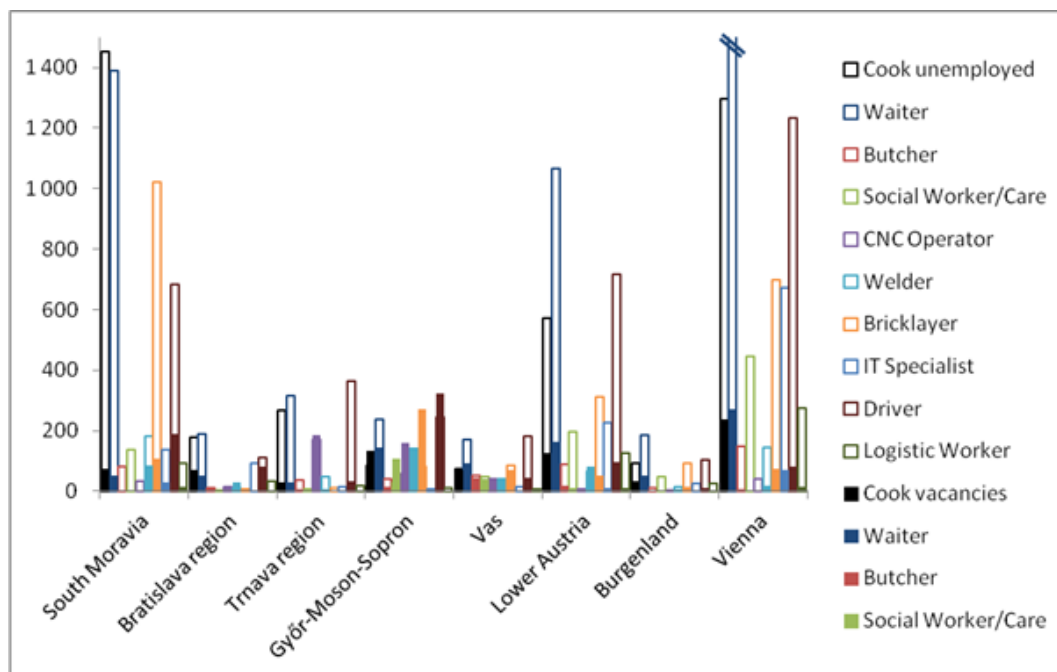


Figure 2. Unemployment and vacancies across regions (Source: CENTROPE Office Czech Republic)

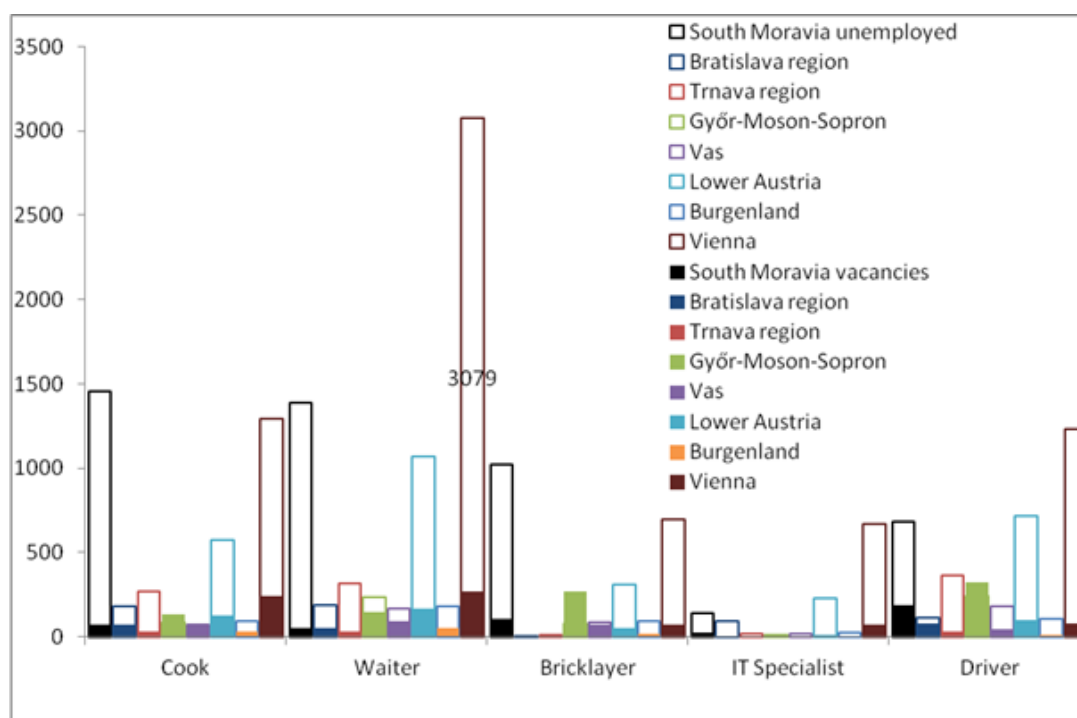


Figure 3. Unemployment and vacancies across occupations (part 1) (Source: CENTROPE Office Czech Republic)

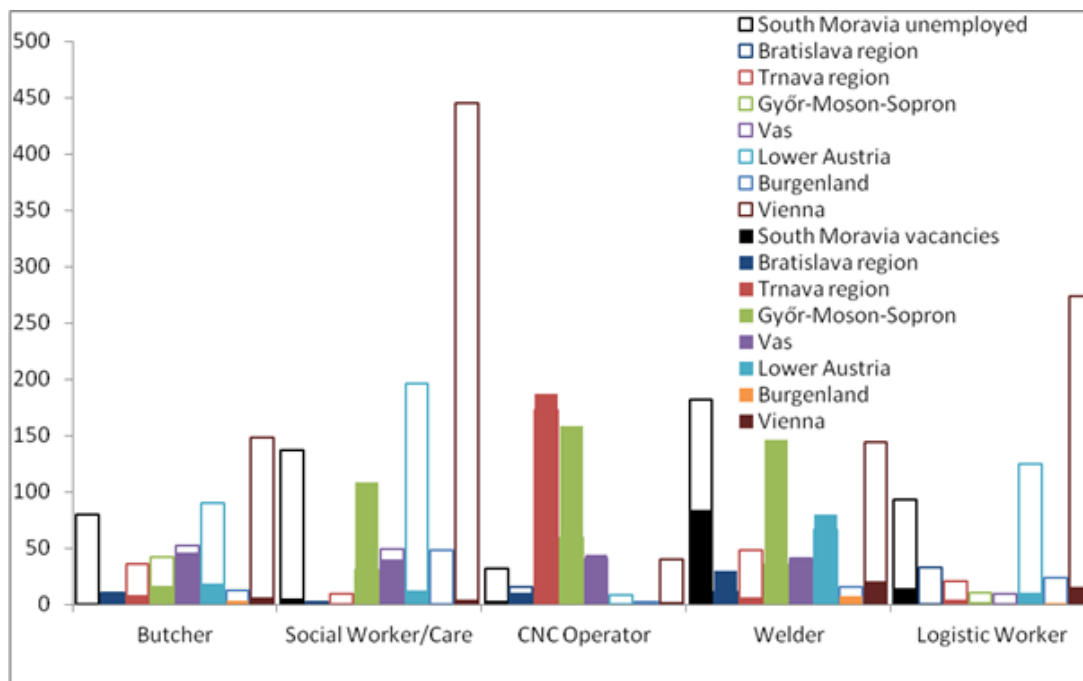


Figure 4. Unemployment and vacancies across occupations (part 2) (Source: CENTROPE Office Czech Republic)

3.2 Unemployment/vacancies ratio across CENTROPE

Besides the rough data on the regional labour market, the Labour market monitoring tool in CENTROPE enables the making of a deeper analysis of cross-border trends and potentials in the CENTROPE region. The unemployment/vacancies ratio belongs to the key indicators within labour market statistics. In the following table 2, we offer the average ratio based on quarterly data in 2010 and 2011. The table shows relatively very high heterogeneity regarding the distribution of labour supply and labour demand across CENTROPE. In other words, such large differences indicate a significant regional problem of mismatch between open positions and the unemployed in CENTROPE.

We can also conclude that our data generally confirms the trends described at NUTS 2 level by Eurostat. In 2010, according to Eurostat, the unemployment/vacancy ratios differed from 3.1 unemployed per vacancy in Bratislava to 41.9 vacancies per unemployed in Western Slovakia. It is necessary to remember that only a part of the NUTS 2 region Western Slovakia, Trnava region, is part of CENTROPE (unlike the Nitra region and the Trenčín region). The same problem we have to take into account when comparing both datasets related to the Czech Republic and Hungary. In spite of this, as regards the Czech Republic, our NUTS 3 data regarding South Moravia are in accordance with NUTS 2 data regarding the Southeast. Also, the ratios concerning Austrian regions confirm the general development at NUTS 2 level: a worse labour market situation in Vienna and considerable disparities among the occupations, in particular, in Burgenland. More important differences between the Eurostat data and our dataset are, thus, visible only in the Hungarian case where the ratios of unemployment/vacancies based on our dataset are relatively low in comparison with the NUTS 2 data. There are a few possible reasons for that – a territorial difference between the NUTS 2 and NUTS 3 region, potential divergence among selected and unselected occupations, and possible methodology differences. We are going to focus on this Hungarian unusualness in future research as well.

Table 2. Average unemployment/vacancies ratio across occupations and regions

	South Moravia	Bratislava region	Trnava region	Győr- Moson- Sopron	Vas	Lower Austria	Burgen- land	Vienna
Cook	25.75	2.27	9.05	1.01	1.90	5.83	3.46	5.47
Waiter	23.74	3.18	9.45	2.30	3.75	7.16	4.91	13.43
Butcher	16.88	1.54	5.55	2.62	1.23	7.18	4.05	45.48
Social Worker/Care	18.15	1.50	1.29	4.00	3.34	17.76	16.13	47.83
CNC Operator	21.88	4.68	4.24	0.98	1.25	0.63	0.00	12.96
Welder	3.07	3.92	16.17	0.40	0.94	2.16	4.14	9.90
Bricklayer	24.45	1.18	2.93	1.30	3.22	18.96	32.95	19.45
IT Specialist	3.67	11.40	10.38	3.33	1.14	21.68	14.47	9.80
Driver	11.15	2.42	15.14	0.82	4.99	16.37	15.86	22.27
Logistics Worker	8.10	42.38	45.14	1.94	4.51	16.22	10.38	15.47

Source: The CENTROPE Office Czech Republic, own calculations.

3.3 Potential percentage of unemployment reduction in CENTROPE in the case of full labour mobility

The next step in our analysis consists of an uncomplicated but rather specific calculation. Its result is very illustrative – a percentage by that the unemployment in a particular occupation could be reduced under assumption of full labour mobility across CENTROPE. The calculation principle is possible to be shown in the following simplified example:

Let's assume there are 10 unemployed cooks and 5 vacancies in South Moravia and 5 unemployed cooks and 10 vacancies in Lower Austria. In the case of the contemporary low level of labour mobility, the labour market will tend to a situation with 5 unemployed cooks in South Moravia. On the contrary, under the assumption of full labour mobility across CENTROPE, people will find their jobs in a neighbouring region and unemployment will disappear. It means that in our example, full labour mobility could decrease unemployment in CENTROPE by 100 %. Assuming only 6 vacancies in Lower Austria, full labour mobility could decrease the unemployment in CENTROPE by 20 %.

In reality, we have counted up excesses of labour supply over labour demand in every single occupation, region and time-period under the assumption of present low labour mobility (immobility). Then we add, under the assumption of full labour mobility, all the differences between unemployment and vacancies in every occupation and time-period; this total must be lower because of excesses of labour demand in some regions. The final percentage is calculated according to the formula:

$$PPUR = 1 - (\text{mobility/immobility}) \times 100.$$

Table 3. Potential percentage of unemployment reduction (PPUR) in CENTROPE in the case of full labour mobility

	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4
Cook	0%	0%	1%	0%	0%	2%	2%	5%
Waiter	0%	0%	0%	0%	0%	0%	1%	1%
Butcher	4%	0%	0%	0%	0%	66%	0%	16%
Social Worker/Care	0%	0%	11%	0%	0%	0%	8%	5%
CNC Operator	0%	0%	34%	36%	100%	51%	100%	3%
Welder	0%	1%	46%	27%	22%	30%	51%	9%
Bricklayer	0%	0%	9%	0%	0%	9%	11%	1%
IT Specialist	0%	0%	0%	0%	1%	0%	0%	0%
Driver	0%	0%	4%	0%	3%	9%	10%	0%
Logistics Worker	0%	0%	0%	0%	2%	0%	0%	0%

Source: The CENTROPE Office Czech Republic, own calculations.

The results clearly show the fields of labour market where commuting could be a significant solution to unemployment in CENTROPE. In particular, as regards CNC operator and welder, labour demand and labour supply distribution are very heterogeneous, which provides a high potential for commuting. CNC operator, particularly because of high labour demand in Trnava region, is a unique case: in Quarter 1/2011 and Quarter 3/2011, 100 % of unemployment could have been avoided if the unemployed had been perfectly mobile across CENTROPE regions. Within this context, nevertheless, we have to remember the limitations of labour mobility in CENTROPE. Besides transport and other transaction costs, there are significant wages differences, in particular, between Austria and other CENTROPE countries.

Based on table 3, it is possible to distinguish two other groups of occupations. As regards bricklayers, drivers and social workers, the migration potential related to unemployment reduction reaches at least occasionally values of around a 10% level (medium commuting potential). On the contrary, the last group of occupations – IT specialist, logistics worker, waiter and also cook – show a very low commuting potential tending to zero. And finally, an extraordinarily uneven development which should be further explored is monitored in the case of butcher.

3.4 Mismatch index

The other possibility of how to consider the migration potential related to the solution of the unemployment problem at regional level is the mismatch index¹. In this analysis, we follow the subsequent form of the formula:

$$m_{it} = \frac{1}{2} \sum_{r=1}^R \left| \frac{u_{irt}}{u_{it}} - \frac{v_{irt}}{v_{it}} \right| \quad (1)$$

where:

u_{irt} are unemployed in occupation i , in region r , at time t

v_{irt} are vacancies in occupation i , in region r , at time t

u_{it} are unemployed in occupation i , in all regions (i.e. CENTROPE), at time t

¹ Layard, Nickell, Jackman, (1992). See also Sahin, Song, Topa (2012).

v_{it} are vacancies in occupation i , in all regions (i.e. CENTROPE), at time t .

The mismatch index m_{it} is then the regional mismatch in occupation i at time t , in other words, it is the number of workers that are misallocated in the regions relative to the social optimum.

It means the index does not show the extent of unemployment but its unequal distribution related to vacancies. The index will be equal to 0 if the number of unemployed is equal to the number of vacancies in every monitored region. The index grows when there are both excesses of labour supply and excesses of labour demand across the regions. Finally, the index is equal to 1 if all unemployed are located in distinct regions and all vacancies in other regions. Thus the higher the index is, the more needed labour mobility is in order to reduce unemployment in the whole region.

As far as the methodology is concerned, we had to deal with a problem of missing quarterly data in cases of Hungary (Q1/2010, Q2/2010) and the Czech Republic (Q4/2011). In these cases, we used a simple regression method (OLS) to estimate the missing data.

Table 4. Mismatch index in CENTROPE

	2010 Q1	2010 Q2	2010 Q3	2010 Q4	2011 Q1	2011 Q2	2011 Q3	2011 Q4	Mean	Std. dev	Variance
Cook	0.330	0.306	0.357	0.355	0.337	0.288	0.297	0.274	0.318	0.027	0.001
Waiter	0.253	0.248	0.315	0.294	0.236	0.244	0.320	0.321	0.279	0.034	0.001
Butcher	0.552	0.447	0.506	0.454	0.447	0.704	0.450	0.503	0.508	0.060	0.008
Social Worker/Care	0.335	0.340	0.721	0.330	0.422	0.602	0.773	0.757	0.535	0.178	0.040
CNC Operator	0.572	0.526	0.526	0.461	0.320	0.436	0.368	0.263	0.434	0.088	0.012
Welder	0.443	0.371	0.348	0.422	0.411	0.363	0.392	0.435	0.398	0.030	0.001
Bricklayer	0.361	0.387	0.434	0.387	0.330	0.506	0.506	0.483	0.424	0.058	0.005
IT Specialist	0.166	0.210	0.382	0.325	0.308	0.171	0.157	0.225	0.243	0.071	0.007
Driver	0.637	0.517	0.419	0.499	0.569	0.501	0.413	0.414	0.496	0.061	0.006
Logistics Worker	0.442	0.375	0.281	0.287	0.354	0.192	0.202	0.270	0.300	0.068	0.007
Mean	0.409	0.373	0.429	0.381	0.373	0.401	0.388	0.395	0.394		

Source: The CENTROPE Office Czech Republic, own calculations.

This table partially confirms results following from the previous table 3 dealing with the Potential percentage of unemployment reduction. First of all, IT specialist, waiter, logistics worker and cook reach a low index level. This group having a low potential to solve the unemployment problem by migration is identical to the third group in the previous step of this analysis. Similarly we can conclude that CNC operator and welder are within a group with a relatively high index level and belong, thus, to the occupations with a high mobility potential related to the solution of the unemployment problem in CENTROPE. On the contrary, the highest index and thus the highest commuting potential we can find in the case of social worker, followed by butcher and driver (see also the Figure 5), which are occupations that were in the previous step classified as occupations with a medium commuting potential.

These differences are naturally caused by different ways of calculation. In comparison with the potential percentage of unemployment reduction in the previous step, the mismatch index is more sensitive to the fluctuations on the labour market. On the other hand, the mismatch index does not take the extent of unemployment into account. We can demonstrate it in a simple example again:

Let's assume that all unemployed are located in region 1 and all vacancies in region 2. Therefore there is a maximal mismatch and the index is equal to 1. However, it does not say what part of unemployment is possible to be solved by labour mobility. Supposing that there are, e.g. 100 unemployed in region 1 and only 1 vacancy in region 2, the mismatch index is still equal to 1 although labour mobility can resolve only 1 % of the unemployment problem.

Thus we can interpret that the mismatch index points out relatively high and especially unequal excesses both of labour supply and of labour demand across the regions. Related to our dataset, hence, it points out the particularity concerning butchers where considerable uneven excesses of labour demand in Hungary and sizeable excesses of labour supply in Austria have been monitored. On the contrary, our original calculation in the previous step, being entitled the Potential percentage of unemployed reduction, provides a look at the unemployment level as well and says to what extent the unemployment in every occupation can be decreased by commuting across CENTROPE.

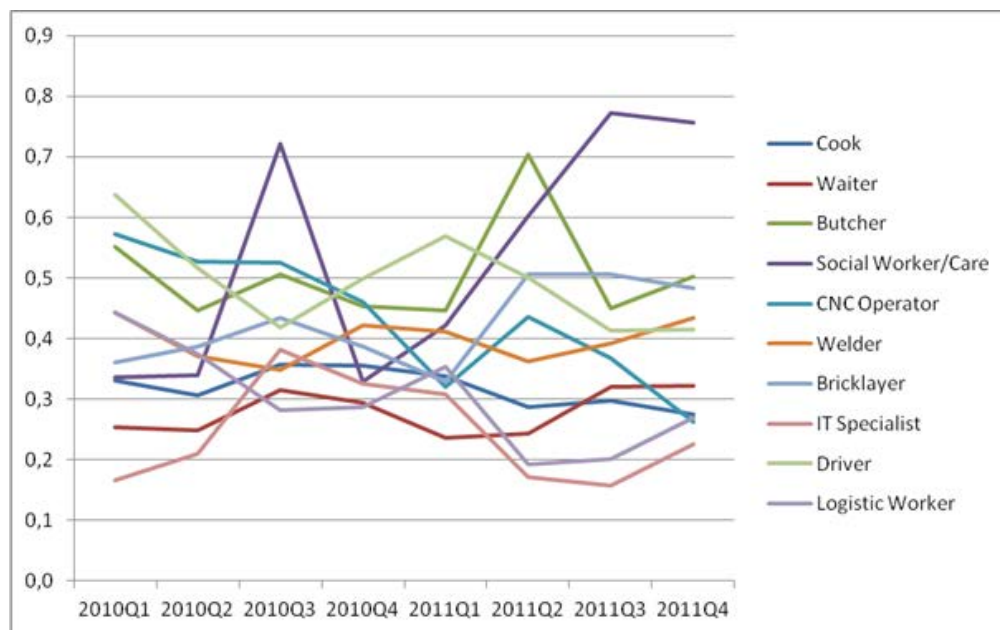


Figure 5. Mismatch index in CENTROPE (Source: The CENTROPE Office Czech Republic, own calculations)

4 Conclusion

The Labour market monitoring tool in CENTROPE showed that there is a relatively high heterogeneity in terms of distribution of labour supply and labour demand across CENTROPE. The high level of mismatch in CENTROPE provides a potential for internal migration and commuting, at least in particular occupations. The identification of these occupations was executed by two ways of calculation: the Potential percentage of unemployed reduction, which is our original calculation, and the Mismatch index. Our original calculation provides a look at the unemployment level as well and says to what extent the unemployment in every occupation can be decreased by commuting across CENTROPE. The mismatch index is more sensitive to the fluctuations on the labour market, however, it does not take the extent of unemployment into account.

We were able to identify the following groups of occupations with various potential for commuting. Based on the Potential percentage of unemployment reduction:

- High potential: CNC operators, welder
- Medium potential: bricklayers, drivers, social workers
- Low potential: IT specialists, logistics workers, waiters, cooks

Based on the Mismatch index:

- High potential: social workers, butchers, drivers

- Low potential: IT specialists, logistics workers, waiters, cooks

Considering this, apart from the partial differences between both ways of calculation, we can summarize: Particularly in terms of CNC operators and welders but also in terms of social workers, butchers and drivers, there are potentials to reduce the unemployment by commuting or migration across CENTROPE. On the other hand, in terms of IT specialists, waiters, logistics workers and cooks, the potentials are very low.

Based on this tool, it is possible to discuss also a question of the labour market liberalization in CENTROPE (the establishment of the freedom of labour movement between Austria and the other CENTROPE countries). A mild deterioration of the labour market in CENTROPE in the second half of 2011 is visible. Nevertheless, it is necessary to take the seasonality and business cycle into consideration. Realizing similar seasonal fluctuation in particular occupations in 2010 and the coming of economic stagnation during 2011, we can infer that the impacts of liberalization on the Austrian labour market were, in accord with expert predictions, only moderate.

Finally, our policy recommendations aim at two areas: labour market monitoring and labour mobility. We suggest establishing a specialized platform for labour market monitoring in CENTROPE in the attendance of representatives from the Labour offices and experts from the regional subdivision of departments of Statistical offices. This platform should deal with the questions - how to make the official statistics system faster, and, how to make the regional data based on national statistics accessible and utilizable for partners in neighbouring countries in CENTROPE. As regards the later, we suggest translating the parts of the national statistics related to the CENTROPE region into English or possibly German. Furthermore, we recommend giving the Labour market monitoring tool in CENTROPE a more institutionalized character.

5 Acknowledgement

We thank, in particular, the representatives of the CENTROPE Office Czech Republic Sylva Talpová and Miroslav Pala. We thank also Peter Huber from WIFO Vienna for valuable critical comments and Marek Litzman from Mendel University for research assistance, furthermore, we thank both of them for the incentives in terms of the mismatch unemployment calculations.

References

- [1] Centrope – central european region, 2014. ARGE CENTROPE Agency c/o Europaforum Wien. [online]. [2014-06-30]. Available from: www.centrope.com.
- [2] Layard, R., S. Nickell and R. Jackman, 1992. *Unemployment - Macroeconomic Performance and the Labour Market*. Oxford University Press.
- [3] Labour Market Monitoring Tool in Centrope, 2012. The CENTROPE Office Czech Republic (an internal dataset).
- [4] Rozmahel et al., 2012. CENTROPE Regional Development Report: Focus and Stock Taking Report on Human Capital, Education and Labour Markets in the CENTROPE. Austrian Institute of Economic Research, Mendel University in Brno, West Hungarian Research Institute of the Centre for Regional Studies, Institute of Economic Research Slovak Academy of Sciences, 2012.
- [5] Sahin, A., J. Song and G. Topa, 2012. *Mismatch Unemployment*. NBER WP 18265.
- [6] Talpová, S. and M. Pala, 2011. Cross-border Labour Market Monitoring in Centrope. In: *Measuring Geographical Mobility in Regional Labour Market Monitoring - State of the Art and Perspectives*. München u. Mering: Rainer Hampp Verlag, pp. 65-71.

MONITORING THE SHADOW BANKING SECTOR IN THE EURO AREA

Zuzana Kučerová

*VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: zuzana.kuceroval@vsb.cz*

Abstract

Shadow banking sector gained great influence in the world financial markets over the past decade. Shadow banking can be regarded as one source of potential financial instability because these activities are realised outside the regulated banking sector. Therefore, it is necessary to monitor and measure these activities. The aim of the paper is to assess the national distribution of shadow banking activities in the Euro Area countries from 1999 to 2013 (or from 2009 to 2013) by using various indicators of the shadow banking both at the level of the whole Euro Area and at the level of individual Euro Area countries. According to results, the role of shadow banking sector in the Euro Area is rising and did not drop even after the financial crisis. Moreover, the interconnection between the regulated MFIs and unregulated OFIs has increased. When measuring the shadow banking activity at national level, it is important to differentiate between the share of national shadow banking activity in the Euro Area activity and the share of this activity within the country, i.e. to take into account the relative size of the economy.

Keywords

Financial Markets, Financial Crisis, Market-Based System, Shadow Banking, Securitisation.

JEL Classification

G10, G01, G21, G28.

1 Introduction

Shadow banking sector gained great influence in the world financial markets over the past decade. Shadow banking institutions are a necessary part of the securitisation process and intermediate credit through a wide range of securitisation techniques; they produce structured financial products like asset-backed commercial papers (ABCP), asset-backed securities (ABS), mortgage-backed securities (MBS), collateralised debt obligations (CDO), etc. Shadow banking can be regarded as one source of potential financial instability because these activities are realised outside the regulated banking sector and as such they are an important source of potential financial stability risk. Moreover, integrated financial markets increase the probability of a severe financial contagion.¹ Therefore, it is necessary to monitor and measure these activities. The Financial Stability Board (FSB) recommends national authorities to enhance their monitoring framework in order to unveil potential risks hidden in the shadow banking sector by means of the application of a stylised monitoring process (see FSB, 2013). It is also essential to measure the interconnectedness between regulated and shadow (unregulated) banking sector.

The aim of the paper is to assess the national distribution of shadow banking activities in the Euro Area countries from 1999 to 2013 (or from 2009 to 2013) by using various indicators of the shadow banking. The analysis is conducted first at the level of the whole Euro Area and then at the level of individual Euro Area countries. The analysis based on data from Financial Vehicle Corporations (FVCs) is conducted only for ten Euro Area countries: Austria, Belgium, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Spain, and Portugal. The data are drawn from the European Central Bank (ECB) online database. We use the method of statistical description and comparison. The structure of the paper is as follows. The second section mentions various definitions of the shadow banking. In the third section, we measure the size of the shadow banking sector in the Euro Area both at the Euro Area and at the national level by using various indicators. In section four, we compare the results gained by these indicators. Section five summarises our results and brings conclusion.

¹ For the analysis of relationship between financial and trade integration in the EU countries over the period 1999-2010, see e.g. Kučerová (2012) or Kučerová and Poměnková (2013).

2 Definition of the shadow banking

There are numerous definitions of the shadow banking in literature. The FSB (2013, p. 5) broadly describes the shadow banking system “...as the system of credit intermediation that involves entities and activities fully or partially outside the regular banking system, or non-bank credit intermediation in short”. According to Bakk-Simon et al. (2012, p. 8), shadow banking “...refers to activities related to credit intermediation, liquidity and maturity transformation that take place outside the regulated banking system”. Deloitte (2012) presents a detailed definition of the shadow banking activities. This definition encompasses the following characteristics: “Credit intermediation, raising short-term funds from financial markets to deploy elsewhere, including maturity and/or liquidity transformation. Shadow banking relies on financial markets, not bank deposits, as the source of funds. Funds raised are not guaranteed, in that there is no explicit government insurance for their safe return to investors in the event of an organizational entity failure. No access to a central bank in the event of a liquidity/funding problem”. Claessens et al. (2012) restrict the definition of shadow banking to “...those activities that are economically most bank-like: involve risk transformation and a focus on reducing counterparty risks”. They focus on two shadow banking activities: securitisation and collateral intermediation.

In our paper, we stick to the definition of FSB (2013), i.e. we focus on such activities which are realised fully or partially outside the regulated banking system.

3 Measuring the shadow banking

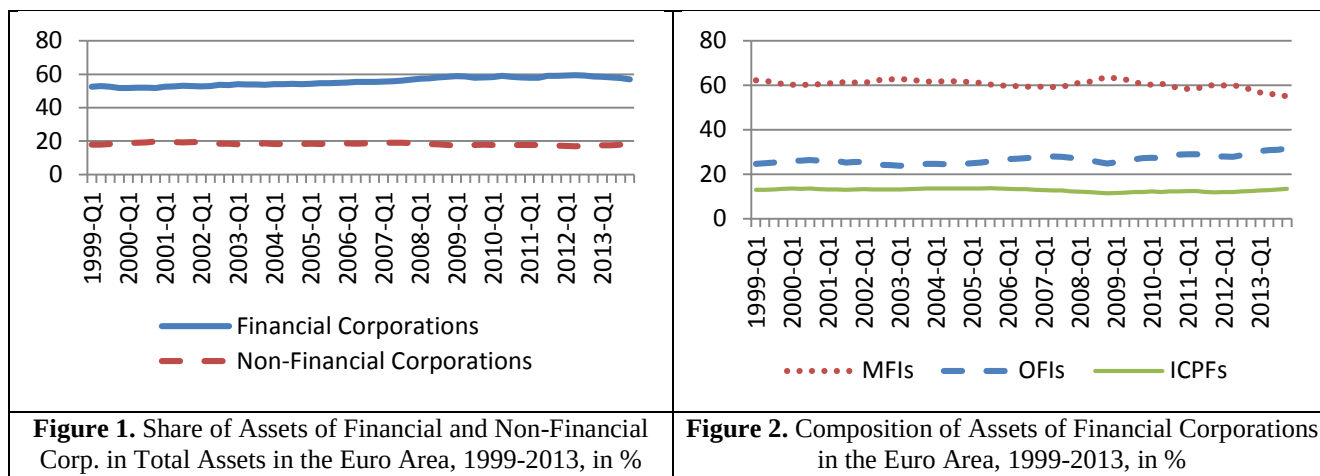
Unlike the United States, the European flow-of-funds data do not provide sufficient data to describe the shadow banking in the Euro Area. One possible way how to quantify these activities is to combine data from two ECB databases – monetary statistics and euro area accounts (EEA) – and construct a proxy which enables us to roughly measure shadow banking activities (Bakk-Simon et al., 2012).

3.1 Data and assets

The EEA data are divided into these sectors: financial corporations, non-financial corporations, general government, and households (including non-profit institutions). Financial corporations comprise monetary financial institutions (MFIs), other financial intermediaries (OFIs) and insurance corporations and pension funds (ICPFs). MFIs cover the regulated banking system and include central banks, credit institutions and money markets funds. The OFIs are regarded as the sector of the shadow banking activities in our paper and therefore, we focus particularly on this sector. Several categories of financial indicators are used as a proxy for measuring the size of the shadow banking sector in this paper. We use assets and loans of relevant financial institutions/intermediaries and then data from FVCs balance sheets; all indicators are analysed at both the Euro Area and national level.

THE EURO AREA LEVEL

First, we focus on the level of assets in the Euro Area countries. Fig. 1 illustrates the assets of financial corporations and non-financial corporations as a percentage share of total assets in the Euro Area from 1999 to 2013. The share of financial corporations in the Euro Area increased from 52.5% in 1Q/1999 to 57% in 4Q/2013 while the share of non-financial corporations remained almost the same throughout this period (17.9 in 1Q/1999 and 18.2 in 4Q/2013). However, these figures do not provide a clear picture concerning the shadow banking activities. Therefore, it is necessary to explore the structure of the financial sector activities.



(Source: ECB, 2014)

Fig. 2 presents data regarding the composition the assets of financial corporations in the Euro Area from 1999 to 2013. The share of assets of MFIs has decreased (from 62.2% in 1Q/1999 to 55% in 4Q/2013) and the share of assets of OFIs has increased (from 24.7 in 1Q/1999 to 31.6 in 4Q/2013). Shadow banking activities amount to almost one third of financial sector activities measured by total assets and the share is rising which indicates the gradual substitution of bank intermediation by non-bank intermediation in the Euro Area countries.

THE NATIONAL LEVEL

Fig. 3 illustrates the percentage share of assets of MFIs/OFIs in individual Euro Area countries in total assets of MFIs/OFIs in the whole Euro Area in 2013. The highest share of intermediation through the MFIs in 2013 was in the Netherlands and Germany² and France but also in Italy and Spain. The highest share of non-bank (OFIs) intermediation was in Luxembourg and also in the Netherlands and Germany. In Ireland and France, OFIs also have a relatively noticeable position.

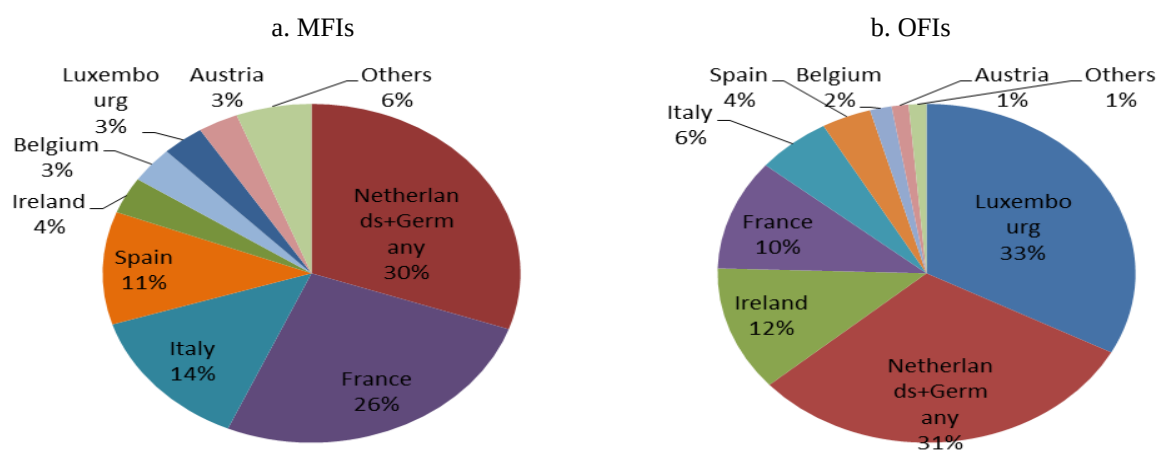


Figure 3. Share of assets of MFIs (a)/OFIs (b) in individual countries in total assets of MFIs (a)/OFIs (b) in the Euro Area, 2013, in % (Source: ECB, 2014)

However, the problem of measuring the activities of individual countries relative to the total Euro Area activities is that such indicators do not take into account the relative size of the national

² Data for these two Euro Area countries are not available and were estimated as a difference between the amount of total assets of all Euro Area countries and the amount of assets of other Euro Area countries for which the individual country data are available

economy. Therefore, a smaller country can be assessed as a country with a low size of the activity only because of the fact that its economy is relatively small (compared to Euro Area countries). In order to measure and then compare the ratio of activities of MFIs and OFIs in individual Euro Area countries, we present our *first measure* of the national shadow banking activity: the percentage share of assets of OFIs in assets of MFIs in individual countries in 2013 (see Fig. 4).

In Luxembourg, the assets of OFIs were almost six times higher than the assets of MFIs in 2013. This country is followed by Ireland. In case of other countries, the share is less than 100% which supports the idea of higher intermediation through the regulated banking sector.

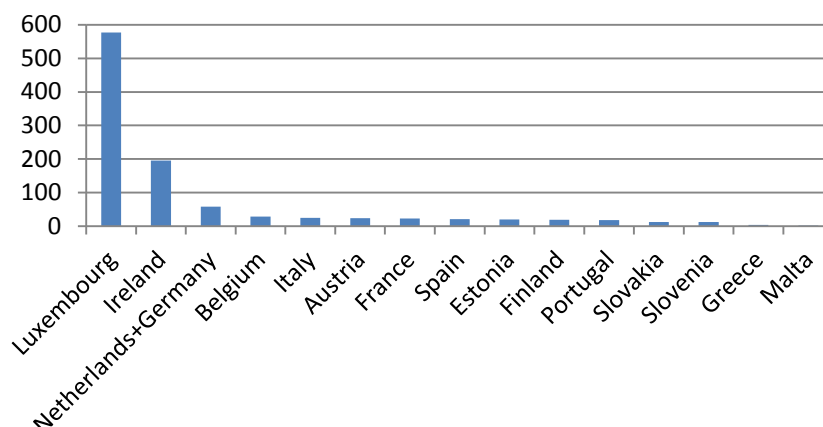


Figure 4. Share of Assets of OFIs in Assets of MFIs in the Individual Countries, 2013, in % (Source: ECB, 2014)

3.2 Loans

THE EURO AREA LEVEL

Second, we focus on the level and composition of loans in the Euro Area countries. Fig. 5 presents the composition of long-term and short-term loans of MFIs of the Euro Area from 1999 to 2013. As far as the long-term loans are concerned, the highest share was provided to households; the share was 48% in 1Q/1999 and rose to almost 51% in 2006 but dropped sharply to 46% in 2009 (as a result of financial crisis) and has begun to rise again since then. The second highest share of long-term loans was provided by MFIs to non-financial corporations; the share fluctuated between 30% and 35% from 1999 to 2013. OFIs accepted only 2-5% of long-term loans from MFIs. However, the share has been rising since 1999 (it was 5% in 2013).

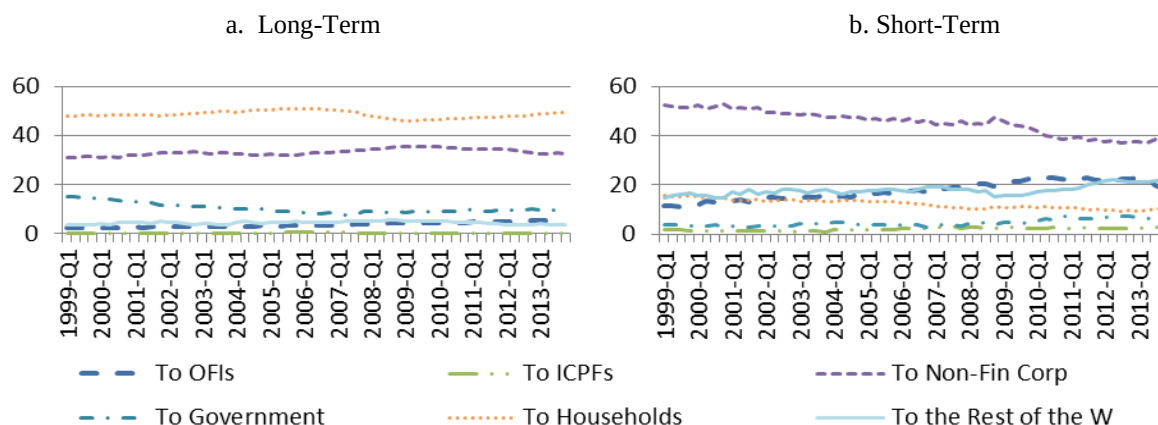


Figure 5. Composition of Long-Term (a)/Short-Term (b) Loans of MFIs in the Euro Area, 1999-2013, Percentage of Total Long (a)/Short-Term (b) Loans of MFIs (Source: ECB, 2014)

Extensive securitisation activity is apparent in the level of short-term loans provided to OFIs. The highest share of short-term loans of MFIs was provided to non-financial corporations in the Euro Area countries. However, the share dropped from 52.5% in 1Q/1999 to 39% in 4Q/2013. On the contrary, the share of short-term loans provided to OFIs increased from 11.5% in 1Q/1999 to 23.1% in 2Q/2013 and then fell suddenly to 18.4% in 4Q/2013. However, the level of these short term loans in 2013 was more than 2.5 times higher than in 1999. This fact indicates the growing share of shadow banking institutions in the assets of MFIs, i.e. the increasing interconnection (and funding interdependence) between the regulated and non-regulated banking sector and a higher risk of potential financial contagion which can be transmitted from one sector to another.

In Fig. 6, all MFIs long-term and short-term loans in the Euro Area were aggregated into two main categories: financial sector and non-financial sector. The financial sector (financial corporations) comprises MFIs, OFIs and ICPFs while the non-financial sector consists of general government, households and non-financial corporations.³

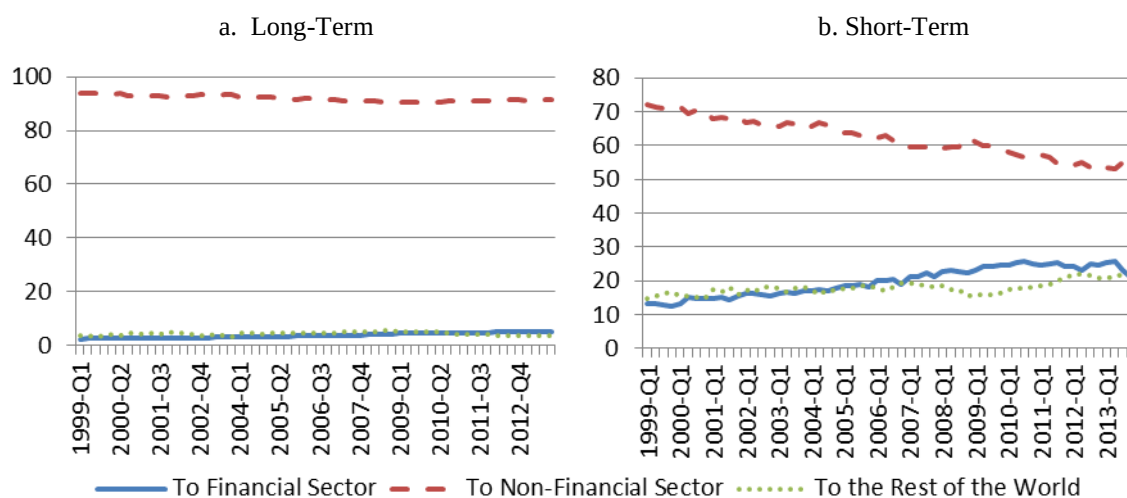


Figure 6. Share of Long-Term/Short-Term Loans of Financial and Non-Financial Corporations in Total Long-Term/Short-Term Loans of MFIs in the Euro Area, 1999-2013, in % (Source: ECB, 2014)

It is obvious that the share of non-financial sector in provided long-term loans is prevailing (91% of all long-term loans provided by MFIs in 4Q/2013). In case of short-term loans, the share of non-financial corporations is somewhat lower and sharply decreasing (from 72% in 1Q/1999 to 57% in 4Q/2013) while the share of financial corporations is increasing (from 13% in 1Q/1999 to 22% in 4Q/2013). In other words, financial corporations (and particularly OFIs) have increased their impact in the sector of short-term loans (accepted from MFIs). In this context, Euro area banks relied more on assets from the non-financial sector compared to the financial sector during the analysed time period. However, the difference is decreasing at quite rapid pace.

THE NATIONAL LEVEL

Fig. 7 presents the percentage share of short-term loans provided by MFIs/OFI in individual Euro Area countries in total short-term loans provided by MFIs/OFI in the whole Euro Area in 2013. The highest share of short-term loans provided by MFIs in the Euro Area was measured in Germany (31%), Italy (21%), France (13%), and the Netherlands (12%); these numbers document the regulated banking activity. However, the shadow banking activity is presented in the right part of Fig. 7: enormous 57% of all short-term loans provided in the Euro Area were provided by OFIs in the Netherlands; in Ireland the share was 20% and in Germany 14%.

³ Compare with the definition of financial and non-financial corporations.

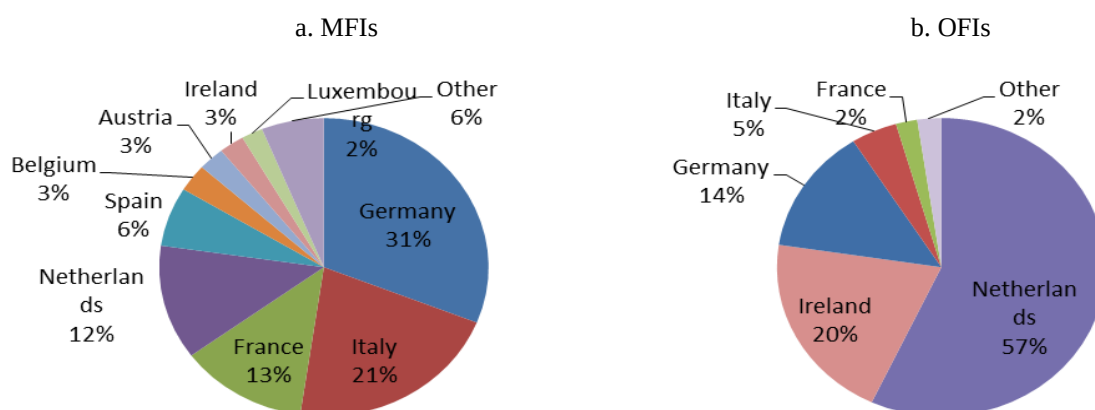


Figure 7. Share of Short-Term Loans of MFIs (a)/OFIs (b) in Individual Countries in Total Short-Term Loans of MFIs (a)/OFIs (b) in the Euro Area, 2013, in % (Source: ECB, 2014)

Again, for the purpose of measuring and comparing the ratio of activities of MFIs and OFIs in individual Euro Area countries, we present Fig. 8 illustrating our *second measure* of the national shadow banking activity: the percentage share of short-term loans provided by OFIs in short-term loans provided by MFIs in individual countries in 2013.

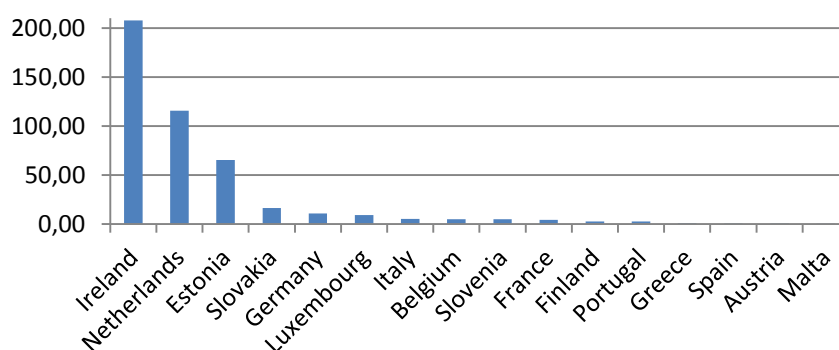


Figure 8. Share of Short-Term Loans by OFIs in Short-Term Loans by MFIs in the Individual Countries, 2013, in % (Source: ECB, 2014)

In Ireland, the level of short-term loans provided by OFIs in 2013 was twice as high as the level of short-term loans provided by MFIs (the share was 208%), i.e. the shadow banking sector was considerably more active in the intermediation of short term debt than the regulated banking sector. The situation was similar in the Netherlands where the share was 116%. In countries like Malta, Austria, Spain, Greece, Portugal, and Finland, where the share was less than 3%, the MFIs intermediated almost all of the short-term debt.

3.3 Financial vehicle corporations

THE EURO AREA LEVEL

This section uses data from the ECB statistics, category Financial Vehicle Corporations Balance Sheets, to measure the size of securitisation in the Euro Area and in individual countries. Structured financial products like ABS, MBS, CDO, etc. stand at the end of the securitisation chain; at the beginning of this chain, we can find originated loans and in the middle there are securitised loans.

Because FVCs are a substantial part of securitisation, it is particularly important to take these corporations into account and include them into our analysis of shadow banking. The size of originated loans and its main characteristics are described in the previous section. In this section, the size of securitised loans in the Euro Area and in individual countries is presented. Fig. 9 depicts the share of securitised loans of FVCs in total assets of FVCs in the whole Euro Area from 4Q/2009 to 1Q/2014.⁴

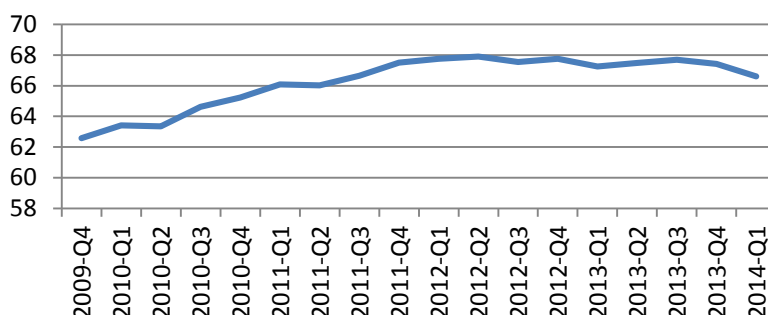


Figure 9. Share of Securitised Loans of FVCs in Total Assets of FVCs in the Euro Area, 4Q/2009-1Q/2014, in %
 (Source: ECB, 2014)

The share of securitised loans in total assets was rising from the level of 62.5% in 4Q/2009 to the level of 68% in 2Q/2012. Then, it has been fluctuating around 67%. It is apparent that even after the beginning of financial crisis in 2007 the share of securitised loans in total assets of FVCs was increasing. Moreover, almost all of these loans were originated by the Euro Area MFIs.

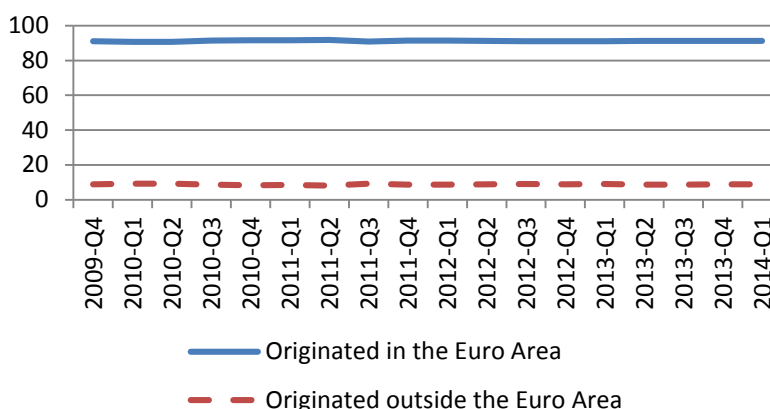


Figure 10. Holdings of securitised loans of FVCs in the Euro Area, 4Q/2009-1Q/2014, in % (Source: ECB, 2014)

Total holdings of securitised loans of FVCs in the Euro Area according to the place of origination from 4Q/2009 to 1Q/2014 are illustrated in Fig. 10. Almost all of the securitised loans (91%) have been originated in the Euro Area since 4Q/2009, i.e. these debts have been intermediated to the Euro Area institutions (mainly households and non-financial corporations, see Fig. 5).

THE NATIONAL LEVEL

Share of total assets of FVCs in individual countries in total asset of FVCs in the Euro Area in 2013 is presented in Fig. 11. Countries with no resident FVCs are not included. The highest share of assets in total assets of FVCs in the Euro Area was in Ireland (22%), the Netherlands (19%), and Italy (17.2%); the lowest share was in Austria (0.14%).

⁴ These time series are somewhat shorter compared to other ECB data since the data concerning the securitisation have been collected since the financial crisis.

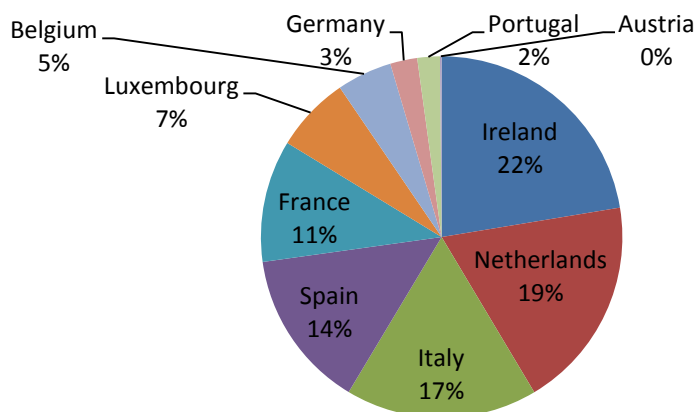


Figure 11. Share of Assets of FVCs in Individual Countries in Total Assets of FVCs in the Euro Area, 2013, in %
 (Source: ECB, 2014)

Fig. 12 presents the share of securitised loans of FVCs in total loans of MFIs in the individual countries in 2013. This share is particularly important in the context of securitisation because in many cases MFIs transferred originated loans to FVCs mainly owing to the regulatory arbitrage. This share serves as our *third measure* of the national shadow banking activity and enables us to assess the relative importance of securitisation in each country.

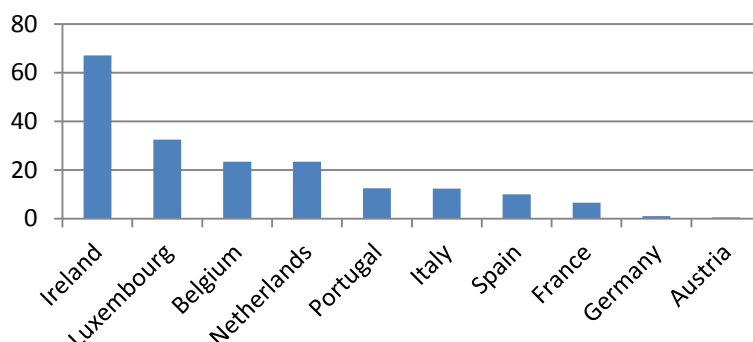


Figure 12. Share of Securitised Loans of FVCs in Total Loans of MFIs in Individual Countries, 2013, in %
 (Source: ECB, 2014)

The absolutely highest share of securitised loans of FVCs in total loans of MFIs was in Ireland where the securitised loans reached almost 70% of total loans provided by MFIs, i.e. securitisation have a really strong position in this country. Ireland was followed by Luxembourg, Belgium, and the Netherlands with a considerably lower level of this share (32.5%, 23.5%, respectively 23.4%). Austria was the country with the lowest share of securitised loans to MFIs loans (0.6%), i.e. with the lowest national level of the shadow banking activity measured by this indicator.

4 Comparison

In order to compare the individual Euro Area countries, we create a sample of countries which are compared in 2013 (latest available data). The country set contains ten Euro Area countries: Austria, Belgium, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Spain, and Portugal. The FVCs statistics documents resident FVCs only in these Euro Area countries.

The first group of indicators is based on the comparison of national levels to the Euro Area level (see Tab. 1), i.e. these indicators depict the relative share of the national banking sector in the whole

Euro Area banking sector. The problem of this approach is that these indicators do not take into account the relative size of the national banking sector. Therefore, a smaller country can be viewed as a country with a low size of the shadow banking sector only because of the fact that its financial or banking sector is relatively small (compared to larger countries).

Table 1. Order of Countries: Nation/Euro Area*)

	Assets MFIs	Assets OFIs	Short-Term Loans MFIs	Short-Term Loans OFIs	Assets FVCs	Average Points	Order
	Fig. 3a	Fig. 3b	Fig. 7a	Fig. 7b	Fig. 11		
Austria	9	9	7	10	10	9.0	9.
Belgium	7	8	6	7	7	7.0	8.
Germany	1.5	2.5	1	3	8	3.2	2.
Spain	5	7	5	8	4	5.8	6.
France	3	5	3	5	5	4.2	4.-5.
Ireland	6	4	8	2	1	4.2	4.-5.
Italy	4	6	2	4	3	3.8	3.
Luxembourg	8	1	9	6	6	6.0	7.
Netherlands	1.5	2.5	4	1	2	2.2	1.
Portugal	10	10	10	9	9	9.6	10.

*) Points are assigned according to the order, i.e. 1st position = 1 point, 2nd position = 2 point, etc.

Source: author's calculations.

In Table 1, five indicators of the size of the shadow banking sector – described in the text above and illustrated in figures mentioned in the second row of the Table 1 – are displayed. Numbers represent points according to the order of a country in our country sample. The country with the relatively largest size of the shadow banking sector is the Netherlands, followed by Germany, and Italy. Portugal and Austria are countries with the lowest size of the shadow banking sector.

Table 2. Order of Countries: Nation*)

	Assets OFIs/MFIs	Shor-Term Loans OFIs/MFIs	FVCs Sec. Loans/MFIs Loans	Average Points	Order
	Fig. 4	Fig. 8	Fig. 12		
Austria	7	10	10	9.0	10.
Belgium	5	6	3	4.7	4.
Germany	3.5	3	9	5.2	5.
Spain	7	9	7	7.7	7.-8.
France	9	7	8	8.0	9.
Ireland	2	1	1	1.3	1.
Italy	6	5	6	5.7	6.
Luxembourg	1	4	2	2.3	2.
Netherlands	3.5	2	4	3.2	3.
Portugal	10	8	5	7.7	7.-8.

*) Points are assigned according to the order, i.e. 1st place = 1 point, 2nd = 2 point, etc.

Source: author's calculations.

The second group of indicators is based solely on data from individual countries. Indicators are constructed as a ratio of relevant national financial variables, i.e. they describe the importance of

shadow banking in the individual country and allow for the size of the economy. Table 2 presents three indicators of the size of the shadow banking sector – also described in the text above and illustrated in figures mentioned in the second row of the Table 2 – which refer to the individual country not to the Euro Area as a whole. So these indicators are focused on the size and the importance of the shadow banking sector relatively to the regulated banking sector. In this case, the picture is a bit different. The country with the highest size of the national shadow banking sector is Ireland, followed by Luxembourg and the Netherlands. Austria and France are countries with the lowest size of the shadow banking sector.

Fig. 13 presents the comparison of these two groups of indicator. Countries are ordered according to the first group of indicators (national levels to the Euro Area levels) to better illustrate the differences between these two groups of indicators.

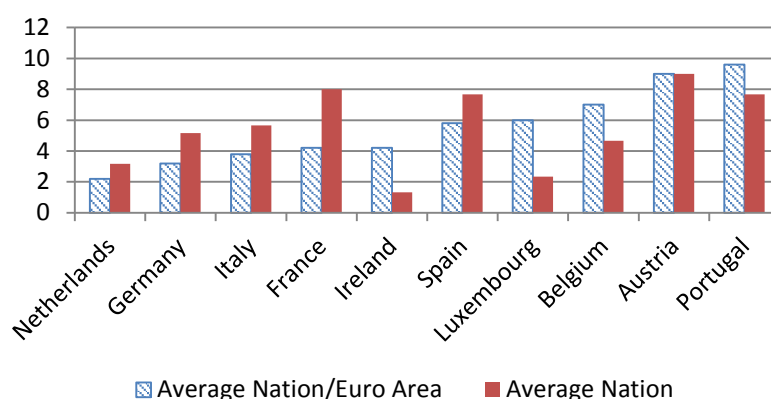


Figure 13. Order of Countries: “Nation/Euro Area” Indicators vs. “Nation” Indicators, Average Points (Source: author’s calculations)

In case of Austria, there is almost no difference because this country exhibits the small size of shadow banking in both cases. However, in case of countries in first four positions (the Netherlands, Germany, Italy, and France) and in case of Spain, the average points according to the “Nation/Euro Area” indicators were lower than the average points according to the “Nation” indicators, i.e. the position in the Euro Area was influenced by the overall size of their financial/ banking sector. In case of countries in last four positions except for Austria (Portugal, Belgium, and Luxembourg) and in case of Ireland, the situation was opposite, i.e. the average points according to the “Nation/Euro Area” indicators are higher than the average points according to the “Nation” indicators. Thus, the relative national size of the unregulated (shadow) banking sector compared to the regulated banking sector was more conclusive.

5 Conclusion

Shadow banking activities should be properly monitored and measured because it can be a source of potential financial instability. FSB has done a lot of work in this field since the beginning of financial crisis in 2007. ECB has also begun collecting and publishing data about shadow banking activities. In our paper, we build primarily on this data source. The aim of the paper was to assess the national distribution of shadow banking activities in the Euro Area countries by using various indicators of the shadow banking. The analysis was concentrated both at the level of the whole Euro Area and at the level of individual Euro Area countries. We measured the size of the shadow banking in three categories: total assets, short-term/long term loans and securitised loans of financial vehicle corporations. The final comparison of indicators was undertaken for ten Euro Area countries with registered FVCs.

According to our results at the Euro Area level, the share of financial corporations in total assets in the Euro Area increased from 1999 to 2013 (particularly due to the rising share of OFIs and

falling share of MFIs) while the share of non-financial corporations remained constant. The shadow banking activities were responsible for almost one third of total financial sector activities measured by total assets. The increasing share indicates the gradual substitution of bank intermediation by non-bank intermediation in the Euro Area countries. At the national level, the shadow banking activities were most extensive in countries like the Netherlands, Germany, Italy, France, and Ireland when we assessed the share of shadow banking activities at the Euro Area level. According to our national measures, the results are somewhat different: countries with the highest share of the national banking activity were Ireland, Luxembourg, the Netherlands, Belgium, and Germany.

To sum up, the role of shadow banking sector in the Euro Area is rising. Assets held by OFIs are large and this share did not drop even after the financial crisis. Moreover, the interconnection between the regulated MFIs and unregulated OFIs has increased. When measuring the shadow banking activity at national level, it is important to differentiate between the share of national shadow banking activity in the Euro Area activity and the share of this activity within the country, i.e. to take into account the relative size of the economy.

6 Acknowledgement

This work was supported by the VSB-Technical University of Ostrava, Faculty of Economics under Grant SGS SP2014/115.

References

- [1] Bakk-Simon, K., S. Borgioli, C. Giron, H. Hempell, A. Maddaloni, F. Recine and S. Rosati, 2012. Shadow Banking in the Euro Area: An Overview. *European Central Bank Occasional Paper*, no. 133.
- [2] Claessens, Z., Z. Pozsar, L. Ratnovski and M. Singh, 2012. Shadow Banking: Economics and Policy. *International Monetary Fund Discussion Note*, no. SDN/12/12.
- [3] Deloitte, 2012. *The Deloitte Shadow Banking Index: Shedding light on banking's shadows* [online]. [2014-06-27]. Available from: http://www.deloitte_development_LLC.com
- [4] European Central Bank, 2014b. *Statistical Data Warehouse* [online]. [2014-06-20]. Available from: <http://sdw.ecb.europa.eu/home.do>.
- [5] Financial Stability Board, 2013. Global Shadow Banking Monitoring Report 2013 [online]. [2014-06-27]. Available from: http://www.financialstabilityboard.org/publications/r_131114.htm.
- [6] Kučerová, Z., 2012. Financial and Trade Integration in the EU Countries. In: Tvrdý, M. and I. Majerová (eds.). *Proceedings of the 10th International Scientific Conference on Economic Policy in the European Union Member Countries: Selected Papers*, pp. 176-188. Opava: Silesian University in Opava, School of Business Administration in Karvina.
- [7] Kučerová, Z. and J. Poměnková, 2013. The Synchronization of Financial and Trade Integration of the EU10 Countries by Using the Method of Classical and Dynamic Correlation. In: Vojáčková, H. (ed.). *Proceedings of the 31st International Conference on Mathematical Methods in Economics*, pp. 488-493. Jihlava: College of Polytechnics Jihlava.

MEASURING THE SUCCESS OF ECONOMIC POLICY V4 USING MAGICAL QUADRANGLE

Miroslav Kuric

*Silesian University in Opava, School of Business Administration in Karvina, Univerzitni namesti 1934/3, 733 40
Karvina, Czech Republic
email: kuric@opf.slu.cz*

Abstract

The economic performance of each country is measured by various indicators. One of them can also be a magic square, which evaluates the economy on the basis of four key indicators – gross domestic product growth rate, inflation rate, unemployment rate and the share of balance of payment's current account deficit on the product. Based on the graphic display is set up magical quadrilateral whose area reflects the success of the economy (in the case of large area the state's economy is successful and vice versa). It is applied to members of Visegrad four and development of this indicator over the period 2004-2013.

Keywords

Magical quadrangle, inflation, unemployment, balance of payments, growth of GDP.

JEL classification

O11, F60.

1 Introduction

Economic policy is, in its simplest essence, a summary of the objectives, instruments and measures of government, through which are regulated, prospectively influenced, the development of the national economy. There is a whole range of indicators for measuring the success of economic policy. One of them is also magical quadrangle, which evaluates performance using four basic indicators, namely price stability, adequate employment, economic growth and external balance, which represent the traditional objectives of economic policy (Urban and kol., 1994). It is based on the values already mentioned clogging indicators to the chart, thus creating the quadrangle. The size of the area shows the success of the economy. The author is a Hungarian economist Nicholas Caldor (1908-1986).

Magic quadrangle will be applied to the Visegrad countries to approximation a success of their economic policies. Among V4 includes the Czech Republic, Slovakia, Hungary and Poland. This group was formed for the purpose of closer cooperation among the Central European countries, which have a close cultural and historical links since 1991. These countries joined the European Union in 2004. (Svatoš and kol., 2009). As observed period were determined years 2004 – 2013. This period represents a decade of membership of these countries in European Union.

2 Construction of magical quadrangle

The scale was derived from the available data (table 1-4) and adjusted to prevent excessive deformation of sampled areas of magical quadrangle. The resulting area presents the success of economic policy - the larger area is, the greater is the success rate of economic policy. We can get this as the ratio of calculated area and ideal quadrangle area.

Basic values of ideal magic quadrangle were determined by OECD based on the evaluation criteria: GDP growth rate (g) - 3%; Unemployment rate (u) – 5%; Balance of the current account (b) – 0% and Inflation rate (p) – 2%.

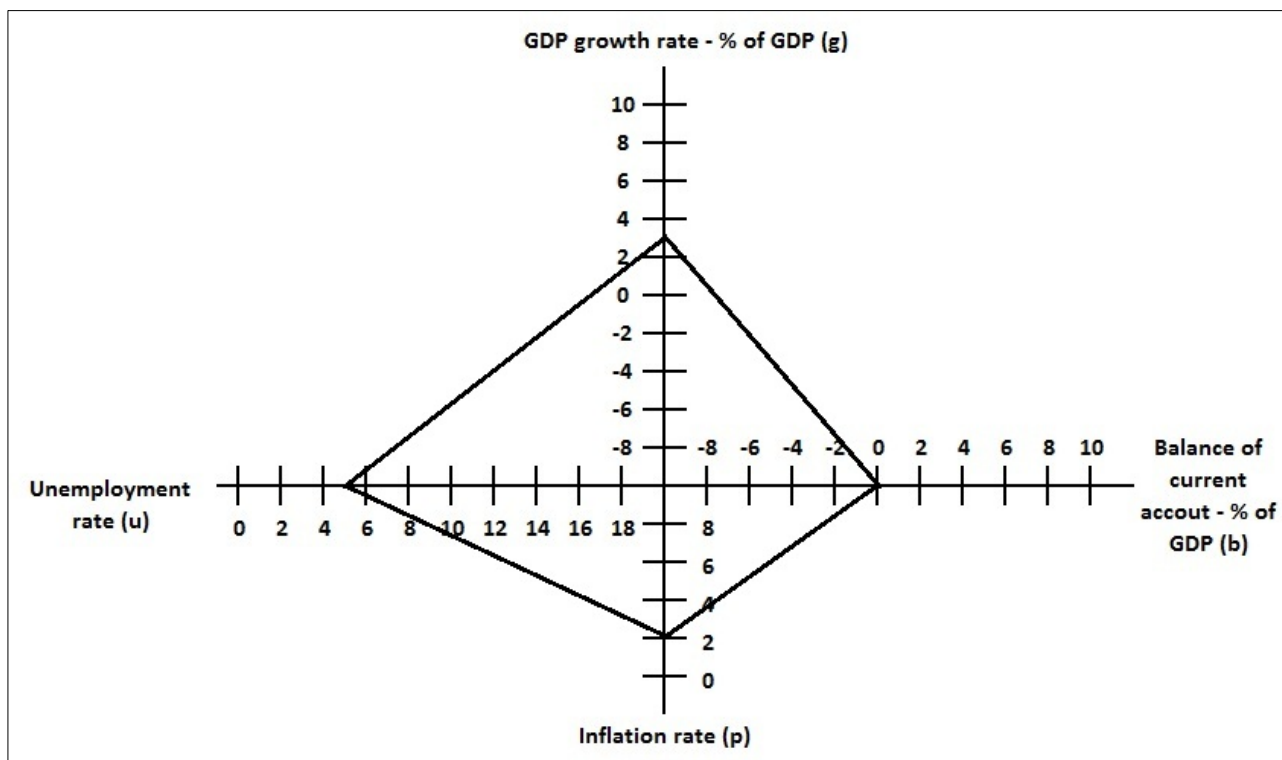


Figure 1. The ideal option of magical quadrilateral (Source: own processing)

We can calculate area of our original quadrangle with the following formula (adjusted Bokrošová, 2005):

$$S_i = \frac{(10+g)*(10+b)}{2} + \frac{(10+b)*(10-p)}{2} + \frac{(10+g)*(20-u)}{2} + \frac{(20-u)*(10-p)}{2} \quad (1)$$

After subsequent substituting ideal values we get an area of the ideal quadrangle (S_i)

$$S_i = \frac{(10+3)*(10+0)}{2} + \frac{(10+0)*(10-2)}{2} + \frac{(10+3)*(20-5)}{2} + \frac{(20-5)*(10-2)}{2} = 262.5 \quad (2)$$

The numeric expression of the success of economic policy will be more transparent in our case, than the graphical version. After calculating the individual areas we have to compare these values with original area (S_i) = 262.5 – than we get economic level index.

2.1 GDP growth rate

Expresses the percentage change in the total volume of final production in units produced in a country for a certain period (in this case a year) by the factors of production located in a country regardless of who is the owner of these factors of production. (Klíma, 2006)

Table 1. Real GDP growth rate (in %)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average
Czech Rep.	4.7	6.8	7.0	5.7	3.1	-4.5	2.5	1.8	-1.0	-0.9	2.5
Slovakia	5.1	6.7	8.3	10.5	5.8	-4.9	4.2	3.0	1.8	0.9	4.1
Poland	5.3	3.6	6.2	6.8	5.1	1.8	3.9	4.5	1.9	1.6	4.1
Hungary	4.8	4.0	3.9	0.1	0.9	-6.8	1.3	1.6	-1.7	1.1	0.9

Source: Eurostat

The previous table shows that the largest increment of GDP has been in the period 2004-2008, and then there was a slump in 2009. The slump was caused by the financial crisis on world markets and there is even the reverse of annual decline in GDP. There was recorded growth of these increments since 2010, but did not reach the previous year's values. In link – term average the bigger increments reached Czech Republic, Slovakia and Poland.

2.2 Unemployment rate

One of primary social problem of today's modern society is unemployment. The total number of unemployed has not such an explanatory power than the unemployment rate, which represents the percentage of unemployed people to the total labor force. (Tuleja and Lebieczik, 1999). Ideal value of unemployment rate in our case of magic quadrangle is 5%, which presents natural rate of unemployment.

Table 2. Unemployment rate (in %)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average
Czech Rep.	7.8	8.0	7.8	6.8	5.6	5.5	6.1	6.9	7.0	6.9	6.8
Slovakia	18.3	17.5	16.1	13.7	11.4	11.0	12.1	13.4	14.1	14.0	14.2
Poland	19.6	18.9	17.0	13.8	10.2	8.3	8.3	9.2	9.8	10.0	12.5
Hungary	5.8	6.4	6.9	7.4	7.6	8.4	9.7	10.7	11.0	10.7	8.5

Source: Eurostat

Because of high rate of unemployment in Slovak and Poland was determined range 0 – 20% on scale for unemployment. In these countries, this indicator represents the biggest problems of all selected indicators. This results a substantial deterioration of total rate economic policy. The Czech Republic passed the best indicator, which maintains a relatively constant rate of unemployment and is closest to the ideal value. In the period Hungary records slow but constant growing of rate of unemployment.

2.3 Inflation rate

Inflation is a rise in the price level, which is demonstrated by a decline in the purchasing power of money. The rise in the price level may have different pace and also may have different vary in intensity and speeches. However, the government can limit the rate of the price level by using their policy. Also we can't forget the inflation expectations of economic entities. (Tuleja and Lebieczik, 1999) According to ideal variant, the value of this indicator should be 2%.

Table 3. Inflation rate (in %)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average
Czech Rep.	2.6	1.6	2.1	3.0	6.3	0.6	1.2	2.1	3.5	1.4	2.4
Slovakia	7.5	2.8	4.3	1.9	3.9	0.9	0.7	4.1	3.7	1.5	3.1
Poland	3.6	2.2	1.3	2.6	4.2	4.0	2.7	3.9	3.7	0.8	2.9
Hungary	6.8	3.5	4.0	7.9	6.0	4.0	4.7	3.9	5.7	1.7	4.8

Source: Eurostat

The highest values are especially visible in Slovakia and Hungary, and it is in the early years after joining the European Union. On the contrary in the last year is visible decline even under ideal boundary 2% for all V4.

2.4 Balance of the current account (% of GDP)

Balance of payments of the country is a system of accounts that capture financial flows with the foreign countries. It consists of several types of accounts – current account, financial account, capital account, statistical deviations and change of foreign currency reserves. There is used current account in our case, which captures exports and imports of goods and services; benefits and incomes from abroad and to abroad and unilateral transfers (eg. gifts or heritage) (Holman, 2004)

Table 4. Balance of the current account (% of GDP)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average
Czech Rep.	-5.0	-1.0	-2.0	-4.3	-2.1	-2.4	-3.9	-2.7	-1.3	-1.4	-2.6
Slovakia	-7.8	-8.5	-7.8	-5.3	-6.2	-2.6	-3.7	-3.8	2.2	2.1	-4.1
Poland	-5.3	-2.4	-3.8	-6.2	-6.6	-3.9	-5.1	-5.0	-3.7	-1.4	-4.3
Hungary	-8.6	-7.5	-7.4	-7.3	-7.3	-0.2	0.2	0.4	0.8	3.1	-3.4

Source: Eurostat

As we can see in the period is balance of the current account almost in all countries negative. The exceptions in last year's are Slovakia and Hungary. Closest to the ideal variant in long – term average is Czech Republic again.

3 Results

In the following table we can see calculated values of individual magic quadrangles of individual countries for the period.

Table 5. Areas of magic quadrangles

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average
Czech Rep.	190.4	264.1	251.7	214.8	187.3	164.6	212.7	201.1	167.9	191.7	204.6
Slovakia	34.2	47.7	73.3	157.3	135.5	116.2	166.7	121.0	163.8	175.6	119.1
Poland	55.4	93.2	114.7	120.9	138.1	158.3	175.8	162.4	150.2	193.2	136.2
Hungary	140.4	164.7	156.2	93.4	112.5	98.5	169.7	174.3	124.7	217.3	145.2

Source: Own calculation

Then we will compare calculated values with ideal area of magic quadrangle and will get economic level indexes based on magic quadrangle for V4 in period 2004 – 2013.

Table 6. Economic level indexes based on the magic quadrangle

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average
Czech Rep.	0.73	1.01	0.96	0.82	0.71	0.63	0.81	0.77	0.64	0.73	0.78
Slovakia	0.13	0.18	0.28	0.60	0.52	0.44	0.64	0.46	0.62	0.67	0.45
Poland	0.21	0.35	0.44	0.46	0.53	0.60	0.67	0.62	0.57	0.74	0.52
Hungary	0.53	0.63	0.60	0.36	0.43	0.38	0.65	0.66	0.48	0.83	0.55

Source: Own calculation

Through individual indicator Czech Republic reached best values in long – term. This was also reflected in the form of final economic level indexes. Best placed was in years 2004 and 2005 when was reached almost ideal values. Czech economy achieves in these years very low inflation rate (1.6% resp. 2.1%) combined with the low passive balance of the current account (-1% resp. -2%) and high GDP growth rate (6.8% resp. 7%). Unemployment rate, the last indicator, achieves in these years higher value than long – term average. That means that value of this indicator was affected minimally. Long – term average of this index represents the value of 0.78.

With minimum distance in long – term average are on next level Hungary and Poland (0.55 and 0.52). Hungarian economy shows in period 2004 – 2013 balanced values which decreased especially during crisis. Index was influenced mainly by low growth of GDP and it was recorded its several negative values and constantly growing of unemployment. On the contrary, the positive indicator is represented by the balance of the current account that achieves positive values.

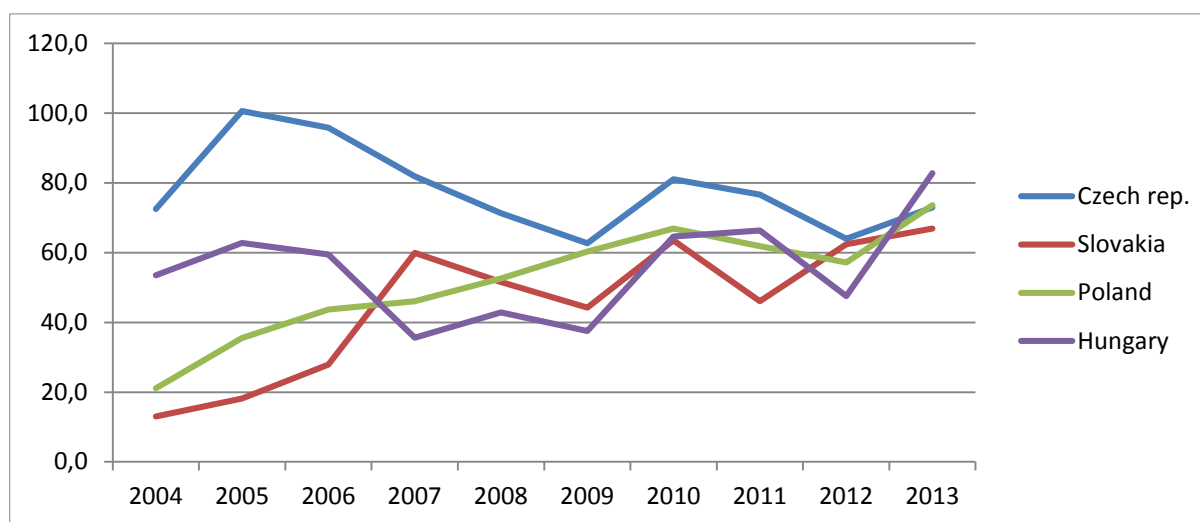


Figure 2. Development of economic level index of V4 in the period 2004-2013

In Poland there is a long – term growing trend of economic level policy. Rate of inflation is constantly decreasing in recent years, GDP growth rate is still relatively high (jointly with Slovakia among V4 in long – term average it is on level 4.1 %), balance of foreign trade achieves low negative values. Poland Achilles heel presents unemployment which rises above the level of 10% again.

Slovakia in the ratings ended in fourth place. Average value of index was affected by years 2004 – 2006. In these years inflation reached the highest values of all V4 same as high unemployment (18.3 % in year 2004). Balance of the current account achieved the biggest negative values. Relatively high

annual growth of GDP was the only positive of this time. However, there has been significant improvement in the following years and even the index reached values over 60% in recent years.

4 Conclusion

The main aim of this study was to clarify, respectively quantify economic performance by magic quadrangle and the level index of individual economies. As we can see from Figure 2, large differences of economic levels in 2004 were reflected by successive approximation and narrowing each other's disparities during 10 years of operation in the European Union. In 2013 there was first time change at first position according to this index – Czech Republic was overtaken by Hungary. This happened because of the difference in the current account balance, which reached 4,5% and the difference in GDP growth that achieved 2%. Anyway, it can be assumed that these indexes are going to oscillate with ever smaller differences between individual countries. Therefore should be interesting to analyze efficiently and the level of individual economies more deeply using other targets of economic policy like fundamental social values and finally maximization of social welfare.

Acknowledgement

This paper was supported by the Ministry of Education, Youth and Sports within the Institutional Support for Long-term Development of a Research Organization in 2014.

References

- [1] Bokrošová, L., 2005. *Ekonomika ČR v letech 1998-2002 pohledem magických čtyřúhelníků. E+M Ekonomie a management*, vol. 8, issue 2, pp. 22-26.
- [2] Eurostat. *Current account balance in % of GDP – annual data*. [online]. [2014-06-28]. Available from: <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tipsbp20&plugin=1>.
- [3] Eurostat. *Inflation rate – annual data*. [online]. [2014-06-28]. Available from: <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&language=en&pcode=tec00118&tableSelection=1&footnotes=yes&labeling=labels&plugin=1>.
- [4] Eurostat. *Real GDP growth rate – annual data*. [online]. [2014-06-28]. Available from: <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tec00115>.
- [5] Eurostat. *Unemployment rate – annual data*. [online]. [2014-06-28]. Available from: <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tipsun20&plugin=0>.
- [6] Holman, R., 2004. *Makroekonomie*. Praha: C. H. Beck.
- [7] Klíma, J., 2006. *Makroekonomie*. Brno: Alfa Publishing.
- [8] Tuleja, P., 2002. *Komparace ekonomické úrovně vybraných zemí střední a východní evropy a vybraných zemí evropské unie v letech 1993-2001*. Frýdek – Místek: Klenwächter.
- [9] Tuleja, P. a M. Lebieczik, 1999. *Makroekonomická analýza*. Ostrava: Moraviapress-repro.
- [10] Svatoš, M., 2009, *Zahraniční obchod*. Praha: Grada Publishing.
- [11] Urban, L. a kol., 1994. *Hospodářská politika*. Praha: Victoria Publishing.

RELATION BETWEEN CORRUPTION IN DEVELOPED AND DEVELOPING COUNTRIES AND THE LEVEL OF THEIR GLOBALIZATION

Šárka Laboutková

*Technical University of Liberec, Faculty of Economics, Studentska 1402/2, 461 17, Liberec 1, Czech Republic
email: sarka.laboutkova@tul.cz*

Abstract

This paper is part of a broader research on the relationship between globalization and institutional quality in developed and developing countries. Globalization is often understood as increasing global economic integration, global forms of governance and globally inter-linked social and environmental development. Institutional quality is approached here in terms of three basic parameters - quality of life, quality of governance and business conditions. The aim of this article is to map, analyze and evaluate, by means of statistical analysis, the mutual relationships between three dimensions of globalization (economic, social and political) and corruption in the public sector, which is one of the factors of quality of governance with regard to transparency. The first part provides the methodology of measuring overall globalization using the composite Index of Globalization KOF 2014. The second part introduces a way of measuring the transparency in public administration: for this purpose the Corruption Perception Index - CPI 2013 is used. The third part compares indices and scores together and analyzes them. It is possible to conclude from the results that a statistically significant association between economic and social globalization and corruption was demonstrated for both groups of countries, whilst corruption is most significantly correlated with the country's social dimension of globalization.

Keywords

Globalization, Institutional Quality, Corruption, Developed Market Economies, Emerging Markets.

JEL Classification

O17, O57, F69, P16.

1 Introduction

The phenomena of globalization is based on the ideology of neoliberalism - direction of neoclassicism - and its basic ideas were more or less standardized in the recommendation package called The Washington Consensus. The Washington Consensus is essentially a list of essential preconditions for the functioning a sound market economy, which were agreed by "Washington institutions" i.e. the IMF and World Bank and published for the first time under that name in 1990. In short, it included efforts to maintain a balanced budget, efforts to reduce taxes, low inflation, interest rate liberalization, a suitable (low) exchange rate, liberalization of trade and financial flows, privatization, deregulation (tearing down the barriers to entry) and consistent enforcement of property rights. The result should be prosperity for all, economic growth and the most efficient allocation of productive resources. The Washington Consensus as such did not fail – its problem was in its use as a universal recipe for prosperity; its ten points of Consensus were meant to more indicate a target than the path to it (Tománek, 2011).

Scientific literature reviews on the results of the Washington Consensus are very contradictory. However, most respected economists dealing with the phenomenon of globalization and economic prosperity are in agreement that the root cause of problems with reforms is in institutions and their changes. For example, a former World Bank chief economist and Nobel laureate in economics, Joseph Stiglitz stresses the role of the state in building infrastructure and a legal framework in which the market economy works. In other words, the traditional neoclassical model, because it abstracts from institutional change, leaves out the heart of development economics (Hoff and Stiglitz, 2001; Hoff 2001). Criticism of neoclassical mainstream economics from the perspective of institutional economics is in the spirit of institutional illiteracy and a misleading analysis of the behavior of participants in economic and political markets. Fortunately, this trend of neglect of institutions in economic literature is slowly changing. Institutional factors extend the range of variables that attempt to explain the achievement of long-term growth and particularly the persistent differences between

developed and less developed economies (Laboutková and Bednářová, 2013). One of the major factors affecting the quality of institutions is corruption.

The main hypothesis of this paper is that a higher level of globalization decreases the level of corruption in developing and developed economies (the developed market economies are the 35 countries with the highest values of the composite Human Development Index). Also it can be assumed that economic globalization and social globalization will have more powerful links with institutional quality – corruption - than political globalization. The aim of this article is to identify and assess the mutual relationship between two factors – corruption as one of the parameters of institutional quality and globalization.

The first part of the paper will introduce the methodology of measuring globalization and corruption. The essence of the article consists of verifying and testing the strength of mutual relationships between three dimensions of globalization (economic, social and political) and corruption. The paper will show the results for a selected sample of countries (developing and developed economies), analyze it, and confirm or reject the hypothesis about the significant linkages of globalization and corruption.

2 KOF Globalization Index¹

Globalization is often understood as increasing global forms of governance, global economic and politic relations, and globally inter-linked social and environmental developments. It is possible to expand this word with other meanings, such as the growing integration of markets, the threat to national sovereignty by trans-national actors, the transformation of national economies, and the spread of inequalities or disparities as well as how emerging markets have increased the degree of integration in world finance etc. Axel Dreher, an architect of a composite index of globalization (KOF) based its work upon the following statement regarding the meaning of globalization: “it is a process that erodes national boundaries, integrates national economies, cultures, technologies and governance, and produces complex relations of mutual interdependence” (Dreher, 2006: 1092).

The composite Index of Globalization KOF 2011 is used to measure overall globalization. The **KOF Globalization Index** produced by the KOF Swiss Economic Institute was first published in 2002 (Dreher, 2006). Globalization is conceptualized as the process of creating networks among actors at multi-continental distances, mediated through a variety of flows, including people, information and ideas, capital and goods. The KOF globalization index is based on the variables used in ATK/FP (A. T. Kearny / Foreign Policy Globalization Index), but it covers a far larger number of countries and has a longer time span. The overall index covers the economic, social, and political dimensions of globalization:

- economic globalization includes the long distance flows of goods, capital, and services and has two dimensions: 1) actual economic flows and 2) international trade and investment restrictions.
- social globalization has been classified by the KOF index into three categories: 1) personal contacts, 2) information flows, and 3) cultural proximity.
- political globalization is characterized by the diffusion of government policies.

In constructing the indices of globalization, each variable is transformed to an index ranging from zero to the value of ten. Higher values denote a higher degree of globalization. The year 2000 is used as the base year. When higher values of the original variable indicate higher globalization, the following formula (1) is used for transformation:

¹ Due to the fact that this article is part of a comprehensive research on the relationship between representatives of institutional quality and globalization measured by the KOF Index of globalization, this sub-chapter is just updated versions of the same chapters in other articles, which were created on the basis of that research.

$$\frac{V_i - V_{\min}}{V_{\max} - V_{\min}} \times 10 \quad (1)$$

Conversely, when higher values indicate less globalization, the formula (2) is:

$$\frac{V_{\max} - V_i}{V_{\max} - V_{\min}} \times 10 \quad (2)$$

An updated version of the original 2002 index An updated version of the original 2002 index was introduced in 2007 as the so-called 2007 KOF Index of Globalization. The 2007 KOF Index of Globalization features a number of methodological improvements compared to the original version. Each of the variables is transformed to an index on a scale from 1 to 100. Higher values again denote higher levels of globalization. The data are transformed according to the percentiles of the original distribution. Table 1 indicates updated weights of variables in the 2011 KOF Index of Globalization. It shows that economic and social integration obtained approximately equal weights (36 %, 38 %), while political globalization has a substantially smaller weight in the overall index (26 %).

Among the first to use the KOF Index for empirical analysis was Ekman (2003), who finds a positive, non-linear correlation between the KOF Index and population health measured by life expectancy at birth. In later studies, Sameti (2004) has found that globalization increased the size of governments, while Tsai (2007) has shown that globalization increases human welfare. Bjørnskov (2006) analyses the three dimensions of the KOF Index and shows that economic and social globalization affect economic freedom, while political globalization does not. Laboutková, Bednářová, Kocourek (2011, 2012, 2013) have proved in empirical studies that the overall index of globalization KOF and Inequality-adjusted Human Development Index IHDI are very tightly connected although there is a much more significant relationship between economic globalization and IHDI than the social and political dimension of globalization and human development. Also Kocourek (2013) quantifies the beneficial social impacts of the pace of globalization in developing countries. Recently published papers have shown a statistically significant association between globalization and governance matters for both groups of countries with one exception: the quality of governance in developed and developing countries is not significantly correlated with the country's political dimension of globalization and a statistically significant association between globalization and the ease of doing business index only in the case of the developing countries (Laboutková and Bednářová, 2013a,b).

Table 1. Weights of variables in the 2011 KOF Index of Globalization

Indices and Variables		Weight (%)
Economic globalization		36
(I)	Actual flows	50
	Trade (% of GDP)	22
	Foreign direct investment, stock (% of GDP)	29
	Portfolio investment (% of GDP)	22
	Income payments to foreign nationals (% of GDP)	27
(II)	Restrictions	50
	Hidden import barriers	22
	Mean tariff rate	28
	Taxes on international trade (% of current revenue)	27
	Capital account restrictions	23
Social globalization		38
(I)	Data on personal contact	33
	Telephone traffic	26
	Transfers (% of GDP)	2
	International tourism	26
	Foreign population (% of total population)	20
	International letters (per capita)	25
(II)	Data of information flows	36
	Internet users (per 1 000 people)	36
	Television (per 1 000 people)	37
	Trade in newspapers (% of GDP)	28
(III)	Data of cultural proximity	31
	Number of McDonald's Restaurants (per capita)	43
	Number of IKEA (per capita)	44
	Trade in books (% of GDP)	13
Political globalization		26
	Embassies in country	25
	Membership in international organizations	28
	Participation in U. N. Security Council missions	22
	International Treaties	25

Source: Dreher et al. (2010, p. 48).

3 Corruption as one of the parameter of institutional quality

Political and economic institutions are a crucial factor in determining economic performance. Currently, there are many approaches to measuring and evaluating the quality of institutions, i.e. the institutional environment is used to characterize the influence of institutions on growth performance and competitiveness of an economy. One of the factors which influence its quality is corruption. Corruption, which can be defined as an abuse of public power for private interests, is critically assessed for its negative impact on institutional quality. Corruption deepens the moral decay of society but also reduces governments' ability to perform their functions. The result is a reduction in resource utilization efficiency and consequent economic performance. Corruption has a negative impact on economic growth by encouraging businesses to unproductive investments that do not benefit society (Krueger, 1974; Bhagwati, 1982; Tullock 1987). A corruptible environment, which flourishes in a regulated economy, also discourages foreign investors. Corruption undermines the functioning of institutions and contributes to reducing global competitiveness.

The most important multinational organization that exclusively investigates corruption indicators and compares them at international level is probably Transparency International (TI). TI regularly publishes several indicators of corruption. The Corruption Perceptions Index (CPI) has been published since 1995. The Corruption Perceptions Index ranks countries and territories based on how corrupt their public sector (or corruption which involves public officials, civil servants or politicians) is perceived to be. A country or territory's score indicates the perceived level of public sector

corruption on a scale of 0 - 100, where 0 means that a country is perceived as highly corrupt and 100 means it is perceived as very clean. A country's rank indicates its position relative to the other countries and territories included in the index. No country has a perfect score, and two-thirds of countries score below 50. This indicates a serious, worldwide corruption problem. Perceptions are, used because corruption – whether frequency or amount – is to a great extent a hidden activity that is difficult to measure. Over time, perceptions have proved to be a reliable estimate of corruption. It is a composite index, a combination of polls drawing on corruption-related data collected by a variety of reputable institutions.

The 2013 CPI draws on data sources from independent institutions specializing in governance and business climate analysis. The sources of information used for the 2013 CPI are based on data gathered in the past 24 months. The CPI includes only sources that provide a score for a set of countries/territories and that measure perceptions of corruption in the public sector. Transparency International reviews the methodology of each data source in detail to ensure that the sources used meet Transparency International's quality standards. The data sources used to compile the index include questions relating to the abuse of public power and focus on: bribery of public officials, kickbacks in public procurement, embezzlement of public funds, and on questions that probe the strength and effectiveness of anti-corruption efforts in the public sector. As such, it covers both the administrative and political aspects of corruption. In producing the index, the scores of countries/territories for the specific corruption-related questions in the data sources are combined to calculate a single score for each country. For a country/territory to be included in the ranking, it must be included in a minimum of three of the CPI's data sources (TI, 2013). Most countries were evaluated using 7-8 sources (see tab. 2).

Table 2. 13 data sources were used to construct the Corruption Perceptions

1. African Development Bank Governance Ratings 2012
2. Bertelsmann Foundation Sustainable Governance Indicators 2014
3. Bertelsmann Foundation Transformation Index 2014
4. Economist Intelligence Unit Country Risk Ratings
5. Freedom House Nations in Transit 2013
6. Global Insight Country Risk Ratings
7. IMD World Competitiveness Yearbook 2013
8. Political and Economic Risk Consultancy Asian Intelligence 2013
9. Political Risk Services International Country Risk Guide
10. Transparency International Bribe Payers Survey 2011
11. World Bank - Country Policy and Institutional Assessment 2012
12. World Economic Forum Executive Opinion Survey (EOS) 2013
13. World Justice Project Rule of Law Index 2013

Source: Transparency International 2013.

Since 2012 the CPI is calculated using a simple average of standardized scores. More specifically, all thirteen sources are standardized by subtracting the mean of the data and dividing by the standard deviation (z-scores) and then rescaled to have a mean 45 and standard deviation 20 (Saisana and Saltelli 2012). The formula for the standardizations is as follows (3):

$$\frac{x_i - \text{mean}(x)}{\text{std}(x)} \times \text{sign} \times 20 + 45 \quad (3)$$

Other important institutions such as the Political Risk Services, Inc. (International Country Risk Guide), the World Economic Forum (World Competitiveness Report), and the World Bank also

devote their time to corruption. The main advantage and added value of CPI lays in the fact that an index which aggregates a set of independent sources that measure the same perceived concept can be more reliable than each source taken separately (Saisana and Saltelli 2012).

4 Methods

For the analysis, only countries with complete available data files were chosen. The countries were divided into two groups. The developed market economies consist of 35 countries (out of 47 developed member states of the United Nations – e.g. Japan, Malta, or New Zealand are missing), in the group of developing countries, there are 75 countries (out of 140 developing member states of the United Nations – e.g. South Africa, Congo, or Saudi Arabia are missing).

For the analysis, data from both the 2013 Transparency International CPI and 2014 KOF Globalization Index (and of their components) were used. To determine the links between the data, the methods of regression analysis were used. For easier comparison and interpretation of the examined relationships, the correlation analysis was chosen as a suitable tool, although it assumes the linear character of the regression between the variables. This simplification makes it possible to compare not only the statistical power (robustness) of the identified links (statistically significant at the customary 5% significance level), but also the intensity with which globalization is connected to competitiveness, or the slope of the linear relationship between the individual pairs of variables expressed by the regression coefficient β_1 in the standard equation for linear regression (4):

$$\hat{y} = \beta_0 + \beta_1 \cdot x \quad (4)$$

where x is the value of the independent variable (in this case the value of KOF, EG_KOF, SG_KOF and PG_KOF) and represents the model (estimated) value of the dependent variable (CPI). Both regression coefficients (β_0 and β_1) can be estimated using the following equations (5) and (6):

$$\beta_0 = \frac{\sum y_i \cdot \sum x_i^2 - \sum x_i \cdot \sum y_i \cdot x_i}{n \cdot \sum x_i^2 - (\sum x_i)^2} \quad (5)$$

$$\beta_1 = \frac{n \cdot \sum y_i \cdot x_i - \sum x_i \cdot \sum y_i}{n \cdot \sum x_i^2 - (\sum x_i)^2} \quad (6)$$

where y stands for the real value of the dependent variable (CPI) and n is the number of statistical units (35 developed market economies, 75 developing countries). Individual correlation models will be evaluated based on their individual indices of correlation R_{XY} and also according to the calculated p -value of significance, according to which the robustness of a particular model is evaluated at the 5% significance level.

For the following calculations and statistical analysis, the statistical software Stat graphics Centurion XVI was used. The thick black straight line represents the estimated correlation model, the narrow dark gray bordered strip shows the confidence interval for the mean forecast; the broader light gray bounded strip is the confidence interval for predictions. It can be assumed that the average values for a given level of KOF index will fluctuate with a 95% confidence within the dark gray limits. The expected specific values of the dependent variable will then, with the same probability, fall into the area between the light gray borders.

5 Results

All the correlation analyses for the developed market economies and developing countries have been summarized in Table 3. Correlations which are statistically insignificant at the 5% level of significance are colored gray in the table.

Table 3. Correlation Characteristic

	CPI (developing countries)		CPI (developed market economies)	
KOF	$\alpha =$	0,0002	$\alpha =$	0,0031
	$R_{XY} =$	0,4129	$R_{XY} =$	0,4854
	$\beta_1 =$	0,4171	$\beta_1 =$	0,9530
EG_KOF	$\alpha =$	0.0163	$\alpha =$	0.0219
	$R_{XY} =$	0.2767	$R_{XY} =$	0.3864
	$\beta_1 =$	0.2041	$\beta_1 =$	0.5493
SG_KOF	$\alpha =$	0.0002	$\alpha =$	0.0036
	$R_{XY} =$	0.4151	$R_{XY} =$	0.4794
	$\beta_1 =$	0.5762	$\beta_1 =$	0.6894
PG_KOF	$\alpha =$	0.3989	$\alpha =$	0.4692
	$R_{XY} =$	0.0988	$R_{XY} =$	0.1265
	$\beta_1 =$	0.0684	$\beta_1 =$	0.1826

Source: own construction.

A statistically significant correlation has been identified between globalization and corruption in the sample of both the developing and developed market economies; the linkage between KOF and CPI is characterized by a coefficient of correlation R_{XY} in the value of 0.4129 or 0.4854 respectively, with the slope of the regression line $\beta_1 = 0.4171$ or 0.9530 (see fig. 1 or 2). The corruption in the public sector in both groups of countries shows a statistically significant relationship with two of the three components of globalization (EG_KOF; SG_KOF).

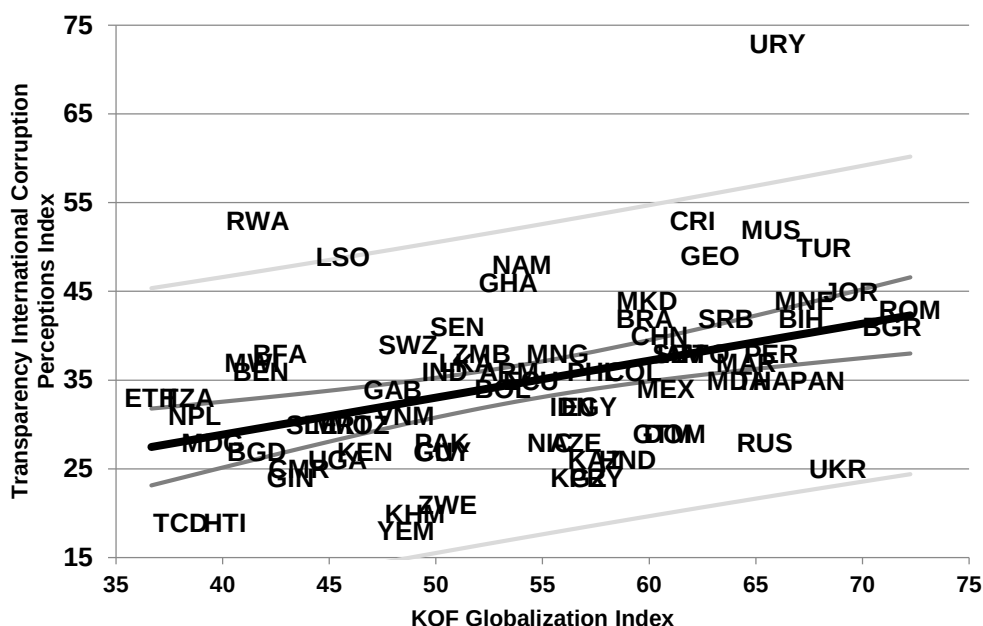


Figure 1. Relationship between KOF and CPI in Developing Countries (Source: own construction)

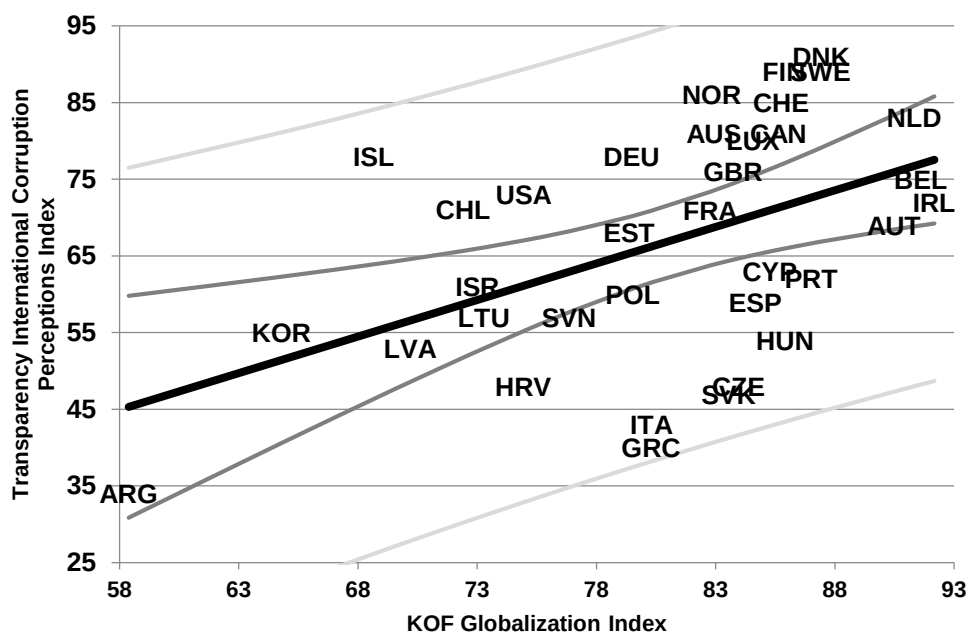


Figure 2. Relationship between KOF and CPI in Developed Market Economies (Source: own construction)

This, however, does not represent an intensive relationship; a correlation index R_{XY} of 41.29 % or 48.54 % respectively indicates a moderately correlated relationship between the indices (power less??? intense relationship between CPI and EG_KOF in both groups pulls down the overall results). The slope of the model line $\beta_1 = 0.4171$ indicates that a KOF increase of one point brings an increase in the average CPI of 0.4171 points in the developing countries and $\beta_1 = 0.9530$ indicates that a KOF increase of one point brings an increase in the average CPI by 0.9530 points in the developed market economies. Globalization as a process (especially in its social parts) therefore significantly influences the corruption environment in both developed and emerging countries.

The analysis of the relationship between political globalization (PG_KOF) and corruption (CPI) shows a different result: the corruption in developed and developing countries is not significantly correlated with the country's political dimension of globalization. The degree of political involvement on the world political scene has no effect on the corruption environment inside the economy. This may be a result of the fact that the coefficient of political globalization index is merely the quantification of embassies, International Treaties, and participations in multinational organizations and does not reflect the activity of these countries and their position or influence in these organizations.

6 Conclusion

The main hypothesis of this paper was that a higher level of globalization decreases the corruption in both developing and developed economies. The authors also assumed that economic globalization and social globalization will have more powerful links with corruption than political globalization.

It is possible to conclude from the results that a statistically significant association between globalization and corruption was demonstrated for both groups of countries. There are moderately correlated relationships between the economic dimensions of globalization and corruption: in the case of developing countries it has been shown that an increase in the economic sub-indicator of globalization by one point will produce slightly worse results in improving the level of corruption in emerging markets. This is probably caused by differences in attitudes towards corrupt behavior across the world. The developed countries are based on the principles laid down by standards of ethical universalism, where each citizen is treated equally by the state and all public funds are distributed fairly. In developing countries, where the norm is particularism (individuals are not treated as autonomous, but by their linkages to the ruling elite or according to that person's social or political group), corruption, as the principal representative of poor governance, is not a failure of the individual but of the entire system. The involvement of these countries in global economic relations does not have the necessary power to change the local climate of corruption. These countries must reduce political corruption and material resources at first and build normative constraints in the form of domestic collective action. Most of the current anti-corruption strategies focusing on increasing legal restrictions often fail because interventions are often located in countries that do not have the rule of law.

Corruption is not only less dependent on political rather than economic and social globalization (as the authors expected), but it is not significantly correlated with the political dimension of globalization. This may be a result of the fact that political globalization does not reflect the qualitative aspects of the involvement of countries in political globalization.

7 Acknowledgement

This article was created as a research project at the Faculty of Economics TUL years 2014-2016 funded from institutional support for long-term strategic development research organizations.

References

- [1] ATK/FP 2011. Globalization Index. A. T. Kearney Consulting Group and Foreign Policy Magazine (2002 and following years). [online]. [2014-05-27]. Available from: <http://www.foreignpolicy.com/>.
- [2] Bednářová, P., Š. Laboutková, and A. Kocourek, 2011. On the relationship between globalization and human development. In A. Kocourek, ed., *Proceedings of the 10th International Conference Liberec Economic Forum 2011*. Liberec: Technical University of Liberec, pp. 61-71.

- [3] Bjørnskov, C., 2006. *Globalization and Economic Freedom: New Evidence*. University of Aarhus, The 2nd Danish International Economics Workshop.
- [4] Bhagwati, N. J., 1982. Directly Unproductive, Profit-Seeking Activities. *Journal of Political Economy*, vol. 90, issue. 5, pp. 988-1002.
- [5] Dreher, A., 2006. Does Globalization Affect Growth? Evidence from a new Index of Globalization. *Applied Economics*, vol. 10, issue 38, pp. 1091-1110.
- [6] Dreher, A., N. Gaston and P. Martens, 2010. *Measuring Globalization – Gauging Its Consequences*. 2nd Ed. New York: Springer Science + Business Media.
- [7] Ekman, B., 2003. *Globalization and Health: An Empirical Analysis Using Panel Data*. Lund: Lund University.
- [8] Hoff, K. and J. E. Stiglitz, 2001. Modern Economic Theory and Development. In: A. Meier and J. E. Stiglitz, eds. *Frontiers of Development Economics*. Oxford: Oxford University Press.
- [9] Kocourek, A., 2013. Analysis of Social-Economic Impacts of the Process of Globalization in the Developing World. In A. Kocourek, ed., *Proceedings of the 11th International Conference Liberec Economic Forum 2013*. Liberec: Technical University of Liberec, pp. 297–306.
- [10] Kocourek, A., P. Bednářová, and Š. Laboutková, 2013. Vazby lidského rozvoje na ekonomickou, sociální a politickou dimenzi globalizace. *E+M Economics and Management*, vol. 16, issue 2, pp. 10-21.
- [11] *KOF Index of Globalization*. [online] Zurich: Eidgenössische Technische Hochschule Zürich, 2014. [online]. [2014-06-10] Available from: http://www.globalization.kof.ethz.ch/static/rawdata/globalization_2014b_long.xls.
- [12] Krueger, A. O., 1967. The Political Economy of Rent-seeking Society. *American Economic Review*, issue 64, pp. 291-303.
- [13] Laboutková, Š., P. Bednářová and A. Kocourek, 2012. An Analytic Study on Internal Linkages between Human Development and Globalization. *Journal of Modern Accounting and Auditing*. 1. ed. El Monte, CA, USA: David Publishing, 2012, vol. 8, issue 12, pp. 1823-1837.
- [14] Laboutková, Š. and P. Bednářová, 2013a. Quality of Governance in Developing and Developed Countries and Its Relation to the Dimensions of Globalization. In *Proceedings of the 11th International Economic Policy in the European Union Member Countries*. Ostrava: Vysoká škola báňská – Technická univerzita v Ostravě, 2013.
- [15] Laboutková, Š. and P. Bednářová, 2013b. Ease of Doing Business and Globalization – Linkages between Both in Developed Market Economies and Developing Countries. In: *The 7th International Days of Statistics and Economics*. Praha: Vysoká škola ekonomická v Praze, 2013. pp. 88-98.
- [16] Saisana, M. and A. Salteli. 2012. Corruption Perception Index 2012; statistical Assessment. *JRC Scientific and Policy Report*
- [17] Sameti, M., 2004. *Globalization and Size of Government Economic Activities*. Isfahan: Isfahan University.
- [18] Tománek, M., 2011. Selhal v Latinské Americe Washingtonský konsensus? *Mezinárodní politika*, issue 7.
- [19] Tullock, G., 1988. Rent seeking, In *The New Palgrave a Dictionary of Economics 1998*, pp. 147-149.
- [20] Tsai, M. C., 2007. Does Globalization Affect Human Well-Being? *Social Indicators Research*, vol. 81, issue 1, pp. 103-126.

DIFFERENCES IN ACTIVE LABOUR MARKET POLICIES IN CHOSEN COUNTRIES

Aleš Lokaj

VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: ales.lokaj@vsb.cz

Abstract

The economic crisis in 2008 has found a series of problems in many countries. Not only European Union is struggling with decline in GDP, increased public debt or rising unemployment. Each country has a different "recipe" to solve these problems and each of these "recipes" has a different success. The aim of this article is to compare Active labour market policies in the chosen countries during period 2006–2011. The presented paper compares the basic indicators of unemployment in OECD countries. Based on the comparison will be selected countries, especially outside Europe, for further analysis of Active labour market policy in these countries. Based on this analysis and statistical data will try to evaluate how successful its policy is.

Keywords

Labour Market, Active Labour Market Policy, OECD, GDP, Unemployment.

JEL Classification

J08, J64, J68.

1 Introduction

Unemployment along with inflation is one of the biggest economic problem. Especially high and persistent unemployment has a negative effect on long-run economic growth. Unemployment can harm growth not only because it is a waste of resources, but also because it generates redistributive pressures and subsequent distortions, drives people to poverty, constrains liquidity limiting labour mobility, and erodes self-esteem promoting social dislocation, unrest and conflict (Castells-Quintana and Royuela, 2012).

Many countries aid the unemployed through social welfare programs. These unemployment benefits include unemployment insurance, unemployment compensation, welfare and subsidies to aid in retraining. Societies try a number of different measures to get as many people as possible into work. Every country use a different active labour market policies – government programmes that intervene in the labour market to help the unemployed find work. There are three main categories of Active labour market policies: *public employment services*, such as job centres and labour exchanges help the unemployed improve their job search effort by disseminating information on vacancies and by providing assistance with interview skills and writing a curriculum vitae. Than *training schemes*, which represents classes help the unemployed improve their skills and hence increase their employability and finally *employment subsidies* in the private or public sector to create jobs for the unemployed. These are typically short-term measures which are designed to allow the unemployed to build up work experience and prevent skill atrophy.

The aim of this article is to compare basic indicators of Active labour market policies in OECD countries, which are reported by this organization. Based on the analysis results will be countries sorted into groups with similar characteristics (contains primarily public expenditure on Active labour market policies and unemployment). Then from each group will be selected one country and will be compared instruments of Active labour market policy in these countries.

This article is a part of introduction into Active labour markets policies, which is part of the project “Alternative measures of active labour market policy and their application on the chosen groups of unemployment within Moravian-Silesian Region“, funded by a grant from Students Grant Project Economic faculty, VŠB-TU Ostrava.

2 Unemployment and public expenditure on Active labour market policies

Analysis are done on available data in OECD countries, especially the data on unemployment and public expenditure on Active labour market policies. Analysis are done on data from the years 2006 – 2011, because till 2011 are data available for many countries. Data for the years 2012 and more are mostly predicted or are still not known. If the graphs below present all OECD countries, there will be the data for selected years – 2007, 2009 and 2011. The aim of these graphs are not analyse the whole process of individual indicators but show the level of these indicators before the crisis – the year of “the greatest growth” in many countries (2007), the year of the crisis (2009) and the year after the crisis (2011), although we know that in this period decrease GDP in many countries again.

2.1 Unemployment in OECD countries

Unemployment is one of the basic macroeconomic indicators, which are monitored in all countries. The following figure 1 shows unemployment in selected years in all OECD countries. As mentioned above, almost in all countries were lowest unemployment in 2007. We can say that most countries were at the level of the natural rate of unemployment.

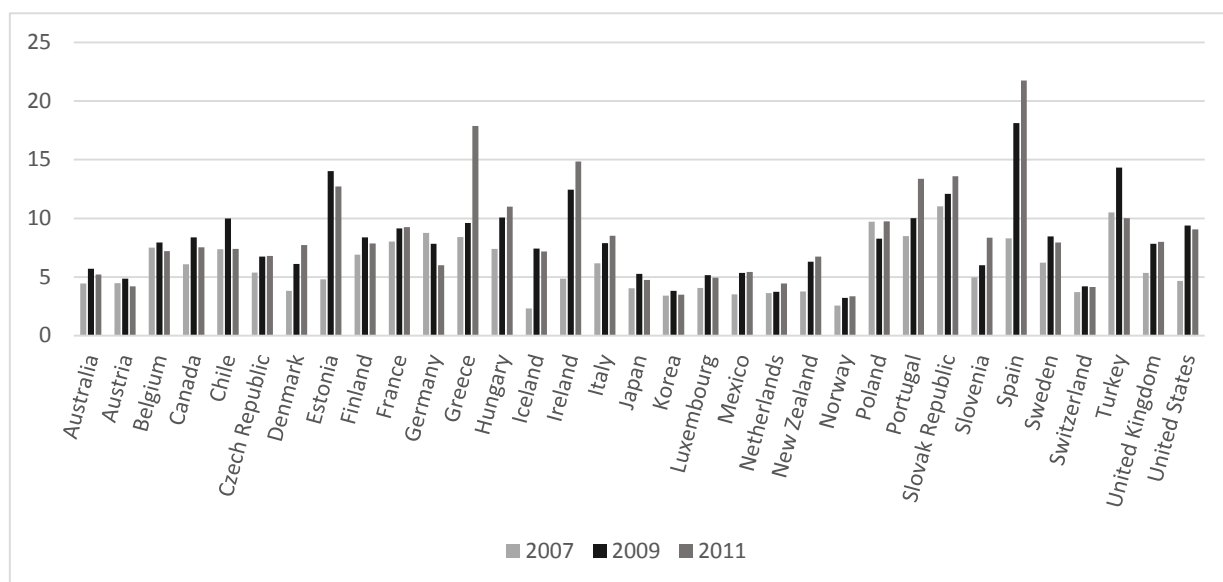


Figure 1. Unemployment rate in OECD countries in % (Source: OECD)

Can be seen, that unemployment were at level of 5% in many countries in 2007. The highest unemployment rate was in the Slovak Republic 11%, in Turkey 10.5% and in the Poland 9.7%. The lowest, on the other hand, was in Iceland 2.3%, Norway 2.6% and in Mexico 3.5%. In 2009 (year of crisis), the unemployment rate increased in all OECD countries (except Poland). Some European countries have been hit by the crisis so much, that their unemployment rate has doubled (Spain, Ireland) or almost tripled (Estonia, Iceland). The highest unemployment rate was in 2009 in Spain 18.1% and lowest in Norway 3.2%. Although the year 2011 was originally chosen as the post-crisis, the graphs shows further deepening unemployment in most European countries. The financial crisis grew into a debt crisis in Europe. There is “a reversion start” of economic growth with decrease in unemployment in countries outside Europe. Unpopular first place remained Spain (21.8%), lowest rate of unemployment was still in Norway 3.3%.

2.2 Public expenditure on Active labour market policies

In the face of a massive output shock, there are strong economic arguments for fiscal loosening and expansion of public investment and expenditure. Temporarily sustaining consumer demand can

prevent the emergence of a dangerous recessionary spiral, where gloomy expectations and restrained consumption and investment serve to institutionalise low levels of aggregate demand. The role that labour market policies may play relative to fiscal or monetary policy instruments in such economic stimulus measures can of course vary, though expanded labour market policies in general and improved unemployment benefits in particular are widely recognised to be especially effective economic stabilizers (Clasen et al., 2012).

The following text will be focus on Active labour market policies. Figure 2 shows how much percent of gross domestic product each country spent for Active labour market policies. Unfortunately, this statistics is not reported in all OECD countries, thus were eliminated following countries: Greece, Iceland, Norway and Turkey. In Chile, Ireland and UK have missed data for one year, so the graph is incomplete in these countries.

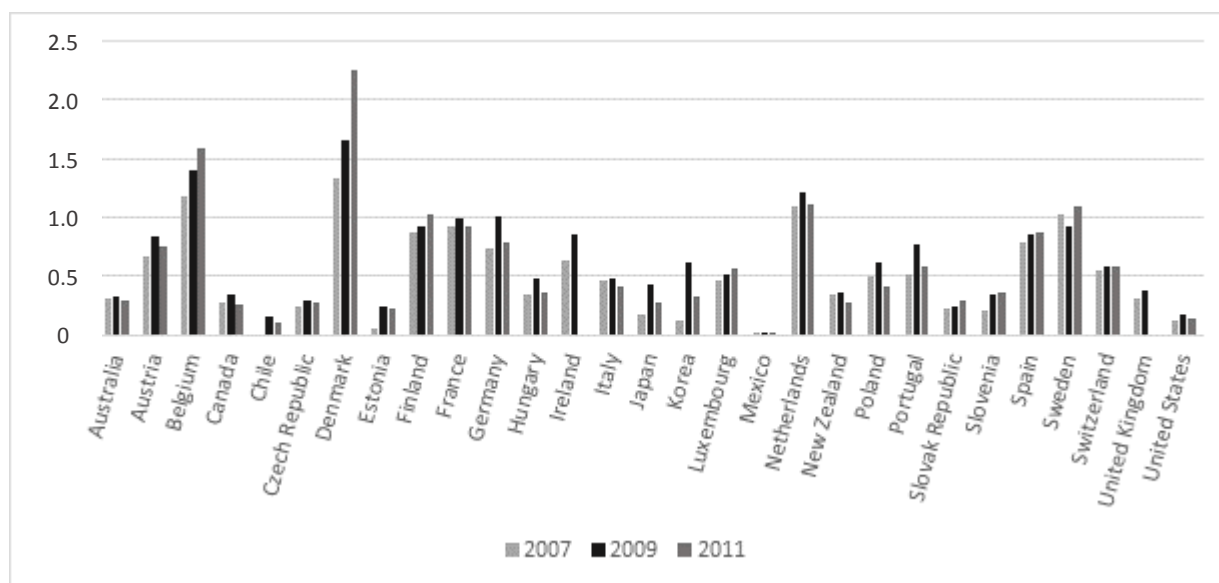


Figure 2. Public expenditure on active labour market policies (% of GDP) (Source: OECD)

The Figure 2 shows that the largest part of GDP on active labour market policies spent Denmark (from 1.3 to 2.3% of GDP), followed by Belgium (from 1.2 to 1.6% of GDP), the smallest part of GDP spent Mexico approximately 0.02% of GDP, Chile about 0.16% of GDP and United States (from 0.13 – 0.17% of GDP).

Because of the big differences between the sizes of countries' GDP, the author has recalculated these data and has determined the approximate amount in thousands dollars, which each countries spent on this policy. The results are summarized in Figure 3. Can be seen that the largest absolute amount in dollars is allocated to active labour market policies in Germany (about 3 billion USD). Germany is followed by other large countries such as France, USA and Japan. It can be seen that United States of America has become the third biggest country in this statistics. They spent more than 2 billion USD on Active labour market policies (which represented approx. 0.15% of GDP). Most small countries spent on this policy up to 50 million USD, the country that spent the least, Estonia, it was about 5 million USD.

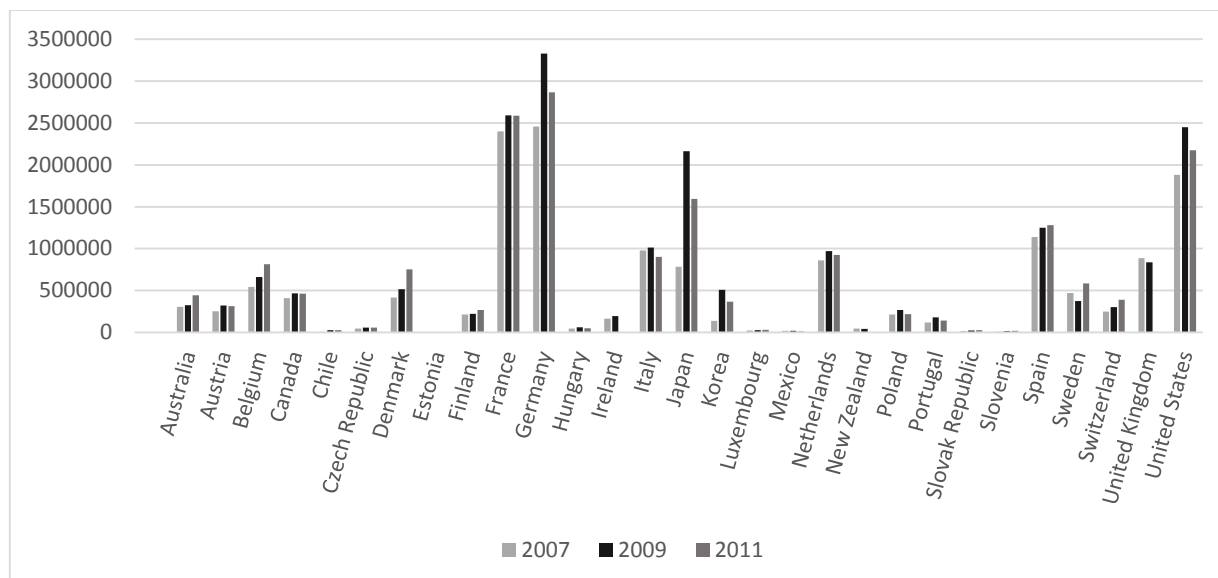


Figure 3. Public expenditure on Active labour market policies in thousands USD
 (Source: own calculation based on OECD data)

Author tried to eliminate the differences between the size of the country and thus the size of GDP. That's why the public expenditure on Active labour market policies were calculated per unemployed person. This indicator was calculated based on OECD data about the number of labour force and the unemployment rate in each country. The results show the figure 4.

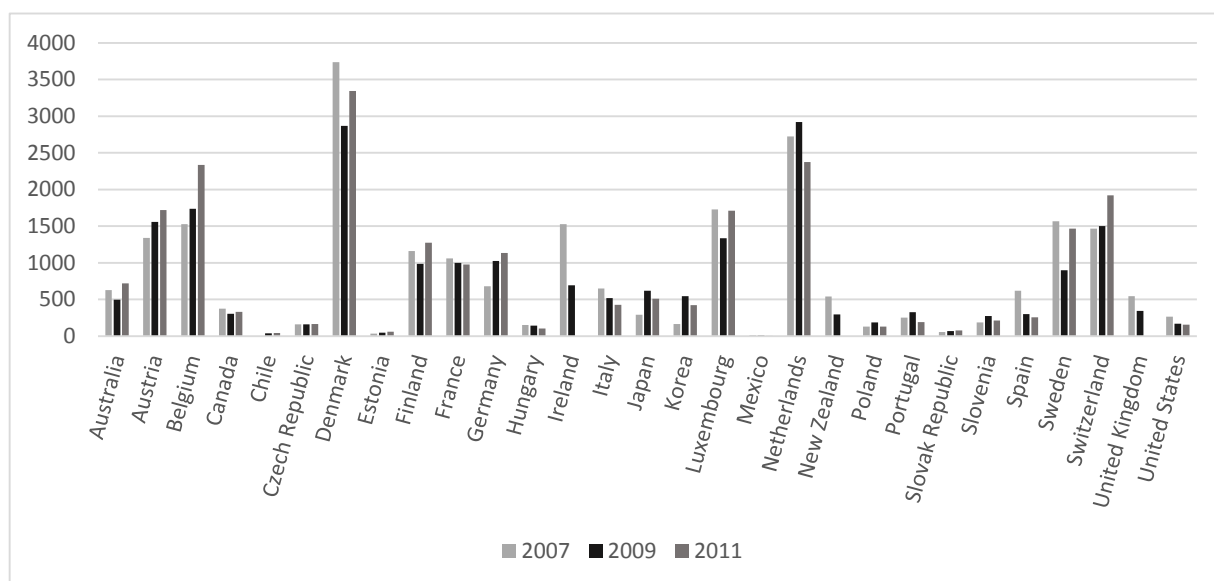


Figure 4. Public expenditure on Active labour market policies per unemployed person in USD
 (Source: own calculation based on OECD data)

The graph clearly shows that the most USD per one unemployed person were spent on Active labour market policies in Denmark (on average about 3 000 USD), followed by the Netherlands, Belgium or Switzerland. Conversely, the least USDs were spent in Mexico (on average about 10 USD), Chile and Estonia.

If we compare the public expenditure on Active labour market policies per unemployed person and the unemployment rate, can be determinate “efficiency” of using these expenditures. Graphically this comparison summarizes figure 5, where the rate of unemployment is on the x-axis and the public expenditure are on y-axis. Based on these results, can be countries divided into four groups (while

the reference value for unemployment rate was chosen value of 6% and for public expenditure the amount about 1 000 USD):

1. The country having a low unemployment with low public expenditure on Active labour market policies – *group low-low* (countries like Mexico, Korea, Japan, Australia, New Zealand, USA, Slovenia, Estonia, Czech Republic, United Kingdom, Canada and Italy).
2. The country having a low unemployment with high public expenditure on Active labour market policies – *group low-high* (Denmark, the Netherlands, Norway, Luxembourg, Austria, Ireland and Switzerland).
3. The country having a high unemployment with low public expenditure on Active labour market policies – *group high-low* (Spain, Germany, Portugal, Poland, Slovak Republic and Hungary).
4. The country having a high unemployment with high public expenditure on Active labour market policies – *group high-high* (Sweden, Finland, Belgium and France).

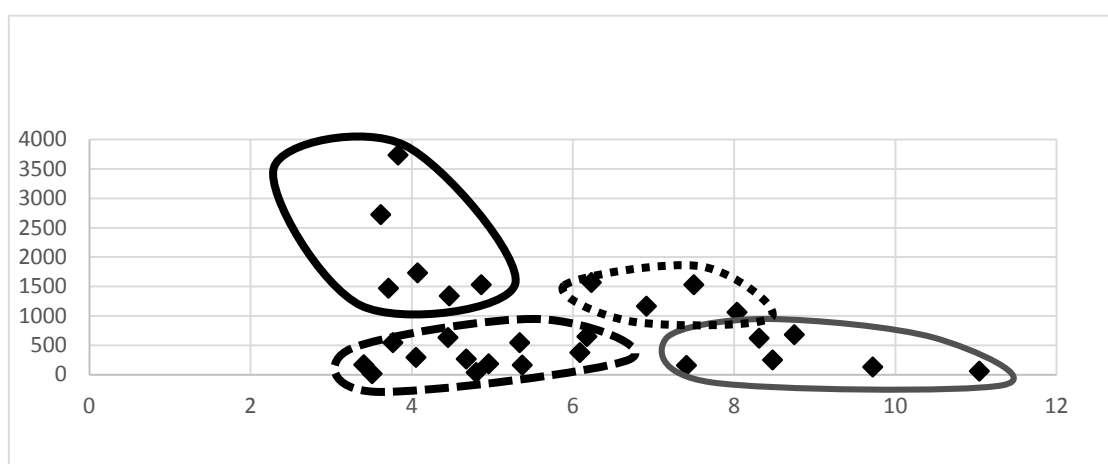


Figure 5. Unemployment (in %) to public expenditure on Active labour market policies per person (in USD) in 2007
 (Source: own calculation based on OECD data)

The same scheme has been created for the same group of countries, but in 2009 (year of the crisis). The results are follows, see figure 6. With the same reference values, can be seen that the groups have considerably changed.

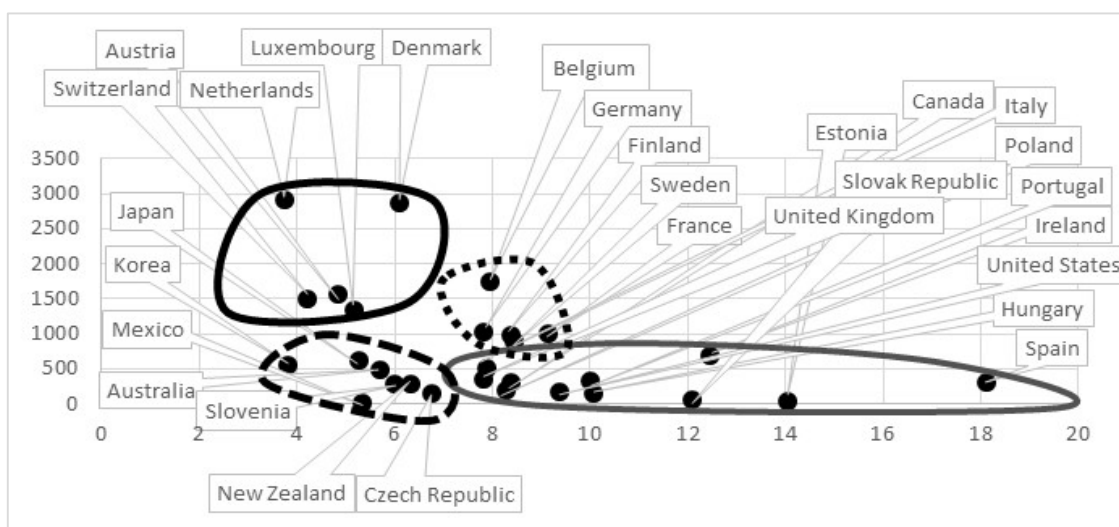


Figure 6. Unemployment (in %) to public expenditure on Active labour market policies per person (in USD) in 2007
 (Source: own calculation based on OECD data)

3 The differences in economies and in their Active labour market policies

If we compare Figures 5 (situation before crisis) and 6 (situation during crisis), we can say many different following reviews:

- The first group of countries (low unemployment – low expenditure) consists mainly countries outside the Europe. Many European countries moved from the largest group (low-low) to the category (high-low). Only Slovenia and Czech Republic stayed in first group, although reference value was slightly exceed it. We can speak (in this group) about three different types of countries. The first type are typical Asian economies (represented by Japan and Korea) based on a Japanese philosophy like Kaizen, Nenko system, Nemawashi, Keiretsu and so on. Employees are expected to work hard and demonstrate loyalty to the firm, in exchange for some degree of job security and benefits, such as housing subsidies, good insurance, the use of recreation facilities, and bonuses and pensions. Wages begin low, but seniority is rewarded, with promotions based on a combination of seniority and ability. Second type of economies are countries that are relatively cut off from the rest of the world (Australia and New Zealand). These countries have relatively protects its market and environment and their economy is dependent upon the raw material resources. Due to distance from other countries, labour mobility is relatively limited. The third group of countries are small open economies dependent on export strategy or on tourism sector (Czech Republic and Slovenia). Uncharacteristically country that is outside of all types of economies is Mexico. Mexico is the country with the most number of immigrants in the world. That's why a lot of people who cannot get a job or want better income migrate to the United States – legally or illegally. By author, this is the main cause of the relatively low unemployment in Mexico and the reason why the government don't have high public expenditure on Active labour market policies.
- The second group of countries (low unemployment – high expenditure) are small developed economies of Europe (Denmark, Luxembourg, the Netherlands, Austria and Switzerland). These countries are focused on Active labour market policies and spends a relatively a lot of money on it. Characteristic feature of these countries is the focus on the sector of services, educational and social system. Rate of unemployment grew up in these countries too, but this growth was about 1% in each country.
- The third group of countries (high unemployment – high expenditure) are large advanced European economies (Germany, France, Belgium) and the North Country (Finland, Sweden). We can distinguish two major factors for relatively high unemployment (it is not so high between 7 – 9%) in these countries. The North Country are relatively isolated from other European countries, that's why are not suitable for foreign investment (connection with the Western or Eastern market is limited). Also we cannot forget concept of the welfare state, which is typically for the other countries in this group too. Another important factor that affects this group is immigration. Germany, France and Belgium are countries with the most immigrants in Europe. People comes to these countries mostly from Eastern Europe and Muslim countries. Therefore, despite the relatively high public expenditures on Active labour market policies has failed to reduce the unemployment rate, because a lot of job positions are occupied by immigrants.
- Fourth, the last group (high unemployment – low expenditure) consists mostly southern and eastern countries, where are a lot of structural problems, that must be solved. In 2009, this group was temporary widened by countries from the first group (low-low) – Canada, USA, United Kingdom and Italy. These countries are big important world economy, which were significantly affected by financial crisis. Due to a decline economic efficiency in these countries, increase cyclical component of unemployment and rate of unemployment increase on average about 3 to 5%. If we look at the unemployment data for the next years, we found that in Canada and the United States unemployment slowly decline. The United Kingdom is at the same level of unemployment and in Italy unemployment still increase to 11%.

In conclusion, we can say that the various groups, that were created on data of the unemployment rate and public expenditures are relatively stable and there are only a minimal changes.

3.1 Active labour market policies in selected countries

There will be given in short basic structure and aims of the Active labour market policies in selected countries from each group. From the first group (low-low) were selected as representative of Japan, the second group (low-high) was chosen Denmark, in the third group (high-high) were selected as representative of Finland and the fourth group (high-low) were chosen Portugal.

Japan

Important in the Japan is the formulation of a comprehensive and strategic labour market policies. What is needed is cooperation between the public sector, employees and employers. Necessity is a collaboration of workers and employers to implement employment policies and in planning and implementation. They are encouraged older who are actively working to extend active working generation. They encouraged young people, women, the elderly and people with disabilities who are willing to work. Importance are also called irregular workers, as is access to professional development. Japanese government support young people's independence, then support women's desire to work, for older workers are important ability to work regardless of age. They help in selecting the work style with confidence and satisfaction, they create a balance between work and private life, provide regional employment and increase support for small and medium-sized enterprises and to build a society that respects the working society. Figure 7 shows, which programs Japan government mostly support in 2007, 2009 and 2011.

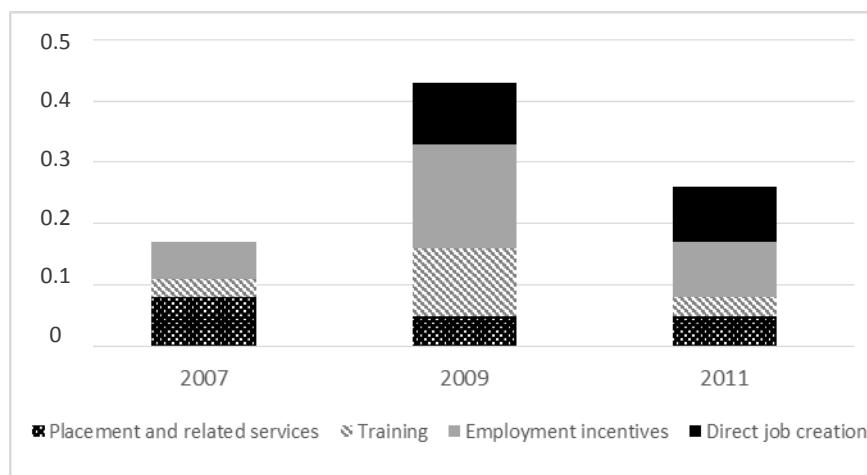


Figure 7. Public expenditure as a percentage of GDP on selected labours programs in 2007, 2009 and 2011 in Japan
 (Source: own calculation based on OECD data)

We can see, changes is Japanese public expenditure on Active labour market policies during reported period. Before the crisis, most expenditure were spent on placement and related services, while during the crisis and after the crisis were most resources devoted to employment incentives and direct job creation. You can also see a sharp increase in expenditure on Active labour market policies and gradual reduction in the post crisis period. If we look at specific programs (Ministry of Health, Labour and Welfare, 2009) we found that in 2009, most funds were spent for support for small and medium enterprises affected by soaring raw material prices to maintain employment (4.45 billion yen) or Enhanced support for businesses to assist job creation in areas facing severe employment/unemployment situations, extensive training for job losers, and job-placement support jointly with prefectural governments (2.49 billion yen) or for job security for non-regular workers (2.1 billion yen).

Denmark

The active employment policy aims at contributing to ensuring a well-functioning labour market. This takes place in the form of a number of measures in relation to both unemployed and employed persons who are looking for a job or wishing to undergo training or education. And it takes place in the form of measures targeted upon both private and public enterprises. The active labour market policy has four overall objectives: to assist jobseekers in finding a job, to offer services to private and public employers who are looking for labour or wish to retain their workforce, to help persons who are receiving social assistance or start help to find a job quickly so that they will be able to support themselves and their families, to help persons who due to reduced working capacity have a special need for assistance in finding a job (Danish Ministry of Employment, 2014).

The employment measures apply to all unemployed persons irrespective of whether they are receiving unemployment benefits, social assistance, start help or sickness benefits. It is a matter of a coherent employment policy with the focus on individualised measures in order to qualify and motivate the individual person to seek and obtain employment on the ordinary labour market. The emphasis is on making work pay. And on ensuring that all unemployed persons are actually available for work. All unemployed persons have a right and duty to receive an activation offer. Figure 8 shows, which programs Danish government mostly support in 2007, 2009 and 2011.

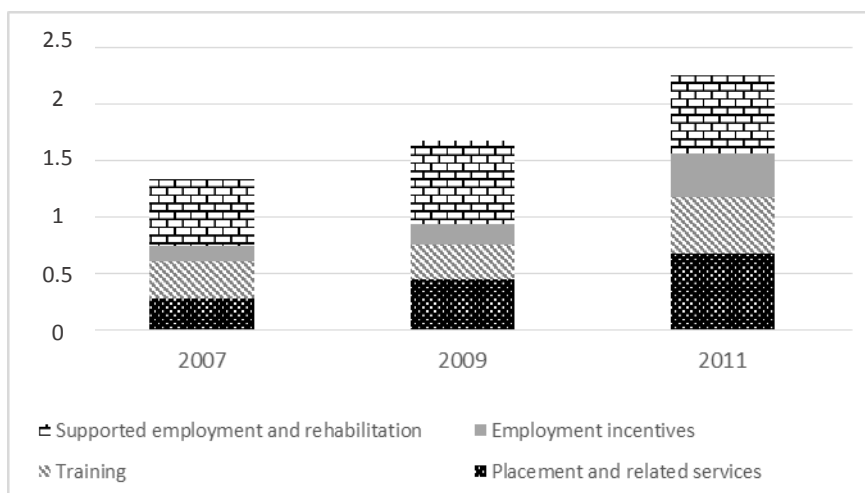


Figure 8. Public expenditure as a percentage of GDP on selected labours programs in 2007, 2009 and 2011 in Denmark
 (Source: own calculation based on OECD data)

In contrast to Japan, Denmark spent most funds for supported employment and rehabilitation, then for placement and related services and training. We can see also the constant increase in public expenditure on Active labour market policies, that can means that the crisis was not in 2011 completely eliminated.

Finland

Unemployed job seekers have several alternatives available to them to improve their chances of finding work. Participation in an employment promotion measure is agreed with the employment and economic development office. Employment promotion measures consist of: labour market training, self-motivated study, work try-outs, preparatory training for the working life, on-the-job training, work and training tryouts, integration measures for immigrants and rehabilitative work activity. (KELA, 2013). Figure 9 shows, which programs Finnish government mostly support in 2007, 2009 and 2011. As is in the case of Denmark, we see increasing expenditure during the whole period. Finland spent funds on all OECD’s monitored programs – for example the program Start-up incentives used from selected country only Finland. The largest part of expenditure spent finish government on training, then on placement and related services.

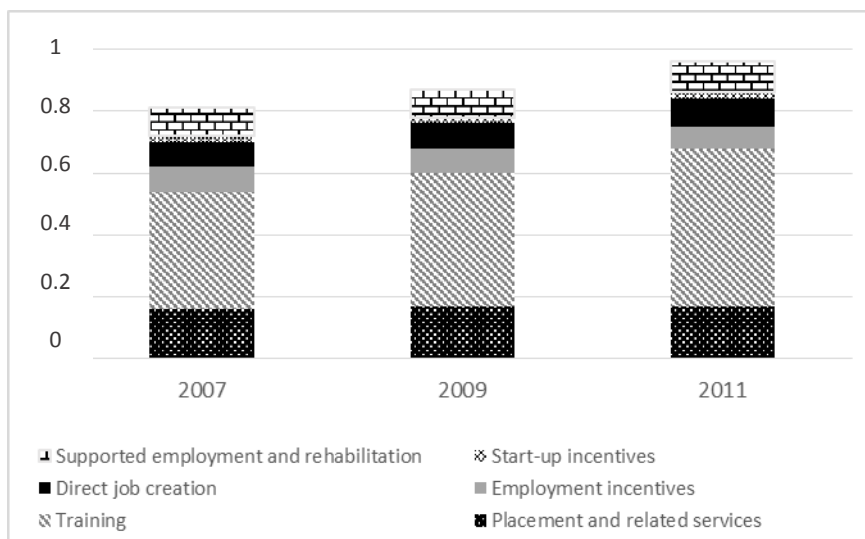


Figure 9. Public expenditure as a percentage of GDP on selected labours programs in 2007, 2009 and 2011 in Finland
 (Source: own calculation based on OECD data)

Portugal

The Memorandum of Understanding envisages Active labour market policies targeting in particular the employability of young people and the disadvantaged categories of people, as well as tackling labour market mismatches. In addition, through policies relating to vocational training, the objective was to address early school leaving and to improve the linkages from education to the labour market. As a response to this, the Portuguese Government introduced short-term stimulus programmes to provide wage subsidies for companies to hire and train job seekers registered with public employment services; whilst youth unemployment was being tackled through a cross-country task force (Šimek and Janíčková, 2014). This information is confirmed by figure 10, which shows public expenditure on Active labour programs in selected years.

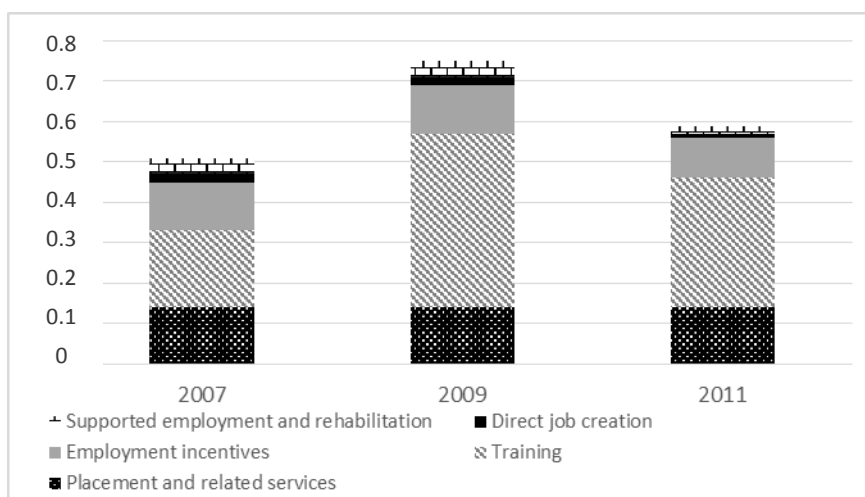


Figure 10. Public expenditure as a percentage of GDP on selected labours programs in 2007, 2009 and 2011 in Portugal
 (Source: own calculation based on OECD data)

Most public expenditure was spent in Portugal for training and then for placement and related services. In contrast with other European countries, public expenditure decreased in 2011, even though rate on unemployment has increased from 10 to 13.4%. Portugal is a country most affected by the crisis and need deep structural reforms.

4 Conclusion

Based on the comparison of rate of unemployment and public expenditure on Active labour market policies per unemployed person, OECD countries were divided into 4 groups. In the first group were countries with low rate of unemployment and low public expenditure. There were included mostly non-European countries. Second group contained countries with low unemployment and high public expenditure. There were mostly small developed European countries (like Denmark, Austria, etc.). In the third group were countries with high unemployment and high public expenditure. There were classified big developed European countries (like Germany) and in last group were countries with high unemployment and low public expenditure. There were mostly southern and eastern European countries.

From each group was a close insight in one country. Based on the above data, can be seen that each country used different program from active labour policy and each country has different success. While in Japan in the post-crisis period decrease public expenditure on Active labour market policies and rate of unemployment; in Denmark, despite the growth of public expenditure, rate of unemployment is still slightly increased. Due to increased public expenditure in Finland, decreased the rate of unemployment. In contrast, in Portugal public expenditure decreased, but the rate of unemployment increased. Unemployment rate affects a number of economic and political measures. We cannot therefore clearly say how much the Active labour market policies help to reduce the unemployment rate. For a clearer conclusions, it is therefore necessary to make deeper analyzes in each country. This Article includes primary knowledge, which will be further worked out in research.

5 Acknowledgment

This paper has been funded by a grant from Students Grant Project EkF, VŠB-TU Ostrava within the project SP2014/113 “Alternative measures of active labour market policy and their application on the chosen groups of unemployment within Moravian-Silesian Region.”

References

- [1] Castells-Quintana, D. and V. Royuela, 2012. Unemployment and long-run economic growth: The role of income inequality and urbanisation. *Investigaciones Regionales*, issue 24, pp. 153-173.
- [2] Clasen J., Clegg, D., Kvist, J., 2012. *European labour market policies in (the) crisis*. Working paper 2012.12. ETUI aibl: Brussels.
- [3] Danish Ministry of Employment. 2014. *Active labour market policy*. [online]. [2014-06-25]. Available from: <http://uk.bm.dk/en/Themes/The%20Danish%20Labour%20Market/Active%20labour%20market%20policy.aspx>.
- [4] KELA - The Social Insurance Institution of Finland. 2014. *Employment promotion measures*. [online]. [2014-06-25]. Available from: <http://www.kela.fi/web/en/employment-promotion-measures>.
- [5] Ministry of Health, Labour and Welfare. 2009. *Employment measures in Post-Financial Crisis Japan*. [online]. [2014-06-25]. Available from: <http://www.mhlw.go.jp/english/policy/affairs/dl/02.pdf>.
- [6] OECD. *OECD Real-time data. Public expenditure and participant stocks on LMP*. [online]. [2014-06-25]. Available from: <http://stats.oecd.org/Index.aspx?DataSetCode=LMPEXP>.
- [7] Šimek M. and L. Janíčková, 2014. Is Active Labour Market Policy Useful? The Case of the Chosen Countries. In: Collective of Authors. *Proceedings of the 2nd International Conference on European Integration 2014*. Ostrava: VŠB-TUO, pp. 667-675.

LABOUR TAXATION AND ITS IMPACT ON ECONOMIC GROWTH IN THE OECD COUNTRIES

Rudolf Macek

*VSB – Technical University of Ostrava, Faculty of Economics, Sokolska trida 33, 701 21 Ostrava, Czech Republic
email: rudolf.macek@vsb.cz*

Abstract

Almost all developed countries integrated in the OECD are currently affected by the crisis of public finances. Therefore they are trying to reduce public spending and increase tax revenues by the growth of the various types of taxes. It is necessary to realize that the negative impact of the labour taxation on the economic growth will be probably compounded through its influence and connectedness to the labour market. From this reason economic policy makers should examine the impact of the personal income taxes and social security contributions on the economic growth. Therefore the aim of the article was to identify the relationship between the labour taxation and the economic growth in OECD countries for time interval 2000-2011. The empirical analysis was based on the methods and tests of a panel regression and the level of taxation was approximated by tax quota and implicit tax rates. In case of both approximators there was proven the negative relationship with the economic growth which means that labour taxation through its connectedness to the labour market is harmful for the economic growth. This harmfulness was with regard with other taxes the highest.

Keywords

Labour Taxation, Economic Growth, Tax Quota, Implicit Tax Rates, OECD.

JEL Classification

E22, H20, C50.

1 Introduction

Taxes and government expenditures represent the fundamental economic instruments which affect the structure and size of national budgets and finally also the economic welfare of individuals. At the same time they can be considered as the particular tool of fiscal policy which is in different way used to create the concrete economic policy or economic background. It is necessary to realize that among the economists and politicians there does not exist the united opinion on the tax policy application and therefore the national tax systems represent the conspicuous and heterogeneous units. These heterogeneous systems usually include the various national particularities and characteristics.

It is also necessary to realize that on the one hand the globalized society is characteristic by many factors which influence the economic growth and logically taxes can be considered as one of them. On the second hand all countries integrated in OECD are also characteristic by crisis of public finances and therefore they are trying to reduce public spending and increase tax revenues. The individual governments try to increase tax revenues by the growth of the various types of taxes. But in case of individual types of taxes it is possible to assume that the negative impact of the labour taxation on the economic growth will be probably compounded through its influence and connectedness to the labour market.

As it is mentioned above tax systems represent the heterogeneous units including a lot of national characteristics and therefore we cannot only work with the statutory tax rates. From this reason we need to use an appropriate approximator of taxation. The most used can be considered the tax quota which represents the ratio of tax revenues to nominal gross domestic product (GDP). But it is necessary to realize that tax quota is characteristic by significant disadvantages which misrepresent the expressed rate of tax burden. Therefore our analysis will be widened by implicit tax rates which remove some of the tax quota shortages.

According to higher stated the aim of the article is to identify the relationship between the labour taxation and the economic growth in OECD countries for time interval 2000-2011. The analysis is based on widened neoclassical growth model of Mankiw, Romer and Weil (1992) and for the

approximation of the level of taxation it will be used traditional tax quota and alternative implicit tax rates in the paper.

2 Integration of taxation in the neoclassical growth theories with the emphasis on labour taxation

In current macroeconomics the growth theories can be considered as fundamental elements which enable us to explain the impact of key variables on long-term economic growth. Taxation represents considerable element influencing the economic growth and also economic welfare which is the top aim of economic policy makers. When evaluating the impact of taxation on economic growth it is necessary to realize that taxation can be integrated into growth theories only through its impact on individual growth variables (Macek, 2012). In case of Mankiw, Romer and Weil's (1992) widened model it is the impact of taxation on investments and capital accumulation or human capital and technology. These particulars channels will be now described with the emphasis on the labour taxation.¹

Daniel and Jeffrey (2013) state that the corporate taxation lowers the return of invested capital and also the structure of capital. The negative relationship between corporate taxation and the inflow of foreign direct investments (FDI) was confirmed by e. g. Quéré et al. (2005). Adina (2009) evaluated the impact of tax policy on entrepreneurs and their localization decisions. The results of the analysis show that the taxation plays an important role in the investor's decision making when it comes to investment localization. Further according to Overesch and Wamser (2010) the corporate taxation impacts two basic aspects of supranational activities. First one is the localized decision and the second one is decision about making business. They argue that corporate taxation has negative impact on both of these decisions. Machová, Kliková and Kotlán (2013) evaluated the tax policy horizon in case of corporate taxation. They found out that the effect of taxation is strongest in case of a two-year lag.

Decoster and Haan (2010) state that labour taxation impacts the living standards of workers and also their welfare. The labour taxation rate is the crucial element of the labour taxation effect which can be negative and positive. Negative effect is based on the decrease of the disposable income and also on the avoidance of the capital taxes payment. This negative effect can be also visible in reduction of entrepreneurial activities (Ie, 1982). Positive effect means the increase of working effort with the aim to achieve the level of income before the taxation (Lubian and Zarri, 2011). Brett and Weymark (2008) state that individual income taxes also influence the savings creation by two channels. First one is the reduction of income and the intended savings; the second channel is through the reduction of savings yield. According to Leibfrits, Thornton and Bibbee (1997) savings represent the inevitable factor of economic growth and also the key restriction of investment realization. The main reason for making savings is the determination of individual and desiderative ratio between the current and future consumption. The individual income taxation changes this ratio and preferences of individual subjects. Economic-policy authorities should not focus only on the household's savings but also on the national savings. The important condition is that the tax exceptions and allowances have to increase the private savings more than they reduce the revenues of public budgets (Engen, Gale and Scholz, 1994).

The relationship between labour taxation, efficiency and economic growth was explored by e. g. Jorgenson and Yun (2013). Alesina et al. (1999) state that the main reason of negative relationship between labour taxation and economic growth is that the growth of labour tax rate leads to the employees' effort to get salary increase at a certain level before the taxation (potentially it also leads to the decrease of work supply). By this a pressure is created to lower the company's profits and consequently also their investments. Feld and Kirchgässner (2001) argue that high labour taxation

¹ Today it is very often discussed the issue of taxation uncertainty, but this is not the filling of our article. For more information see e. g. Kotlán (2013).

discourages companies from localizing their investments and at the same time it affects the structure of capital accumulation.

Capital allocation or entrepreneur's investment decisions can be influenced also by the consumption taxes. Salanié (2003) states that when a risk is absent, this type of taxation has the same impact on investments as the labour taxes.

Human capital and technological advance represent the factors of long-run economic growth in the economies which have reached the stable state. Lin (2001) confirms that a positive dependency can exist between the economic growth and taxation if the revenues from taxes are used only for the human capital accumulation. Anyway, it is necessary to realize that human capital is typical for its illiquidity, it is highly risky and it presents insufficient level of certainty (Jacobs, 2002). Especially due to these reasons the financial institutions provide funds for investments into human capital only in a small rate. The most important motivation element for the employer to realize the investments into human capital is the tax reliefs (Jacobs, 2007).

3 Empirical analysis: methodology, data, procedure and results

The aim of the article is to identify the relationship between the labour taxation and the economic growth in OECD countries for time interval 2000-2011. According to higher stated it is clear that taxation affect economic growth through its influence on individual growth variables. These individual growth variables are investments and capital accumulation or human capital and technology.

In harmony with Barro and Sala-i Martin (2004) approach, there will be analyzed the homogenous group of countries. For homogenous group of countries can be considered countries with e. g. similar production functions, institutional parameters etc. This approach is fulfilled in our analysis, where the basic criterion for homogeneity is the country's membership in OECD.² Also due to the quality data sources it is possible to assume acceptable comparability.

The information about the GDP amount per capita in purchasing power parity and government spending were drawn from OECD database National Accounts Statistics. The data about the amount of ratio of investments on GDP are acquired from database Penn World Table (Penn World Table – database 1950 – 2011). Information about human capital was acquired from OECD Education at Glance. Data about tax quota were from OECD Tax Statistics and information representing implicit tax rates is from database of Eurostat (2014).

The analysis is based on panel regression within which exist time series for each entity used within sectional selection for time period 2000-2011. Main econometric program is E-views, version (7), which enables its users to execute all common econometric tests such as it is mentioned by e.g. Wooldridge (2009).

Now it is necessary to introduce the chosen approximators of taxation, concretely tax quota and implicit tax rates. Tax quota represents probably the most used indicator of measuring tax burden which is very often used in more sophisticated analysis. Tax quota presents the ratio of tax revenues to nominal gross domestic product (GDP) (Macek and Šporková, 2013). The categorization and classification of total tax quota into individual partial quotas is more rather empirical than technical issue and it is usually executed according to methodology and classification of OECD. Based on this classification it is possible to determine partial tax quotas for individual types of taxes: (1100) personal income taxes; (1200) corporate income taxes; (2000) social security contribution; (4000) property taxes; (5120) value added tax; (5120) other taxes on consumption. Tax quota as the

² It is evident that OECD can be understood as a divergent group of countries. However in case of the e.g. European Union countries the problem can be caused by a limited number of observations and also the fact that the tax systems are harmonized and coordinated to some extent. It is necessary to realize that other more homogenous grouping of countries is not available. Also Barro and Sala-i-Martin (2004) state that groups of countries where the growth theory is valid (so called conditional convergence), exist within the growth theory; such group of countries can be considered the OECD countries.

approximator of taxation is characteristic by some shortages e. g. not incorporating shadow economy; in meaning of Laffer curve it does not really have to reflect the real tax burden; not incorporating time delay between the real tax liability and real tax payment or administrative costs of tax payments (Kotlán and Machová, 2012; Macek, 2012; Arnold, 2008). Therefore our analysis will be widened by implicit tax rates. Implicit tax rates represent an appropriate indicator for comparison of effective tax burden because it does not take into consideration only the level of statutory rates but also other aspects of tax systems. These tax rates also do not relate their tax collection to the GDP as a base, but to the activity with the tax is directly affected. By this way it can be expressed the real tax burden of labour (ITRL), capital (ITRC) and consumption (ITRc). The rates are calculated according to harmonized systems of national and regional accounts – ESA95 (European Commission, 2013).

Econometric analysis is based on Mankiw, Romer and Weil's model (1992) and currently, this modified model belongs among the most used ones because it widens the basic neoclassical growth model by human capital. According to this model it is possible to write the next mathematical formula shown in equation (1).

$$GDP_{it} = \alpha + \hat{\beta}_1 RINV_{it} + \hat{\beta}_3 HUM_{it} + \hat{\beta}_4 GOV_{it} - \hat{\beta}_5 TAX_{it}^* + \hat{u}_{it}. \quad (1)$$

$i = 1 \dots 34; t = 2000 \dots 2011$

* (TQ_{it}; ITR_{it})

Individual variables of the analyzed model can be written down as:

- **GDP** - gross domestic product growth per resident expressed by the amount of real GDP per capita in purchasing power parity in USD (dependent variable);
- **RINV** - capital accumulation approximated by indicator of proportion of real investments to GDP, expressed in purchasing power parity per one resident;
- **HUM** - human capital which is approximated by proportion of people with a minimum of secondary education onto total manpower;³
- **GOV** – total government spending as a % GDP;
- **TAX** - taxation rate approximated by tax quota (TQ) and implicit tax rates (ITR).

The regression analysis in this article is based on a panel data analysis which includes time series for each space unit (Wooldridge, 2009). Resulting number of observation is therefore equal to the product of number of analyzed periods and number of cross-sectional units. Within the panel regression the pool data model was utilized. Generally, there are three basic models for estimating parameters in econometric regression models, where Wooldrige (2009) states that when creating econometric regression models the method of least squares (OLS) is used. This method was also used in the case of analysis of Mankiw, Romer and Weil (1992).

Firstly, the individual variables entering the analysis were transformed into logarithms. Due to that, it is possible to interpret the resulting coefficients, if some independent variable changes by 1 % this fact will lead to the growth or decrease of GDP growth rate by the amount of estimated coefficient.

Then the stationarity of time series was tested, where it is tested the hypothesis of existence of single root. Time series stationarity of individual variables was explored by tests of Levin, Lin and Chu (2002); Im, Pesaran and Shin (2003) and ADF and PP tests according to Maddalu and Wu (1999). Stochastic instability was observed with GDP, GOV, TQ (2000) and ITRL, ITRc. Due to this, these individual variables were converted to first differences which have already shown stationarity.

Wooldridge (2009) states that in the case of utilizing the macroeconomic data in the situation where the cross-sectional units are states, the model with fixed effects seems to be more appropriate. At the same time, when the group of member states is fixed and concurrently the differences among

³ Within international classification of education levels ISCED, it is level ISCED3, ISCED4 and ISCED5.

individual member countries are relatively constant in time, then the individual models should also be estimated with fixed effects. Appropriateness of utilizing fixed effects was tested by Hausman test.

All models were also estimated by White Period method which eliminates possible occurrence of heteroskedasticity and autocorrelation, where it utilizes asymptotic covariance matrices without changing the estimation method.

Table 1. Results of the regression analysis of the labour taxation influence approximated by tax quota onto economic growth in OECD countries (2000-2011)

Number of observations	330	Economic verification	
Adjusted R ²	0,22		
F-statistics	14,56***	Theory	Empiric
C ₀	-0,14**		
Ln_RINV	0,05(4,09)***	+	+
Ln_HUM	0,007(1,03)	+	+
D_Ln_(GOV(-1))	-0,13(-2,81)*	+	-
Ln_1100(-1)	-0,02(-4,38)***	-	-
Ln_1200(-1)	-0,01(-2,36)**	-	-
D_Ln_(2000)	-0,18(-3,21)***	-	-
Ln_5110+5120	0,04(3,16)***	-	+

Note: *, **, *** represent the significance level at 10 %, 5 % and 1 %.

Source: own computation.

Table 1 represents the results of the analysis of the labour taxation impact approximated by tax quota on the economic growth in OECD countries. It is clear that the model as a whole is statistically significant at 1 % level of significance with the coefficient of determination at 22 %. Anyway, it is necessary to realize that the level of coefficient of determination is in the case of panel data generally at lower level and also depends on the analyzed area. Empirical tax study of Kotlán, Machová and Janíčková (2011) works with the coefficient of determination at a similar level.

It is visible that capital accumulation is statistically significant at 1 % significance level and there was confirmed the positive relationship with the economic growth. This fact can be connected with conclusions of basic neoclassical growth model. In this model the growth of capital accumulation (represented by increased savings or investment activity) is the basic source of economic growth up to the achievement of stable state. Based on this, it is possible to assume that OECD countries have not reached the stable state yet.

Human capital is not statistical significant, but this variable was kept in the model as a basic growth “controlled” variable. It is also clear that human capital is positively connected to the economic growth.

In case of government expenditures it is possible to state that they are lagging by one period in the model with statistical significance at 10 % significance level. The econometric significance of government spending time-lag is justified because the change of government spending level or structure is one of the basic economic-policy maker’s decision. This decision is accompanied by certain time-lag. In this case there was not proven the positive theoretical assumption. This fact can be probably explained by the government expenditures structure. Total government expenditures involve in themselves productive and unproductive government spending. Kneller, Bleaney and Gemmell (1999), Drobiszová (2013) or Machová (2013) rank among the unproductive spending: the pension spending, social security contributions and expenditures for recreation, culture and religion. Productive spending consists of e.g. spending on education, healthcare, defense and infrastructure. From their analysis it is evident that especially unproductive expenditures have a significant negative impact on the economic

growth. Therefore, it is possible to say that within the total government expenditures prevail the unproductive spending which ultimately lowers the growth rate.

In case of individual income taxes measured by tax quota it is evident that this type of taxation reduces the economic growth and then gradually also welfare and the standard of living of working individuals. It is necessary to realize that this type of taxes reduces the creation of savings as the basic source of investments in the neoclassical growth model. Subsequently there is also a decrease of disposable sources which finance investments and by this the number of realized investments also falls. The next impact of this taxation is through its connectedness to the labour market. The growth of labour taxation causes the decrease of labour supply which increases the unemployment. The unemployment growth is accompanied by increased pressure on the passive unemployment policy and sources which finance it. Concurrently, the increase of labour taxation leads to the employees' effort to receive a salary before the taxation. This leads to the increase of labour costs and to the creation of pressure to lower the enterprises' profits. Due to this, the enterprises abandon the investments localization and also the structure of capital accumulation changes. Also the increase in labour cost causes the substitution of labour by capital and decreases marginal product of capital. Therefore from the long-term view it comes to the growth of unemployment, which is also connected with a low rate of product growth.

From the analysis results it is also visible that corporate taxation reduces the economic growth in the OECD countries. Increase of this type of taxation expressed by tax quota reduces the capital return, inflow of FDI or investments into human capital or technology.

Social security contributions are also in negative relationship with the economic growth. This result can be explained by same way as in the case of individual income taxes. Individual income taxes together with the social security contributions represent the labour cost or the labour taxation. Therefore it is possible to state that labour taxation reduces economic growth in OECD countries.

The mutual comparison of absolute impact of income taxes on the economic growth the analysis results indicate that social security contributions are the most harmful for economic growth. Then follow the personal income taxes and corporate taxes.

For completeness it is necessary to state that property taxes were statistically insignificant and therefore these taxes were removed from the analysed model. In case of indirect taxes represented by categories (5110) and (5120) it is visible that there was not confirmed the negative relationship with the economic growth. This can be caused by the uniting of these categories together and also by the tax quota which is characteristic by its shortages which can distort the impact of this tax type.

Table 2. Results of the regression analysis of the labour taxation influence approximated by implicit tax rates onto economic growth in OECD countries (2000-2011)

Number of observations	184	Economic verification	
Adjusted R ²	0,41		
F-statistics	6,97***	Theory	Empiric
C ₀	-0,64***		
Ln_RINV	0,19(4,81)***	+	+
Ln_HUM	0,04(1,08)	+	+
D_Ln_(GOV(-1))	-0,05(-0,84)	+	-
D_Ln_(ITRL(-1))	-0,15(-1,81)**	-	-
Ln_(ITRC(-1))	-0,04(-3,08)***	-	-
D_Ln_(ITRc(-1))	0,19(2,61)***	-	+

Note: *, **, *** represent the significance level at 10 %, 5 % and 1 %.

Source: own computation.

Table 2 shows the results of regression analysis of labour taxation impact expressed by implicit tax rates on the economic growth. The model as a whole is again statistically significant at 1 % significance level with the coefficient of determination at 41 %. The difference between coefficients of determination of individual models most probably lies in the construction of individual indicators of taxation and in the amount of factors the approximator reflects.

It is also visible the positive relationship between capital accumulation and economic growth from the table. This variable is statistically significant at 1 % significance level.

Human capital is again statistically insignificant with positive relation with the economic growth. Despite the statistical insignificance this variable was kept in the model as a basic growth “controlled” variable.

Government expenditures are in this case statistically insignificant, but it is necessary to realize that taxes represent the most important source of public budgets and from the view of complexity evaluation of their influence it is necessary to incorporate government spending into the analysis. Therefore this variable was also kept in the model.

From the table it is also clear that all types of implicit tax rates are lagging by one period. Implicit tax rates on labour are statistically significant at 5 % significance level and there was proven the negative relationship with the economic growth. This type of taxation reduces savings and subsequently the realized investments and also has a negative impact on the labour market. From these reasons the relationship between implicit tax rates on labour and economic growth is negative. Implicit tax rates on capital are also negatively connected to the economic growth, but implicit tax rates on consumption are not in harmony with the economic theory. This result is same as in the first analyzed model.

It is also clear that labour taxation is the most harmful to the economic growth, followed by corporate taxation.

4 Conclusion

Almost all developed countries integrated in OECD are currently affected by the significant budget crisis within which they have problems with repayment of their short-term and long-term liabilities. Due to this, the governments are exposed to the increased supervision from the financial markets and therefore they are forced to consolidate public budgets. The public finance crisis is usually solved by two concrete channels – channel of reducing the public spending and the channel of increasing tax revenues by the growth of the various types of taxes. Anyway, it is important to realize that the negative impact of the labour taxation on the economic growth can be probably amplified through its connectedness to the labour market. Therefore the aim of the article was to identify the relationship between the labour taxation and the economic growth in OECD countries for time interval 2000-2011. The empirical analysis was based on the methods and tests of a panel regression. At the same time a lot of tax studies exclusively use only tax quota as the main approximator of the taxation. From this reason our analysis was widened by implicit tax rates.

In case of capital accumulation there was proven the theoretical assumption in both analysed models. Since this results were statistically significant, it is possible to state that the OECD countries have not reached the stable state yet.

Human capital was not statistically significant, but this variable was kept in both analysed models because it represents the basic growth “control” variable. The results showed that human capital approximated by the ratio of at least secondary educated people on whole manpower is really the source of long-term economic growth.

The results of government spending impact on the economic growth were not in harmony with the economic theory. These results are probably connected with the structure of total government spending where the unproductive spending predominate. Unproductive spending are connected with financing so called welfare state resp. with spending on social security, which in the final consequence lowers the rate of economic growth.

Within the tax burden approximated by tax quota the negative relation between economic growth and personal income taxes, corporate taxation and social security contributions was verified. Therefore, it can be stated that these basic types of taxes lower product growth rate through their impact on capital accumulation, inflow of FDI, creation of savings or labour market. The most harmful to the economic growth are social security contributions followed by personal income taxes and corporate taxes. In case of indirect taxes there was not confirmed the negative theoretical assumption.

With taxation approximated by implicit tax rates the negative relationship was confirmed in case of implicit tax rates on labour and capital. The results of implicit tax rates on consumption impact were not in harmony with the economic theory. In this model there were also the most harmful to the economic growth implicit tax rates on labour followed by implicit tax rates on capital.

According to higher stated it is possible to say that labour taxation (personal income taxes + social security contributions) reduces economic growth in the OECD countries. There was also proven the hypothesis that labour taxation through its connectedness to labour market is harmful for economic growth. This harmfulness is with regard with other taxes the highest.

5 Acknowledgement

This paper was financially supported by the VŠB - Technical University SGS grant project No. SP2014/145 “The Influence of Structure of Government Spending and Taxes in Selected Sectors and Economic Growth in the Czech Republic”.

References

- [1] Adina, M., 2009. The Impact of Taxation on the Investment Localization Decision in the Context of Globalization. *Analele Stiintifice ale Universitatii Alexandru Ioan Cuza din Iasi*, vol. 56, issue 1, pp. 133-142.
- [2] Alesina, A. et al., 1999. Fiscal Policy, Profits and Investment. *National Bureau of Economic Research*, Working Paper No. 7207.
- [3] Arnold, J., 2008. Do Tax Structures Affect Aggregate Economic Growth? Empirical Evidence from a Panel of OECD Countries. *OECD Economic Department*, Working Papers No. 643
- [4] Barro, R. and X. Sala-i-Martin, 2004. *Economic Growth*. 2nd ed. London: The MIT Press.
- [5] Brett, C. and J. Weymark, 2008. Optimal Nonlinear Taxation of Income and Savings without Commitment. *Vanderbilt University Department of Economics*, Working Paper No. 0805.
- [6] Daniel, B. and P. Jeffrey, 2013. Investment Taxation and Portfolio Performance. *Journal of Public Economics*, vol. 97, issue 1, pp. 245-257.
- [7] Deoster, A. and P. Haan, 2010. Empirical Welfare Analysis in Random Utility Models of Labour Supply. *German Institute for Economic Research*, Working Paper No. 1074.
- [8] Drobiszová, A., 2013. The Impact of Productive and Unproductive Government Expenditure on Economic Growth in OECD Countries. In: Z. Machová, eds. *Proceedings of the 3rd International Scientific Conference: TAXES IN THE WORLD*. Ostrava: VŠB, pp. 37-48.
- [9] Egen, E., Gale, W. and J. Scholz, 1994. Do Saving Incentives Work? *Bookings Papers on Economic Activity*, vol. 25, issue 1, pp. 85-190.
- [10] European Commission. *Taxation Trends in European Union 2013*. [online]. [2014-06-06]. Available from: http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/index_en.htm.

- [11] Eurostat. *Statistics*. [online]. [2014-06-06]. Available from: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database.
- [12] Feld, L. and G. Kirchgässner, 2001. The Impact of Corporate and Personal Income Taxes on the Location of Firms and on Employment: Some Panel Evidence for Swiss Cantons. *Center for Economic Studies*, Working Paper No. 455.
- [13] Im, K., Pesaran, H. and Y. Shin, 2003. Testing for Unit Roots in Heterogeneous Panels. *Journal of Econometrics*, vol. 115, issue 1, pp. 53–74.
- [14] Jacobs, B., 2007. Optimal Tax and Education Policies and Investments in Human Capital. In Hartog, ed. *Human Capital: Theory and Evidence*. Cambridge: Cambridge University Press, pp. 212-232.
- [15] Jacobs, B., 2002. Optimal Taxation of Human Capital and Credit Constraints. *Tinbergen Institute*, Discussion Paper No. 02-044/2.
- [16] Jorgenson, D. and K. Yun, 2013. Taxation, Efficiency and Economic Growth. *Handbook of Computable General Equilibrium Modelling*, vol. 1, pp. 659-741.
- [17] Kneller, R., Bleaney, M. and N. Gemmell, 1999. Fiscal Policy and Growth: Evidence from OECD Countries. *Journal of Public Economics*, vol. 74, issue 2, pp. 171-190.
- [18] Kotlán, I., 2013. Level and Volatility of Taxes: The Impact on Economic Growth. In: Z. Machová, eds. *Proceedings of the 3rd International Scientific Conference: TAXES IN THE WORLD*. Ostrava: VŠB, pp. 69-82.
- [19] Kotlán, I. and Z. Machová, 2013. The Issue of Using Tax Quota in the Growth Empiricism. In: M. Tvrdoň, I. Majerová, eds. *Proceedings of the 10th International Scientific Conference: Economic Policy in the European Union Member Countries Selected Papers*. Karvina: Silesian University, pp. 145-160.
- [20] Kotlán, I. and Z. Machová, 2012. Vliv zdanění korporací na ekonomický růst: selhání daňové kvóty? *Politická ekonomie*, vol. 60, issue 6, pp. 743-763.
- [21] Kotlán, I., Machová, Z. and L. Janíčková, 2011. Vliv zdanění na dlouhodobý ekonomický růst. *Politická ekonomie*, vol. 59, issue 5, pp. 638-658.
- [22] Leibfritz, W., Thornton, J. and A. Bibbee, 1997. Taxation and Economic Performance. *OECD Economics Department*, Working Paper No. 176.
- [23] Levin, A., Lin, Ch. and Ch., Chu, 2002. Unit Root Tests in Panel Data: Asymptotic and Finite-Sample Properties. *Journal of Econometrics*, vol. 108, issue 1, pp. 1-24.
- [24] Lin, S., 2001. Taxation, Human Capital Accumulation and Economic Growth. *Japanese Economic Review*, vol. 52, issue 2, pp. 185-197.
- [25] Lubian, D. and L. Zarri, 2011. Happiness and Tax Morale: An Empirical Analysis. *University of Veroa*, Working Paper No. 04.
- [26] Macek, R., 2013. Is Level of Corporate Taxation Equally Important in all Countries? In: Z. Machová, eds. *Proceedings of the 3rd International Scientific Conference: TAXES IN THE WORLD*. Ostrava: VŠB, pp. 95-102.
- [27] Macek, R., 2012. The Impact of the Corporate Tax Quota and Implicit Tax Rate on Capital on Economic Growth in Selected Countries. In: Z. Machová, I. Kotlán, eds. *Proceedings of the 2nd International Scientific Conference: TAXES IN THE WORLD*. Ostrava: VŠB, pp. 67-83.
- [28] Macek, R. and Z. Šporková, 2013. Does the Corporate Taxation Reduce Economic Growth? In: Z. Machová, N. Uhrová, eds. *Proceedings of the 11th International Scientific Conference:*

Economic Policy in the European Union Member Countries Selected Papers. Ostrava: VŠB, pp. 197-204.

- [29] Maddala, G. and S. Wu, 1999. A Comparative Study of Unit Root Tests with Panel Data and a New Simple Test. *Oxford Bulletin of Economics and Statistics*, vol. 61, issue 0, pp. 631-652.
- [30] Machová, Z., 2013. Pro-growth Effects of (Un)productive Government Spending in the OECD. In: Z. Machová, eds. *Proceedings of the 3rd International Scientific Conference: TAXES IN THE WORLD*. Ostrava: VŠB, pp. 103-112.
- [31] Machová, Z., Kliková, Ch. and I. Kotlán, 2013. Corporate Tax Changes: When is Fiscal Policy Effective? In: Z. Machová, eds. *Proceedings of the 3rd International Scientific Conference: TAXES IN THE WORLD*. Ostrava: VŠB, pp. 1-12.
- [32] Mankiw, G., Romer, D. and D. Weil, 1992. A Contribution to the Empirics of Economic Growth. *The Quarterly Journal of Economics*, vol. 107, issue 2, pp. 407-437.
- [33] OECD. *Education at Glance*. [online]. [2014-06-06]. Available from: https://www.oecd-ilibrary.org/education/education-at-a-glance_19991487.
- [34] OECD. *National Accounts Statistics*. [online]. [2014-06-06]. Available from: https://www.oecd-ilibrary.org/economics/data/national-accounts-at-a-glance_naag-data-en.
- [35] OECD. *Tax Statistics*. [online]. [2014-06-06]. Available from: https://www.oecd-ilibrary.org/taxation/data/revenue-statistics_ctpa-rev-data-en.
- [36] Overesch, M. and G. Wamser, 2010. The Effects of Company Taxation in EU Accession Countries of German FDI. *Economics of Transition*, vol. 18, issue 3, pp. 429-457.
- [37] Penn World Table. *Databases*. [online]. [2014-06-06]. Available from: https://pwt.sas.upenn.edu/php_site/pwt_index.php.
- [38] Quére, A. et al., 2005. How Does FDI React to Corporate Taxation? *International Tax and Public Finance*, vol. 12, issue 5, pp. 583-603.
- [39] Salanié, B., 2003. *The Economics of Taxation*. Cambridge: MIT Press.
- [40] Steuerle, E., 1982. Is Income From Capital Subject To Individual Income Taxation? *Public Finance Review*, vol. 10, issue 3, pp. 283-303.
- [41] Wooldridge, J., 2009. *Introductory Econometrics: A Modern Approach*. Mason: South-Western CENGAGE Learning.