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Part II

September 16-18, 2014
Ostravice, Czech Republic

Silesian University in Opava
School of Business Administration in Karvina

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

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September 16-18, 2014

Ostravice, Czech Republic

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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 Tvrdon
Vice-Dean of Science and Research
Silesian University in Opava
School of Business Administration in Karvina

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POTENTIAL IMPACT OF THE FAMOUS PIERRE FABRE CASE ON E-BUSINESS IN THE EU – THE EUROPEAN SECRET MESSAGE ABOUT THE SIGNIFICANCE OF DOMAIN NAMES

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Abstract
Three years have passed since the famous decision of the European Court of Justice *C-439/09 Pierre Fabre* which shed new light on the area of online distribution. Conventionally, this case is presented as a hallmark and touchstone regarding the evolution of the approach of the European Commission and Court of Justice of the European Union to vertical contractual arrangements involving intellectual property and, allegedly, as a guidance for the assessment and evaluation of selective distribution systems based on Art. 101 of the TFEU. However, the entire *Pierre Fabre* case has more layers, deals with conceptual issues of a more economic approach as well as with the general EU attitude to e-commerce, etc. The forensic and investigative employment of well accepted sources from related areas is instructive, namely the exploration of an (anti) competition case about online distribution, *Pierre Fabre*, which is informative about the perception of domain names by the EU organs. The goal of this article is to explore, through meta-analysis, points which are extremely valuable for business conduct in the EU, such as the indirect and implied recognition of the function and importance of domain names for e-advertising, e-marketing and even e-commerce in the EU. In addition, it indicates that the cutting of this competition law Gordian knot was done based on imperfect knowledge about IS/IT and is hardly reconcilable with the Europe 2020 Initiative.

Keywords
Domain Name, E-Business, European Union, On-line Distribution, Pierre Fabre Case, Vertical Restrictions.

JEL Classification
D86 , K21, L21, L42, O32, O34.

1 Introduction

Information systems and information technologies ("IS/IT") are hallmarks of our post-modern, global society and successful business conduct depends strongly on their appropriate use. The *platform par excellence* for e-business, and in particular e-commerce, is the supra net of e-nets, the Internet (MacGregor, 2013). Structurally, the Internet is hierarchically composed of large domains called Top Level Domains ("TLDs"), while each of the TLDs includes a number of domains carrying domain names. Technically, a domain is the e-sphere around one or more e-devices, typically computers, sharing a common communications address expressed as a code under Internet Protocol, either in 32 bits version 4 or in 128 bits version 6 using 8 groups of 16 bits separated by a double column ":" (MacGregor, 2012a). Thus, a domain is an e-platform for a set of related web pages called a web site, which is hosted on at least one web server accessible via the Internet or a private local area network ("LAN"). All publically accessible web sites constitute the World Wide Web and they, resp. their domains, have a numeric code IP v4 or IP v6 address convertible through the Domain Names System ("DNS") into a verbal form called domain names. The practical implication is that virtually all businesses in the EU use the Internet and are present on the Internet, i.e. typically they "have" at least one domain with a preferably attractive domain name and they use it for their web site, i.e. for the their e-business and especially its selling oriented part, e-commerce. Businesses clearly rely on customers shopping online and e.g. more than 10% of all retail sales are made over the Internet in several EU member states and by 2020 this proportion should double (Gilbert, 2013).

There are insignificant differences in the perception of the impact of domain names on e-commerce from the perspectives of businesses in the EU, but there are still important differences in perceiving the impact of domain names on e-commerce from the perspective of customers in the EU (MacGregor, 2013). There are emerging trends regarding the preferences of businesses from the EU regarding the ideal TLD for their domain and web site (MacGregor, 2012b).

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The EU is aware about the importance of IS/IT for a sustainable development and a stronger integration and makes it clear that the e-format is vital for the single internal market and helps to make the EU rank among the top two or three most competitive and dynamic knowledge-based economies in the world, if not at the actual forefront. The underlying concepts, which followed the priorities and wording of the Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce in the Internal Market ("Directive on e-commerce), can serve as an example *par excellence.*

For the European integration, the success of the internal market is critical. Thus, the EU, especially its integration engines, the European Commission and the Court of Justice of the EU, are vigorously supporting instruments promoting the single internal market and appropriate competition on it and fighting against instruments hurting and hampering the internal market and unduly restraining competition on it. One of the principal reasons is the commonly shared opinion that appropriate competition encourages businesses to offer consumers goods and services on the best terms, to be more effective and efficient, to engage in innovation process' and to try to reduce prices and increase quality. The protection part of the EU competition policy, the EU antitrust policy, rests on two pillars explicitly proclaimed in the primary EU law, i.e. Art. 101 and Art. 102 of the Treaty on the functioning of the EU ("TFEU") with a consolidated version published in the Official Journal C 326 , 26/10/2012 P. 0001 - 0390.

The general prohibition is set by Art. 101 (1) TFEU, which prohibits agreements or collusion by two or more businesses, which may affect trade between Member States and which have as their object or effect the restriction of competition within the internal market. This ban targets especially horizontal cartel agreements fixing prices, with the infamous Resale Price Maintenance ("RPM") clause or splitting the market. The individual exemption from the general ban is set by Art. 101 (3) TFEU, which allows for escaping the application of Art. 101(1) TFEU if four cumulative conditions laid down in this provision are met. Art. 102 TFEU prohibits the abuse of a dominant position. The European Commission is empowered with large duties in this arena, nevertheless modern EU antitrust law is decentralized and a delegation *sui generis* to national antitrust authorities is established.

The Council Regulation (EC) No 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty, newly Art. 101 and Art. 102 TFEU („Regulation on the implementation of antitrust rules") explicitly states in Art. 1(2) that agreements, decisions and concerted practices caught by Art. 101(1) TFEU which satisfy the conditions of individual exemption pursuant to Art. 101(3) TFEU are not prohibited and that no prior decision to that effect is required. According to Art. 2 of the Regulation on the implementation of antitrust rules, the burden of proof with respect of Art. 101(1) TFEU rests on the party or authority alleging the infringement, typically the European Commission or the national antimonopoly office, while the burden of proof with respect of Art. 101(3) TFEU is borne by the business claiming the benefit of the exemption. Art. 3 of the Regulation on the implementation of antitrust rules specifically covers the application of national competition law along with EU competition law by national authorities and courts. In addition, according to Art. 3(2) of Regulation on the implementation of antitrust rules, the application of national competition law may not lead to the prohibition of agreements which may affect trade between Member States but which do not restrict competition within the meaning of Art. 101(1) TFEU, or which fulfill the conditions of Art. 101(3) TFEU. Further, the Commission Regulation (EU) No 330/2010 of 20 April 2010 provides a block exemption from the application of Art, 101(1) TFEU to vertical agreements, which do not cover more than 30% of the relevant market, which do include hardcore restrictions, and which are entered into by businesses with a total annual turnover not exceeding EUR 50 million.

With respect to the interpretation and application of Art. 101 and Art. 102 TFEU and related provisions from EU primary, secondary, and even supplementary law, there is an ongoing discussion about models and schools to be followed or rejected, about post-Chicago lines as well as ordoliberal lines, but there are not any doubts that the EU antitrust law dominates the scenery and the antitrust

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law of EU members mirrors it. Thus, ultimate decisions in cartel cases by the CJ EU have the potential to become EU as well as national precedents. Exactly so is the instance of the decision in *C-439/09 Pierre Fabre*, which is heavily quoted and commonly presented across the EU as a decision clearly prohibiting the inclusion of a clause banning online sales into vertical agreements. Reportedly, according to *C-439/09 Pierre Fabre* by operation of Art. 101 (1) TFEU, a manufacturer is not allowed to agree with its selected distributors that they will not use online sales of the product, unless the public law requires sales in brick-and-mortar premises and/or in the presence of professional experts, e.g. medications in a pharmacy. Occasionally, some comments deal as well with the *C-439/09 Pierre Fabre* impact on the interpretation and application of the exemption included in Art. 101 (3) TFEU, i.e. whether the prohibition of such online ban clauses cannot be overcome via a block exemption for vertical agreements.

However, *C-439/09 Pierre Fabre* as a precedential and further referred post-Lisbon Treaty case of the CJ EU means much more, because it shows the critically important insight and attitude of the CJ EU towards e-business, domain names and their significance, i.e. it indicates with a strong likelihood *quo vadis* of EU and EU law. The capacity of the CJ EU to steer the wheel and to determine the legal framework and evolution, e.g. while using the self-made doctrine of supremacy and direct effect, is famous, but it is famous also for its unwillingness to rethink and to review its previous positions (Svetlicinii, 2011). This was, once more, recently confirmed with respect to the reform Lisbon Treaty and the competition. The Lisbon Treaty suppressed the 50-year-old commitment regarding the "*undistorted competition*" and, due to the French request, pushed it from Art. 3 into the Protocol No 27. This opened discussions about whether the principle of undistorted competition is out and whether the move means an efficiency-based reconstitution of competition law doctrine stressing the consumer welfare. The CJ EU, as so often in the past, did not hesitate to step in and to make it clear in a number of post-Lisbon decisions that the principle remains without any change regardless of the legislative move, and that a restraint of competition requires no more than harm to the competition structure regardless of any (lack of) impact on the consumer welfare (Van Rompuy, 2011). Undoubtedly, the CJ EU was, is, and will be a pro-integration active EU organ, which shapes the EU law scenery with an extremely high consistency.

In *C-439/09 Pierre Fabre*, a myriad of highly interesting and even controversial arguments regarding IS/IT were advanced by the Advocate General, J.Mazak, and by the Third Chamber of the Court presided by K. Lenaerts and considering the power and consistency of the CJ EU, they can soon become (un)official rules to be observed. Certainly, *C-439/09 Pierre Fabre* is a precedent with a *ratio decidendi* about the understanding and application of Art. 101 TFEU and related provisions and rules about the vertical distribution agreements trying to avoid online sales. Nevertheless, a forensic critical study with Meta-Analysis elements can demonstrate that many arguments and conclusions about IS/IT in *C-439/09 Pierre Fabre* have the potential to be much more than a mere *obiter dictum*. Almost three years have expired after the issuance of *C-439/09 Pierre Fabre*, while the richness of its insight in the IS/IT was ignored even by the academic and professional public. Such a situation is deplorable, especially considering the massive importance of e-business, the importance of IS/IT which is well recognized by the EU, and the reduced amount of special policies and rules dealing with IS/IT, including domain names, in the EU. Unambiguously, the *C-439/09 Pierre Fabre* implies a rather unexpected perception of Internet domains, domain names and their significance for business by the CJ EU and thus constitutes a unique opportunity to address it, i.e. to change our practice to comply with it or to try to correct it so it is reconciled with the manner in which business is truly done in the EU. In sum, *C-439/09 Pierre Fabre* is a unique and, so far, over-looked resource with a dramatically important and controversial impact on the EU, European integration and the manner of e-business, especially e-commerce, in the EU.

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2 Methods

A major task in all areas of science is the development of theory and theoretical concepts (Schmidt, 2014), especially if only a limited amount of sources and information is available, it is critically important to select the most appropriate methods in order to research them and explore their full richness.

Methodologic basis and points of departure for studies involving legal aspects must include both deductive and inductive aspects of legal thinking (Matejka, 2013), because legal theoretic orientation reflects the legal science which is not axiomatic but argumentative (Knapp, 1995). It is obvious that the legal regulation of competition, intellectual property and IS/IT is not a static postulate field, but a dynamic argumentative with a potential for conflicts between well recognized principles and priorities. Thus the appropriate argumentation must come out from an objective observation and scientific interdisciplinary study and strongly apply various balancing and continuously changing tests. The argumentation itself must be not only rational, but as well ethical and mirror the scientific modesty (Knapp, 2003) which naturally is not in contradiction with the requirements of scientific courage and honesty (Matejka, 2013).

Both traditionally and conventionally, the quantitative approach and the qualitative approach are distinguished. Customarily, quantitative research and analysis relies on mathematically measurable values. The study of *C-439/09 Pierre Fabre* based on the available opinion of the Advocate General and the judgment given by the judges from the CJ EU and the extraction of semi-conclusions for IS/IT can just marginally be done by quantitative methodology and only peripherally use deduction to determine and assess, based on the collected data, what, when, how much, and how likely a phenomenon occurs, but not why.

The exploration of *C-439/09 Pierre Fabre* is much more investigative and argumentative and inherently entails the qualitative analysis, which rather inductively assumes and confronts with such assumptions collected data and explains why and how the original theoretical assumptions should be modified. Hence, the hypothesis for the qualitative search is an instrument for interpretation, not a tested subject matter to be confirmed or rejected. Particularly for *C-439/09 Pierre Fabre*, the dominant qualitative approach should target two potentially conflicting areas – comparative confrontation and reconciliation. Since the opposition between qualitative and quantitative methods should not be overplayed, and at the same time the confrontation-reconciliation attitude is suggested for *C-439/09 Pierre Fabre*, quantitative methods should not be avoided (Silverman, 2013). On the contrary, it is vital to employ the Meta-Analysis methods, which are known for their focus on contrasting, combining and reconciling data and results from different studies in order to identify patterns, relations, and relationships. Meta-Analysis is founded upon the conviction that there was discovered, exposed, more than what was understood and presented as the official results. It is a scientific research about broad research outcomes and constitutes a refreshing and important component of a systematic review procedure, and thus it is a welcome set of methods critically combining evidence of a predominantly numeric nature. Plainly, Meta-Analysis is an analysis of analysis, it is a rigorous alternative to the casual, narrative discussions of research studies which typifies efforts to make sense of the swiftly expanding research literature. (Glass, 1976)

In *C-439/09 Pierre Fabre*, instead of various studies, the Meta-Analysis treatment will address the outcome of the analysis performed by the Advocate General and judges and advanced in the opinion of the Advocate General and in the ultimate judgment. The results will be critically confronted with the publicly available data about IS/IT and their correctness will be assessed.

In addition, considering the very particular field of competition law, intellectual property and IS/IT, especially their overlapping, it is valuable to employ investigative forensic study cases and to give to the term *forensic* its original meaning, i.e. legal as related to courts and thus in Latin *before the forum* (Anderson, 2008). Forensics means the application of scientific methods relative to objective empirical observation and to evidence gathering via data analysis, and testimonial

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recommendations. Typically, the case study method is a type of the application employed in relation to forensics, such as the study of the *C-439/09 Pierre Fabre.*

As correctly pointed out, we often do not exploit gold mines of information included in our sources, because we employed predominantly narrative review methods with respect to more or less arbitrarily pre-selected sources (Glass, 1976). We definitely need to improve our methods for synthesizing and integrating sources and data, especially in the case of judicature (Schmidt, 2014).

Thus regarding *C-439/09 Pierre Fabre*, the first hypothesis is that statements and arguments about IS/IT, especially domain names, in the opinion and judgment contradict each other, can hardly be reconciled with each other and do not reflect the current role and function of IS/IT, especially of domain names. The second hypothesis is that the EU and EU law are both undergoing an evolutionary, if not revolutionary, change in their perception and attitude towards the Internet.

3 Results and discussion

A systematic analysis of the meaning of *C-439/09 Pierre Fabre* for IS/IT, especially of its significance for e-commerce via Internet domains, relies on three key sources to be consecutively explored and ultimately confronted and, if possible, to reconciled – the opinion, the judgment and the aftermath judicature and academic literature.

3.1 Statements and arguments about IS/IT advanced in the Opinion of Advocate General J.Mazák delivered on 3rd March 2011 in *C-439/09 Pierre Fabre*

The opionion of the Advocate General in *C-439/09 Pierre Fabre* was delivered by Prof. Ján Mazák, born in 1954, originally the Slovak professor of civil law, later on the professor of Community Law and who has served for many years as a judge of various Slovak national courts. He was an Advocate General at the CJ EU from 2006 to 2012. This background information is highly illustrative for the analysis of the „IS/IT" parts of his opinion. Manifestly, the opinion was delivered by an expert on Civil Law and EU law, an experienced national judge and definitely not a raw beginner at the CJ EU. At the same time, certain doubts may *prima facia* arise regarding his mastery of IS/IT, his hands-on experience with e-business and his appreciation of the management of domains, domain names and web sites. Undoubtedly, Prof. Mazák excellently addressed many competition and antitrust issues in *C-439/09 Pierre Fabre*, however, the following analysis will cover exclusively a set, seemingly fragmentary, of his statements, arguments or even conclusions going to the very heart of e-business.

In point 19. of the opinion in *C-439/09 Pierre Fabre*, it is mentioned, with reference to a statement of the Pierre Fabre Dermo-Cosmétique SAS („PFDC") that, given the very high level of intra-mark competition resulting from the 23 000 outlets in France, an *in concreto* examination shows that the object of the agreement is not to restrict competition. In point 38 of the opinion there is repeated the PFDC argument that the ban regarding online sales is objectively justified by the major risk of an increase in counterfeited products due to Internet sales, by the resulting dangers for consumer health, and by the risk of free-riding which could lead to the disappearance of the services and advice provided in pharmacies, as the owners of internet sites could free-ride on the investments of distributors who do not have such sites. PFDC actually developed this argument further by suggesting that, due to the ban, consumers know that any products sold with PFDC´s brand via the Internet are counterfeit. Accordingly, no Internet domain, regardless of its name or use, should become a forum to get PFDC products, and, as a result, the potential for parasitism or confusion via Internet Domains should be reduced to zero.

This PFDC argument was ragingly rejected by Prof. Mazák, despite his recognition of counterfeiting issues on the Internet and in e-business. As a matter of fact, the wording used by Prof. Mazák is more than surprising. Although he stated in point 39 that the threat of counterfeiting and the risk of free-riding are valid concerns in the context of selective distribution, he followed in point 40 with a peculiar statement: "*However, I am uncertain how the distribution by a selected distributor of*

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a manufacturer's products via the internet could itself lead to an increase in counterfeiting and how any detrimental effects resulting from such sales cannot be counteracted by adequate security measures." Sadly, a multitude of consumers from the EU can testify about how easy it is to get confused by a pretentious web site under domain names strongly suggesting that they are operated by the true and genuine beneficiary of trademark protection, and that the online offered products are not counterfeit. Ironically, PFDC is active in a business with superior quality cosmetic products and this is one of the very popular fields for attack by online experts in the placing and selling of counterfeit products.

Even more sadly, Prof. Mazák went on, and in point 40 of his opinion continued: *"As regards the question of free-riding, given that the setting-up and operation of an internet site to a high standard undoubtedly entails costs, the very existence of free-riding by internet distributors on the investments of distributors operating out of a physical outlet cannot be presumed*." The following tables shows that obtaining a domain name, arranging for a domain and creating, plus operating, web sites for e-business is financially insignificant, the annual costs are generally way under 1% of the annual turnover of even small and medium size enterprises.

Table 1. Domain Names Price Comparison

Top Level Domain	Registration of domain name	Renewal
.biz	USD 5	USD 7
.com	USD 5	USD 8
.eu	USD 5	USD 7
.in	USD 3	USD 9
.me	USD 7	USD 8

Source: domparison.

Manifestly, the initial investment in the registration of a domain name through a Registrar in a Registry of a TLD attractive for e-business is insignificant. Similarly, the annual renewal fee is insignificant.

Table 2. Web Hosting Companies Comparison

Company offering web hosting	Price	Rating based on space, traffic, speed
GoDaddy	USD 1	9.7
inMotion	USD 2	9.7
BlueHost	USD 4	9.7
HostMetro	USD 2	9.4
Dreamhost	USD 9	9.2

Source: findmyhosting.

Clearly, the "renting space" for the label, i.e. getting web hosting for the domain under a domain name, can be done for a very marginal cost.

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Table 3. Costs for building/designing a web site

Author of Web Site	Cost	Comments
Yourself-WorldPress	free or under USD 1	Template
Local Designer using template	USD 200	Adjusted for you
Local Designer doing ad hoc for you	USD 1 000	Done for your
Local Designer Company	USD 2-5 000	Done for you
Famous Design Experts	Over USD 5 000	Superior copyright work

Source: own elaboration.

Obviously, there are many options about how to design and build a web site, and it can be done free of charge as well as for hundreds and even thousands of USD. At the same time, it seems unlikely to have to spend over USD 10 000 to have a high quality web site for e-business, and if the business has an IT specialist, then the cost of web site design can be reduced, if not eliminated. In addition, Registrars are truly competing for clients and thus they offer various monthly package plans which include all three elements presented in Table 1, Table 2 and Table 3, i.e. domain name+web hosting + web site design for USD 6-15 monthly.

Therefore, the argument of Prof. Mazák in point 40 of his opinion, that the costs for setting-up and maintaining an Internet site are so high that the free-riding by Internet distributors on distributors operating brick-and-mortar shops cannot be presumed, is self-defeating, and must be rejected. Certainly, a web site for e-business presented within a domain with an attractive domain name are assets with a value. However, such a value streams predominantly from the worth of a domain name, and if a business does not want a unique domain name which is already registered for somebody else and is open to get a variation of it, then it can get the entire package for less than USD 10 000 for a period of ten or even more years. In other words, at least 90% of businesses are getting their web sites for 1% or less of their turnover and 10% or less than their price for one physical shop lease. Certainly, there are domain names sold for over USD 100 000 and even rare cases of sales for over USD 1 000 000, but they represent less than 1% of all domain names (SHONTELL, 2012). In addition, it is possible to buy the entire online retail business with all its assets – principal web site, subsidiary web sites, the domain with the domain name, rights to web site design covered by copyright and the software required to maintain and to update the whole web site set, while the domain name is typically the top concern of the buyer and has the biggest influence on the amount of the total price (Gilbert, 2013). Thus, unless a business is bound and determined to do e-business, then its e-platform, which is open to the entire universe, should be relatively easily obtainable and significantly cheaper and entailing less effort than a small shop on the corner.

Strangely enough, Prof. Mazák added, in point 40 of his opinion, probably to support his above mentioned and rejected opinion, that the e-business by distributors is not a problem for a manufacturer, because the manufacturer can contractually arrange with distributors about their e-platforms, monitor them and enforce the compliance, and so counteract free-riding and ensure that the manufacturer's distribution network operates in a balanced and equitable manner. The flaw in such an argument is due to the number of distributors and outlets, i.e. 23 000 outlets is an impressive amount. Despite the well advanced IS/IT, it seems virtually impossible to monitor thousands and thousands of web sites continuously for their compliance and to monitor all other web sites so that they do not illegally infiltrate into the selective distribution network. In addition, even if such monitoring would generate information about infringement, the enforcement would be difficult due to the problem with the evidence as well as with the foundation on a mere disputable alleged violation of a contract clause and the enforcement in general.

Interestingly, in point 54. Prof. Mazák correctly observed that "*It is conceivable that there may be circumstances where the sale of certain goods via the internet may undermine inter alia the image*

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and thus the quality of those goods thereby justifying a general and absolute ban on internet sales." However, he immediately continued reincorporating his previous problematic opinion from point 40, i.e. he stated:„*However, given that a manufacturer can, in my view, impose appropriate, reasonable and nondiscriminatory conditions concerning sales via the internet and thereby protect the image of its product, a general and absolute ban on internet sales imposed by a manufacturer on a distributor is, in my view, proportionate only in very exceptional circumstances*." Since Prof. Mazák again repeated this very sentence in point 61, there is not the smallest doubt that he is intimately and almost irrevocably convinced that a manufacturer can easily, through contracts with distributors, ensure the quality of goods and services marketed via the Internet. It would be extremely interesting to learn from him how this should be done.

3.2 Statements and arguments about IS/IT advanced in the Judgment of the Court of Justice (Third Chamber) given on 13th October 2011 in *C-439/09 Pierre Fabre*

The judgment in *C-439/09 Pierre Fabre* was given by the Third Chamber of the Court, presided by K.Lenaerts. The judge rapporteur was E.Juhász and one of the involved judges was as well D.Šváby, originally a Slovak civil and family law judge. Thus, the most involved judge in the proceedings and preparation of the judgment in *C-439/09 Pierre Fabre* was E.Juhász, who has a strong government and diplomatic background, including a Commercial Counselor position. With a touch of exaggeration, it can be suggested that *C-439/09 Pierre Fabre* is an outcome of Slovak-Hungarian judicial and diplomatic perception regarding competition and IS/IT and, as was shown above regarding the Advocate General, and as it will be shown below regarding the court, especially the judge rapporteur, the superior mastery of competition law aspects was not matched by their mastery of IS/IT.

The judgment in *C-439/09 Pierre Fabre* is significantly sententious and the explanation is rather brief and without arguments developed in their entirety, as was done in the opinion by Prof. Mazák. The CJ EU agreed with the European Commission by stating that the clause *de facto* excluding online sales considerably reduced the authorized distributor's ability to sell to customers in their allocated territories of activity, i.e. restricting the competition (Themelis, 2012). Further, since the conclusions of both, opinion and judgment, are similar, if not identical, and since no arguments from the opinion are rejected by the judgment and no arguments are added by the judgment, it is plausible to conclude the CJ EU embraces and endorses the above critically discussed arguments presented by Prof. Mazák in the opinion. Thus, the judgment added only one more element to the opinion with a high significance for IS/IT and included it in the point 46, according to which " *The aim of maintaining a prestigious image is not a legitimate aim for restricting competition and cannot therefore justify a finding that a contractual clause pursuing such an aim does not fall within Article 101(1) TFEU."* and thus the will of the manufacturer of, e.g. luxury items, to avoid their online trafficking is not a legitimate aim excusing the restricting impact on the competition. From a strictly legal point of view, this strong statement of the CJ EU cannot be rejected *per se*. However, when the economic and intellectual property aspects are added, it seems at least understandable that owners of well known trademarks do not want to see their genuine goods and services being mixed on obscure Internet web sites with free-riding and counterfeited products or to see various pretenders and cybersquatters trying to parasite on their hardly built *renomé.* It is obvious that the exclusion of products from online sales reduces the abusive options of many parasites. Similarly, it is obvious that the anonymity inherently linked to the Internet causes any enforcement of the intellectual property rights to become extremely challenging. Finally, it is obvious that prohibiting certain clauses from contractual arrangements reduces the contractual freedom of parties.

In this context there needs to be underlined point 44 of the judgment confirming a truly firm and concise attitude of the Court, according to which:" *The court, in the light of the freedoms of movement, has not accepted arguments relating to the need to provide individual advice to the customer and to ensure his protection against the incorrect use of products, in the context of nonprescription*

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medicines and contact lenses, to justify a ban on internet sales (see, to that effect, Deutscher Apothekerverband, paragraphs 106, 107 and 112, and Case C-108/09 Ker-Optika [2010] ECR I-0000, paragraph 76)." Well, one more time, the CJ EU shows that the top priority is the *"undistorted competition"* on the internal market, and the integration in general, and that this cannot be changed by concerns regarding consumer welfare, contractual freedom or IS/IT operation.

3.3 Aftermath of *C-439/09 Pierre Fabre* with its impact on IS/IT

The growing importance of e-business, especially e-commerce via Internet domains which carry domain names referring to the particular business and/or products, highlights how vertical competition law and its enforcement are important building blocks of competition law policies on both sides of the Atlantic. However, there are noticeable differences in the manner in which restrictions of online sales are assessed. In the USA there prevails a rather liberal approach towards distribution restraints and this is in contrast with the stricter EU approach, which is caused by the mandates of the single internal market (Accardo, 2013). The fact that EU rules require more significant compliance efforts for vertical agreements than the USA rules may generate some agitation and complaints, but still it is understandable and acceptable, provided it is done properly. However, going in the IS/IT e-business *par excellence* sphere in an ill-informed and ill-considered manner is deplorable. Hence the policies and communications issued by the European Commission and the precedential decisions entered by the CJ EU regarding restrictions on vertical contractual freedom with respect to e-business must reflect a superior knowledge and appreciation of how the vertical business through Internet domains is done in the EU in the second decade of the 21st century.

The *C-439/09 Pierre Fabre* is positively referred to by the CJ EU and thus can be perceived, at least with respect to certain of its aspects, as a precedent. In judgement *C-1/12 Ordem dos Técnicos Oficiais de Contas* it is done in point 70, according to which." *Although it is for the referring court to examine whether the contested regulation has had or is likely to have harmful effects on competition in the internal market, it is for the Court to provide it, for this purpose, with the points of interpretation of European Union law which enable it to reach a decision (see, to that effect, Case C-439/09 Pierre Fabre Dermo-Cosmétique [2011] ECR I-0000, paragraph 42*)." In *opinion C-226/11 Expedia* delivered by the Advocate Generale, J.Kokkot, there is found the *C-439/09 Pierre Fabre* referred to in point 41 and point 49 as a footnote and deals with the issue of appreciating the general economic and legal context of a particular agreement and of proof of the capacity of an agreement to restrain competition. As well, *C-439/09 Pierre Fabre* is referred to in both opinion and judgment, in *C-32/11 Allianz*. Although the post-judicial evolution confirms that *C-439/09 Pierre Fabre* is a good precedential case, it does not bring more light in the rather confused ideas, opinions and even statements about IS/IT presented in *C-439/09 Pierre Fabre.*

The *C-439/09 Pierre Fabre* became a subject of important academic and professional discussions and its analysis was several times presented from various angles in the academic press. It prompted as well practitioners´ concerns that following *C-439/09 Pierre Fabre*, manufacturers of luxury brands might face difficulties in protecting the image of their goods and services commercialized through selective distribution systems and especially to run into difficulties regarding the control of their distribution via the Internet (Svetlicinii, 2011). The CJ EU seems to become more strict than in *C-59/08 Copad* and *T-88/92 LeClerc* and the aura of luxury linked to the quality of product seems to lose its recognition and protection by the CJ EU. Such a move deserves a serious and well-argued explanation, which, so far, has not been fully provided.

Even more importantly, *C-439/09 Pierre Fabre* and its aftermath discussions contributed to the official recognition of the Internet´s ubiquitous status for commercial purposes by the EU (Themelis, 2012). In the light of the arguments presented by the CJ EU in *C-439/09 Pierre Fabre*, its approach and perception of IS/IT and its determination to stick with the same competition rules and apply them in the same manner to the tangible as well as intangible, it is clear that a more modern and IS/IT aware outlook is maintained by the second organ of the EU integration tandem, the European

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Commission. Namely, COM/2010/0245 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee of the Region, A Digital Agenda for Europe, was prepared and as a part of the Europe 2020 Initiative should help to reboot Europe's economy and help EU Citizens and businesses to get the most out of IS/IT. Along with the other six initiatives under the Europe 2020 Initiative, it should assist with the smart sustainable and inclusive growth. The Commission Communication COM (2011) 942, A coherent framework for building trust in Digital Single Market for E-Commerce and Online Services (2012) follows this line.

Hence, the CJ EU with its emphatic ruling that any restriction in using the Internet is prohibited, and its conviction that the Internet cannot develop to anything more than a complementary distribution mode which is inherently linked to the physical marketplace, does not respect the market evolution in the 21st century (Themelis, 2013). The European Commission is more open-minded and attempts to go ahead with the Europe 2020 Initiative, but it still is balancing between the old approach firmly maintained by the CJ EU and the new approach recognizing that the Internet is an autonomous commercial space to which the traditional competition rules must be applied flexibly.

The first hypothesis, that statements and arguments in *C-439/09 Pierre Fabre* about IS/IT in the opinion and judgment contradict each other and can hardly be reconciled with each other and do not reflect the current role and function of IS/IT, especially of domain names, was confirmed by a number of logical arguments and current publicly available economic data. The second hypothesis, that the EU and EU law are both undergoing an evolutionary, if not revolutionary, change in their perception and attitude towards the Internet was confirmed based on the review of the agitated aftermath of *C-439/09 Pierre Fabre* and the issuance of the Commission Communication COM (2011) 942. It is obvious that the EU is at a crossroads, and if it really wants to become more competitive and meet the objectives of Europe 2020 Initiative, then both the European Commission and the CJ EU (!!!) will have to perfectly understand the Internet and its functions, especially the e-business potential and the critical role of domain names for e-commerce. This honest and deep understanding is definitely more important than the mere issuance of new legislations or proclamations worshiping IS/IT.

4 Conclusion

The EU and European integration have been significantly supported and developed by the synchronized co-operation of the European Commission and the CJ EU. They have shaped European policies as well as EU law. In the post-Lisbon EU, their coordinated efforts with respect to the single internal market and the protection of competition and their inclination to consistency runs contrary to several aspects of modern IS/IT. The *C-439/09 Pierre Fabre* is a perfect demonstration that the application of the "old" competition rules, developed without consideration of e-business, should be applied with extreme caution, if at all, to vertical and intra-brand e-business conduct. It appears that commercialization has changed dramatically between 1951 and 2014, far more than the CJ EU is willing to admit. There is no need for a revolution, but there is a clear need for enhancing awareness and evolving, and apparently the Commission is better at it than the CJ EU, or at least some senior members of the CJ EU.

The *C-439/09 Pierre Fabre* shows a rather problematic understanding and perception of IS/IT and of the importance of domain names for business by both the European Commission and the CJ EU. The determination to rigidly apply the same rules to regular ordinary business and e-business is not sustainable and is not in compliance with the Europe 2020 Initiative. The European Commission seems to understand the newly emerged needs, although the inclination to balance between the old and new approach is still noticeable. Regarding the CJ EU, the situation appears more challenging and the many times extremely praiseworthy and terrific consistency appears to be rigid and contra-productive with respect to IS/IT and denying the market evolution. If nothing else, arguments and opinions advanced in *C-439/09 Pierre Fabre* were very good for the EU before the turn of the millennium, but in the second decade of the 21st century they must undergo an update. The Europe 2020 Initiative, and its seven flagship instruments, is a wonderful opportunity to cross the Rubicon,

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leave behind the old-fashioned ideas about IS/IT included in *C-439/09 Pierre Fabre* and definitely strip this outdated thinking from its dangerous potential of being the bad genie locked up in the bottle and ready to jump out.

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PUBLISHING PRODUCTIVITY OF CZECH SENIOR ACADEMIC ECONOMISTS: FINALLY ON THE RIGHT TRACK, BUT NOT QUITE THERE

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Abstract
In 2004, the Czech Republic joined the European Union and became a standard market economy. However, its higher education sector has not passed fundamental reforms yet. It is argued that one of the persisting problems is a low degree of international competitiveness, as demonstrated, for instance, by rather poor publishing performance of senior academic staff in economic disciplines. Since our last research study (see Macháček and Kolcunová, 2009) the Czech government has made a great effort to improve this unpleasant situation, and that is why we are focusing on publishing performance of 299 associate professors and 116 full professors of economics to find out whether there is a clear recent trend of increasing the number of publications in journals listed in the Web of Science (WoS) database. Our empirical findings show that although this positive trend exists, quite many senior academic economists are still lacking any proof of their research abilities in meeting international/European publishing standards.

Keywords
Publications, Web of Science, Academic Economists, Czech Republic, European Union.

JEL Classification
A11, A14, I23, I28.

1 Introduction

In 1995, the Czech Republic became a member of the Organization for Economic Cooperation and Development (OECD) and in 2004, it joined the European Union (EU). However, no matter that by accessing these prestigious ‘‘clubs of advanced economies‘‘ the country basically completed its transition process and became a standard market economy with developed democratic institutions, some of its economic and social building blocks have not passed fundamental reforms yet. This is the case of the Czech higher education (HE) sector which had clearly undergone substantial changes since the fall of the Communist regime in 1989, with the country´s EU accession having positive impact on its reforms, but that still suffers from a number of institutional loopholes, inefficiencies and imperfections. As a result, the quality of HE is not improving as fast as was expected when introducing market mechanisms, leaving room for increasing the international competitiveness of the Czech Republic and its human & social capital development and economic growth.

This paper deals with the current state of the Czech academic research after 10 years of the Czech Republic´s accession to the EU, empirically assessing the publishing productivity of local senior academic economists. It is argued that one of the persisting problems within the HE system is the inability of many academics to meet generally accepted research quality standards, as demonstrated, for instance, by rather poor publishing performance of senior academic staff in many research fields, social sciences and humanities in particular. In spite of the fact that the Czech Republic greatly benefited from its participation in the European Research Area (ERA) and European Higher Education Area (EHEA), its academic research is lagging behind the leading EU countries, no matter that the total research production of public universities more than doubled between 2008 and 2011(Fiala, 2013) and keeps growing[1]. As this contribution is a preliminary assessment of relatively

[1] According to report by Arnold and Mahieu (2011), universities are the main producers of scientific publications in the Czech Republic. As for the Economics & Business field, their share in the total output published in the journals listed in

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narrow empirical data set rather than a profound policy discussion paper, we do not provide a detailed analysis of the causes and consequences of the problems connected with academic research and its reforms before and after the Czech EU membership. Nevertheless, we argue that despite the recent effort by the Czech government to bridge the gap between the Czech Republic and the leading EU countries and enhance the excellence and efficiency in universities´ research, the overall quality of this research remains limited and requires further reform commitment and effort.

In our previous papers (see Macháček and Kolcunová, 2005, 2009a), we discovered that as for the economic disciplines, most full and associate professors had not a single publication in a prestigious foreign periodical. With our expanded data set consisting of 299 associate professors and 116 full professors of economics & business and their publication records, we are focusing here on the publishing performance of selected local senior academics to find out whether there is a clear recent trend of improving the research productivity as proxied by the number of publications in journals listed in the Web of Science (WoS) database. Our main finding is that although this positive trend exists, quite many senior academic economists are still lacking any proof of their research abilities in meeting international publishing standards. Given the fact that economics and business are widely considered as one of the ‘‘hardest‘‘ and most international social sciences, this finding is striking and having strong implications for the research and development (R&D) and HE policies and management in the Czech Republic.

2 The Czech Academic Research, its Reforms, Problems, and Evaluation: A Brief Sketch

According to current understanding, universities have three basic missions: (i) teaching, (ii) research, and (iii) community engagement. While the first two missions are traditional and come from the medieval times, the third mission, viewed as a close collaboration between universities and society, is getting more attention in the last decades. However, in the era of socialism and central planning research and community engagement were not associated with universities as the Communist Party and government considered them purely educational institutions, promoting Marxian values, beliefs, and ideas. With universities concentrating on teaching and spreading the Communist ideology, basic research has been conducted in various institutes of the Academy of Sciences, and applied research in branch ministries and their institutes (Moore, 1994, Balasz et al., 1995). As a result, university teachers were not giving priority to research and often did not enjoyed enough credentials in their fields of study, thus not being able to educate knowledgeable and well prepared graduates. Combined with a low proportion of the working-age population entering the universities (typically around 11 – 15 percent), this has been reflected in deteriorating human & social capital and dragging down the economy.

After the restoration of democracy and market economy in the early 1990s, universities acquired lost autonomy and used it, among others, for starting international cooperation and conducting both basic and applied research. The Academy of Sciences was substantially reduced, a half of its employees lost their jobs, and 22 research institutes were closed, including the Economic and Prognostic institutes. To fund basic research on a competitive basis and to promote international cooperation in basic research, the Czech Science Foundation (GACR) – an independent research funding organization – was founded by the Czech government in 1993 (http://www.gacr.cz/en/). However, although universities were granted teaching and research autonomy and the HE system started to gradually change in line with a standard ‘‘three missions model‘‘, the system path-

the Web of Science database amounted to 58% over the period 1993-2009, while for the Management & Planning field, their share amounted to 68%.

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dependence remained a serious issue as academic elites used newly-acquired freedom to block further principal reforms that were threatening their current positions and benefits.[2]

It is beyond the scope of this paper to provide an extensive review of the research reform measures, the motivations behind them and their real outcomes (for valuable summaries see, for instance, Provazník, 1994, and Filáček, 1998). Nevertheless, we find it important to mention the OECD Country Note ''Thematic Review of Tertiary Education: Czech Republic'' (File et al., 2006) criticizing the management system of human resources and research at the Czech universities, and resulting in the White Paper on Tertiary Education (Matějů et al., 2009) which contains the key principles of the proposed HE reform, including the introduction of tenured positions and elimination of poor research results by funding excellency. Albeit this reform has not been launched yet and the White Paper´s recommendations are still waiting for implementation, mainly due to a strong resistence among academics and a lack of consensus among politicians and the general public, there is a growing public demand for sound research evaluation responding to fiscal tightening and the ongoing need for innovations (Fiala, 2013). Another major step to motivate universities and academic researchers to be engaged in excellent research and knowledge transfer was the Reform of Research, Development and Innovations System approved by the Czech government in March 2008 (see The National Research, Development, and Innovation Policy of the Czech Republic in 2009 – 2015). Since the beginning of this reform, an official methodology of research output evaluation in the Czech Republic changed several times, with the latest change just under way, but despite the heavily criticized instability of the newly introduced performace evaluation system this policy measure forced universities and academics to focus on publishing, especially in scientific monographs and international journals. An extensive ''International Audit of Research, Development & Innovation in the Czech Republic'' conducted by the respected Technopolis Group, whose results were published in September 2011 (for details see Arnold and Mahieu, 2011), played an important role in this development. In addition, as the Czech Republic joined the EU and got access to its funds supporting economic and social development of less advanced regions and member countries (for instance, the thematic operational programmes ''Research and Development for Innovations'' and ''Education for Competitiveness''), universities were able to invest in building their research capacities, infrastructure, and people to effectively meet domestic and international competitors. To support applied research and experimental development, the Technology Agency of the Czech Republic (TACR) – an organizational unit of the State – was founded in 2009, representing „one of the cornerstones of the fundamental reforms in research and development (R&D) in the Czech Republic" (see http://www.tacr.cz/index.php/en/about-tacr.html).

A large amount of literature has been devoted to assessing the effects of transition process in the field of science and technology after the collapse of Communist rule, using various qualitative and quantitative (bibliometric) indicators and focusing on different countries and research fields (see, for instance, Gaponenko, 1995, Braun and Schubert, 1996, Must, 2006, Allik, 2008, Ciaian, et al., 2008, Markasova et al., 2009, Jokič et al., 2010, or Zavadskas et al., 2011). As for the research in the Czech Republic, Vaněček (2008a) analyzes publications generated from 1994 to 2005 and provides their comparison with papers from six other EU countries (Austria, Hungary, Poland, Finland, Ireland and Greece). He concludes that Czech research is lagging behind the leading EU countries, but its output is proportional to the R&D expenses. This author also studies Czech patents (Vaněček, 2008b) and European framework programme results (Vaněček et al., 2010) using the methods of bibliometric analysis, with the results indicating poorer patent performance of Czech researchers and a positive impact of their participation in the Framework Programmes 5 and 6 on the publication activity and

[2] In 2009, the Ministry of Education, Youth and Sports realized a vast survey amongst academics to find out their expectations about the reform of HE in preparation. 24% of Czech academics participated (6099 persons) and the survey revealed that 72% of them supported an in-depth reform. Interestingly, it emerged that the support for reform decreased with academic seniority of respondents and their management positions.

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citations. Beside the previously mentioned work by Fiala (2013) focused solely on the academic research in the Czech Republic, Radosevic and Auriol (1999) and Gorraiz et al. (2012) performed bibliometric analyses of Czech research outputs in the context of a larger group of countries.

It is a well-know fact that while medicine, mathematics, statistics, natural sciences, engineering and technical sciences in general have not suffered from ideological indoctrination during the era of socialism so much, social sciences and humanities were victims of Marxist social engineering on a large scale. That is why these disciplines are good candidates for evaluating the effects of transformation process mentioned above. As for the research on economics & business, several domestic studies exist (see, for instance, Turnovec, 2002, Turnovec, 2005, Münich, 2006, Macháček and Kolcunová, 2005, 2008, 2009a, 2009b). These studies paint a pessimistic picture of the state of economic research in the Czech Republic, claiming that an average number of publications in journals from the databases Journal of Economic Literature (JEL) and Web of Science (WoS) per an academic economist in the Czech Republic had been only 0.85 in the period 1994 to 2003 (Turnovec, 2005), some 54 percent of the economics professors tenured between 1999 and 2005 had not published a journal paper with an impact factor before their appointment (Macháček and Kolcunová, 2005), about half of all Czech economics departments had no single publication with an impact factor between 1998 and 2005 (Münich, 2006), and high-ranking positions in the Czech research institutions were mostly occupied by professionals without any publications in journals with an impact factor (Macháček and Kolcunová, 2009b). However, all of these studies deal with the pre-reform period and thus the question naturally arises whether the major changes to the Czech system of research evaluation in the second half of the 2000s led to the substantial advancement in the years following the R&D reforms. Therefore the empirical assessment of the publishing productivity of Czech senior academic economists follows to shed some light on the problem.

3 Publishing Productivity of Senior Academic Economists: An Empirical Assessment

Data on 116 full professors and 299 associate professors appointed between January 1999 and January 2014 in the Czech Republic were retrieved from the web pages of Ministry of Education, Youth and Sports.

3.1 Data and Methods

The focus was solely on the appointments and habilitations in the following 13 economics & business fields: Economics, Finance, Public Economics, Economic Policy, Econometrics and Operational Research, National Economy, International Trade, Business Economics and Management, Management, Sector Economy and Management, World Economy, Accounting and Financial Management, Economic and Social History.

At individual academics we searched for the number of their publications using the international databases Web of Science (WoS) – Social Sciences Citation Index and Conference Proceedings Citation Index - Social Sciences & Humanities. The publications were collected to the date of professorship appointment or associate professor's habilitation and to the date of the research completion (i.e. April 2014). Publications were further split in the categories "articles" and "foreign articles". While the first category does not comprise reviews, information, lead articles, etc., the second one moreover excludes papers published in the Czech Republic and Slovakia. In assigning of found publications to individual researchers a shared responsibilities were taken into account. In these cases we proceeded in a strictly egalitarian way. This means that if a certain publication is a joint work of n authors, the author's share of each person is expressed as a fraction of 1/n.

Unlike our previous research we do not present here the results of specific universities where professorship appointments and habilitations were carried out (see Macháček and Kolcunová, 2005) nor we compare results from two main publication databases WoS and Scopus (Macháček and

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Kolcunová, 2009a). Also, compared to the later publication, we do not analyze publication activities of professors and associate professors within a given period after their appointment.

3.2 Results and Discussion

Figure 1 shows how the total numbers of completed professorship appointment procedures and associate professors´ habilitations are distributed among particular economics & business fields.

It is evident that in the past 15 years the most popular field of professorship appointment and habilitation has been the field of Business Economics and Management, with the shares equal to 28% and 39%, respectively. Other popular fields have been Economics, Finance, and Sector Economy and Management. Altogether these fields´ shares in professorship appointments amounts to 69% and in habilitations even to 77%. On the contrary there are clearly fields where the appointment procedure or habilitation takes place only seldom (for instance, World Economy, Public Economics, or Economic and Social History). Interestingly, since June 2009 new professorship appointments were made only in 5 fields out of the total number of the fields assessed, with no appointments in the fields of Economic Policy, Econometrics and Operational Research, International Trade, World Economy, Accounting and Financial Management, Economic and Social History, and National Economy (which field is no more accredited). The comparison with previous studies (Macháček and Kolcunová, 2005, 2009a) shows that the differences among fields remain stable in time and arguably reflect the needs and demands of universities, students, public sector, and business.

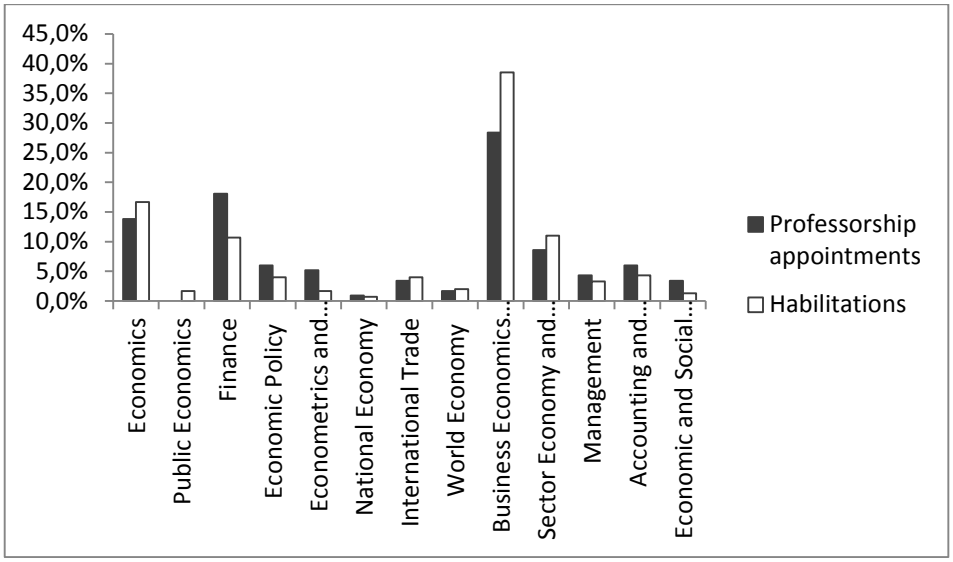

Figure 1. Shares of fields in total number of professorship appointments/habilitations (Source: authors´ calculations)

However, with the differences in numbers of professorship appointments and habilitations among particular fields identified, the question arises whether the apparent popularity of some fields does not stem from the fact that in these fields the professorship candidates are subject to fewer requirements. Figure 2 provides some indication that this might be the case. The figure shows that in some popular fields (i.e. the fields with at least 5 appointments in the 1999-2014 period) there is a distinct above-average share of appointment procedures and habilitations successfully completed without any published journal article while in other fields it is just vice versa. Focusing solely on the most popular fields (see Figure 1), it is evident the fields Business Economics and Management, Sector Economy and Management, and Management rank among the fields with "soft" publication criteria whereas Economics and Finance are ''hard" fields with the share of procedures without journal articles significantly below the average. Here again we see no difference from our earlier findings.

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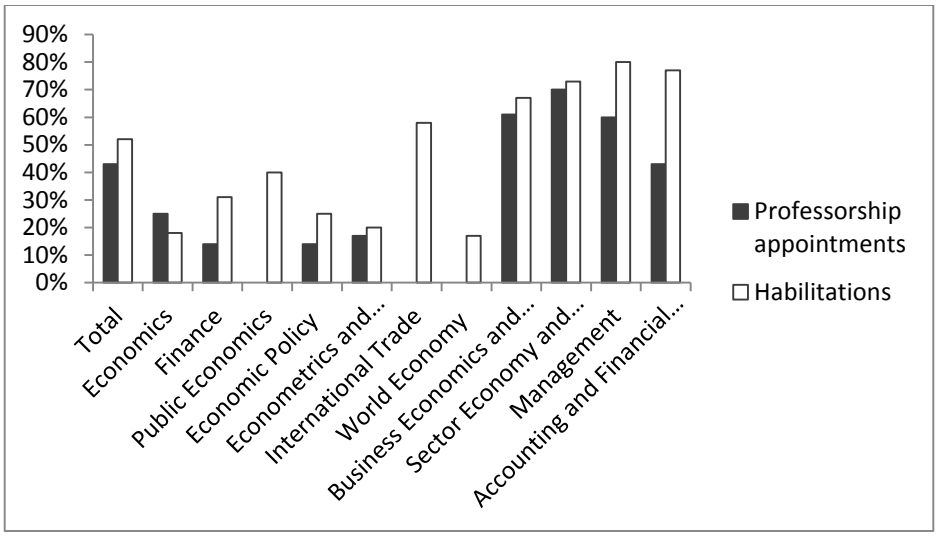

Figure 2. Shares of procedures without publications in professorship appointments/habilitations (Source: authors´ calculations)

Table 1 presents our research results in the aggregate. It is evident that though the representation of women in the group of appointed full and associate professors increased since our last research conducted in 2009, it still remains modest. On the other hand, Figue 3 documents that the rate of masculinization varies among fields of professorship appointments/habilitations, with the fields of Economics and Sector Economy and Management being masculinized above average while the fields of Finance, Business Economics and Management, and Accounting and Financial Management showing a below average rate of men´s representation. However, just in the case of the habilitations conducted in the field of Accounting and Financial Management women represented a slight majority of the candidates (54%). These findings roughly correspond with our earlier estimates and are not very surprising indeed.

Table 1. Aggregate results

Appointmens 1999/01 – 2014/01	Full Professors	Associate Professors
Total	116.00	299.00
Women	31.9 %	39.1 %
Men	68.1 %	60.9 %
No publications on 2014-04-18	21.6 %	21.4 %
No articles on 2014-04-18	21.6 %	36.1 %
No foreign articles on 2014-04-18	52.6 %	78.9 %
No publications at the appointment date	36.2 %	41.1 %
No articles at the appointment date	43.1 %	51.8 %
No foreign articles at the appointment date	82.8 %	86.6 %

Source: authors´ calculations.

The most important finding is that by the second half of April 2014 22% of the full professors and 36% of the associate professors appointed between January 1999 and January 2014 had not a single journal article recorded in the WoS database. Even more warning is the fact that 53% of these full professors and 79% of the associate professors had not a single WoS journal article published abroad (i.e. aside the Czech Republic and Slovakia). Looking at the publishing results at the date of appointment, our findings show that 83% of the full professors and 87% of the associate professors obtained their degree without any WoS journal article published abroad. While these figures are

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somewhat better than our earlier research indicated, there is just a week signal that Czech senior academic economists are becoming more competitive players in the international research market. The positive sign is that out of the 16 new professorship appointments since our last research, only one appointment (in the field of Business Economics and Management) was without any WoS journal article, though the results for habilitations are more disappointing.[3]

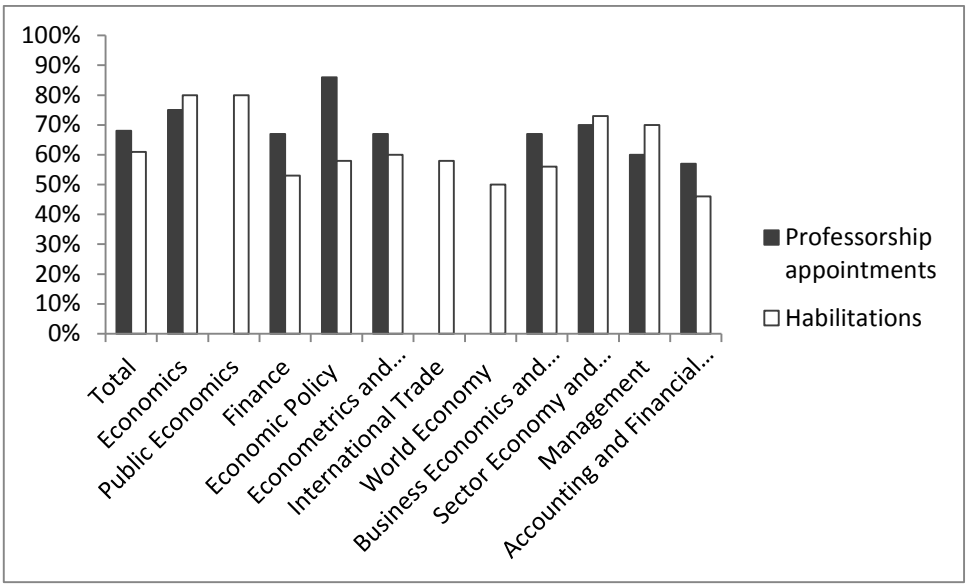

Figure 3. Shares of men in professorship appointments/habilitations (Source: authors´ calculations)

4 Concluding Remarks

There is no argument that since the publication of a state of the art report on the Czech academic profession by Melichar and Pabian 7 years ago (see Melichar and Pabian, 2007), the situation markedly changed. By virtue of reforming R&D system and introducing a new research performance appraisal mechanism in 2008, local academics are now motivated to publish extensively, and the Accreditation Commission of the Government of the Czech Republic expects universities and faculties to appoint full and associate professors with high-quality research results.

A study on the Czech R&D by the Technopolis Group (see Arnold and Mahieu, 2011) revealed that since 1993 the Czech science system was improving both in terms of output development and international impact, with a notable increase of the research conducted by social scientists. At the same time, the study found that the Czech Republic had still a long way to go to catch up with countries as Denmark or the Netherlands that were undisputed ''European research superstars''. With particular respect to economics and business fields, it is a promising fact that between the years 2005-2009 the international influence of research output increased by 140% as compared with the full period 1993-2009. Nevertheless, although our empirical findings indicate that over time more and more local senior academic economists publish in the journals listed in the WoS database, 53% of full professors and 79% of associate professors of economics & business still do not have any WoS journal article published abroad. And what is even more striking is that regardless of the current requirements by the Accreditation Commission and its research performance evaluation, professorship appointmens and habilitations without any publication record in the WoS database remain existing.

What can be done to foster the transformation of the Czech HE system and to restrain free-riding behaviour of some academics who unfairly benefit from their professorships in terms of social status,

[3] More than a fifth of habilitations were completed without any WoS journal article, around one-third of which in the field of Business Economics and Management.

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money, and power? A recent OECD report on the universities in Moravia-Silesia region offers the answer: "The Czech HEIs are in principle highly autonomous in staffing matters, but in practice constrained by the current academic qualifications and career system. The Czech career system with habilitation and strict career requirements involves a number of weakness that affect public and private higher education institutions´ flexibility. […] The system limits the supply of available professors and aprofessors and leads to a practice of holding multiple appointments by "flying professors". (Puukka et al., 2013, p. 32). As for the recommendations for national government, it is necessary to "Take steps to develop a more diverse academic career structure on the basis of a tenure system, rather than the existing system of habilitation". (Puukka et al., 2013, p. 34) In addition, we are convinced that without further reforms to the R&D evaluation methodology and introducing sound institutional peer-review system, no major progress in the Czech academic environment occurs.

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TAXES AS A SOURCE OF GOVERNMENT SPENDING FINANCING

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Abstract
Pro-growth effects are usually connected with the productive government spending financed by indirect taxes in the literature. Thus the aim of the paper is to confirm or refute this hypothesis for OECD countries in the period 2000-2012. Unlike similar studies, the analysis is based on a dynamic panel data model and uses two alternative proxies for taxation - the tax quota and the World Tax Index (WTI). Results of the analysis confirm the hypothesis, showing that if productive spending is financed by indirect taxes, the effect on economic growth is positive, while if the spending is financed by direct taxes, the effect on growth is negative. However, the increase in indirect tax revenues must be accompanied by an increase in real tax burden via this type of taxation approximated e.g. by the WTI, which means that only an increase in effectiveness of tax collection is not sufficient.

Keywords
Government Spending, Direct Taxes, Indirect Taxes, World Tax Index (WTI), Budget Balance.

JEL Classification
H60, H50, H20.

1 Introduction

Recent debt crisis in Europe (see e.g. Funta, 2011, Kačaljak 2011, or Aiginger et al., 2012 for more on the topic) has intensified the prolonged public debate about fiscal discipline in developed countries. Among others, European countries face the problem of costly social security systems and high mandatory/total government spending ratios, which gives them only minimal space for active fiscal policy-making. In an effort to lower the public debts, they are thus often forced to turn to the opposite side of their budgets - to the taxes.

However, although there is not a broad consensus among contemporary economists, the effect of taxation on economic growth is generally considered to be negative in economic theory. On the other hand, some of the government spending is widely considered to have a positive effect on growth. Hence the policy-makers are caught in a circle from which it is not easy to find a way out, either economically or from a purely political point of view.

If there is a part of government spending that has a positive effect on growth, there naturally occurs a question whether there are also taxes that would positively affect the growth, as suggested by several previous empirical papers (see the literature review below), in the developed countries. Standardly applied approach suggests that it is important to distinguish at least between direct and indirect taxes and their effects on growth in combination of type of government spending that is financed by the taxes. Pro-growth effects are connected with the productive spending financed by indirect taxes. Thus the aim of the paper is to confirm or refute this hypothesis for OECD countries in the period 2000-2012. Unlike other studies (Drobiszová, 2013, Macek, Machová and Kotlán, 2013), the analysis is based on a dynamic panel data model and uses two alternative proxies for taxation - the tax quota and the World Tax Index.

2 Literature review

The results of empirical analyses show that investment activities, and thus growth, are negatively affected in particular by corporate tax. For more, negative effects of corporate tax (e.g. Keuschnigg, 2009, or Janíčková, 2013), or also the taxation of dividends (e.g. Santoro and Wei, 2009), are very

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often associated with decisions to place foreign direct investment. Kotlán and Machová (2012a), Machová, Kliková and Kotlán (2013), or Kotlán (2012), however, empirically describe the ambiguous effects of corporate tax when using the tax quota and alternative taxation indexes. The negative effect of labor tax is confirmed by e.g. Erosa and Koreshkova (2007), particularly in case of progressive tax rates (for more on the progressivity of taxation, see e.g. Simonovits, 2013), but most of the studies agree on ambiguous effect, which is also the case of capital tax (see Lin, 2001, or Jacobs, Bovenberg, 2010).

Indirect taxes affect economic growth only through their effect on the substitution between leisure and work, while direct taxes have an effect by other, e.g. previously described, channels. The negative influence of direct taxes on economic growth should thus be greater and their distortionary effects stronger compared to indirect taxes. As evidenced by Mamatzakis (2005), shifting the tax burden from direct to indirect taxes can lead to the promotion of economic growth while preserving tax revenues for the state budget.

The issue of the distortionary nature of direct and indirect taxes is discussed by Kneller, Bleaney and Gemmell (1999). Where indirect taxes, as compared to direct taxes, have fewer distortionary effects, their negative effect on growth will be smaller, or even positive. They also point out that it is necessary to take into account the type of public expenditure that is financed through tax revenues. Pro-growth effects can only result from productive (investment) spending financed through non-distortionary, or indirect, taxes. In contrast, unproductive public (consumption) spending, especially if financed through distortionary taxes, has a negative effect on economic growth.

Empirical analyses confirm both the positive and negative effects of government spending on economic growth. Standard Keynesian theory understands government expenditure to be an exogenous factor that can be successfully used as a fiscal policy tool to promote economic growth. Lucas (1988) and Romer (1986), on the other hand, argue that only investments in human capital and research and development have pro-growth effects. Barro (1990) also considers investments in infrastructure as having pro-growth effects. As already mentioned, it is necessary to distinguish between productive and unproductive spending. However, Barro (1990), Foelster and Henrekson (2001), or Schaltegger and Torgler (2004) add that the effect of government expenditure on growth is negative in developed, wealthy economies with a large public sector and a greater proportion of non-productive expenditure due to crowding out.

Public Choice School economists offer interesting approach to the relationship between taxes and government spending. They understand collective decision-making about level of taxes and public spending as a result of rational individual fiscal decisions. As indicated by e.g. Buchanan (1999), the same mechanisms apply in the case of collective decisions as in the case of individuals, who adjust their spending according to their income. Although any decision to change spending necessarily leads to a decision about the level of taxation, any decision to change taxation leads to a decision about spending. Buchanan (1999) further indicates that this analogy applies especially under conditions of representative democracies, where all fiscal decisions are ultimately made by individuals, either directly or indirectly, and not by an entity completely separate from citizens. Individuals adjust their total expenditure, both private and public, to their incomes, but incomes can usually be adjusted to a relatively limited extent. Likewise, public spending can match the agreed level of tax revenues, rather than the other way round. However, the resulting direction of action will primarily depend on the institutional environment in which fiscal decision-making takes place.

Although the links between fiscal variables and growth are unexceptionable, most of the empirical studies investigates just one side of state budget, meaning either public spending or taxes, with the aim to confirm their effects on economic growth (Kotlán and Machová, 2013b, or Machová and Kotlán, 2013a). However, like e.g. Helms (1985) shows, the analysis should be extended with the examination of combined influence of both taxes and spending, which is supposed to give different point of view and results, as indicated already in Machová (2012, 2013).

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In that case, it is also necessary to include the budget balance into the analysis. This approach was used also by Izák (2011), Benos (2009), Bleaney, Gemmell and Kneller (2001), or Kneller, Bleaney and Gemmell (1999). These works express the economic growth as a function of vector of control growth variables and vector of fiscal variables, including tax revenues and government spending and state budget deficit in required structure. To avoid the complete multicollinearity, it is necessary to omit one variable in the model. If it is e.g. the variable of productive government spending, it is possible to interpret regression coefficients of taxation variables as a change of economic growth in case they are used to finance the productive government spending. As such, it is possible to analyze the structure of public spending as well as the sources of their financing and their combined effects on economic growth.

As already mentioned, empirical studies show that to achieve positive effects on growth, productive government spending must be financed by non-distortionary, or indirect, taxes. On the other hand, negative impact on growth results from the combination of direct taxes and unproductive government spending being financed by them.

The experience from the OECD countries concerning the influence of fiscal policy on growth confirms the approaches above in many aspects. Kneller, Bleaney and Gemmell (1999) used a panel of 22 OECD countries, 1970-1995. They confirm the results of Barro (1990) for the OECD countries showing that distortionary taxes reduce growth, while non-distortionary taxes do not, and productive government expenditure enhances growth, while non-productive do not. However, in their later study (Bleaney, Gemmell and Kneller, 2001), they also show that long-run fiscal effects are not fully captured by period averaging and static panel methods (as in case of Barro, 1990). Alesina and Ardagna (2010) used OECD data from 1970 to 2007 to show that fiscal stimuli based on tax cuts are more likely to increase growth than those based on government spending increases, and that fiscal adjustments based on spending cuts and no tax increases are more likely to reduce deficits and debt over GDP ratios than those based on tax increases. It is also interesting to add that Bhattacharya and Mukherjee (2013) used a panel data from 18 OECD countries to confirm that households in the OECD move from non-Ricardian to Ricardian behaviour as government debt reaches high levels and as uncertainty about future taxes increases. Recent study by Afonso and Jalles (2014) for OECD countries still shows that taxes on income are less for growth enhancing, as well as public wages, interest payments, subsidies and government consumption, while spending on education and health boosts growth, which is another confirmation of positive effects of productive spending and negative effects of unproductive spending and some types of taxes in the OECD. This supports the necessity to distinguish between different types of taxes and spending.

3 Methodology and data

The analysis below is based on a dynamic panel data model, where real GDP per capita (*GDP*) is dependent variable. According to the approach described above, independent variables include two groups of variables. The first group includes standard growth variables, i.e. physical capital accumulation (*CAP*, growth fixed capital formation as a percentage of GDP) and human capital accumulation (*HC*, according to Feenstra, Inklaar and Timmer, 2013, indicator based on years of schooling and investment in education). Fiscal variables include taxation, government spending and budget balance (*DEF*).

In case of government spending, we distinguish between productive and unproductive spending (*UNPROD*), but in accordance with the approach above, we omit productive spending from the model. The classification is made according to the study by Bleaney, Gemmell and Kneller (2001). Unproductive spending includes consumption spending, social contributions above all, while productive spending includes investments into infrastructure, education, health etc.

For taxation, two alternative proxies are used. First, 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, 2013a), the analysis uses also the World Tax Index (*WTI*) as

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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 spending, and tax revenues (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 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.

The analysis was performed for 34 OECD countries in the years 2000-2012. As an estimation method a generalized method of moments (GMM) was used, specifically the Arellano-Bond estimator (see Arellano a 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).

4 Results

The aim of the empirical part of the paper is to confirm or refute the hypothesis about positive effect of productive government spending on economic growth in case they are financed by indirect taxes, i.e. in the situation when the tax burden by indirect taxes increases as well as the productive spending. The lagged dependent variables were used as instruments for each period with starting lag equal 2. This led to 34 implicit instruments because the set of instruments grows as the number of periods increase. 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. The results of the analysis are presented in the table 1.

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Table 1. Regression analysis results

Dependent variable	D(LOG(GDP))			
Taxation proxy	TQ		WTI	
No. of observations	340		340	
No. of instruments	34		34	
J-statistics	28,673		29,564	
	Coefficient	t-statistics	Coefficient	t-statistics
D(LOG(GDP(-1)))	0,017	0,475	0,024	0,546
D(LOG(CAP))	0,462	74,930***	0,461	55,708***
D(LOG(HC))	0,025	0,115	0,108	0,459
D(DEF(-1))	-0,645	-22,082***	-0,674	-20,325***
D(UNPROD(-1))	-0,494	-5,812***	-0,570	-5,902***
D(TQDIR(-1))/WTIDIR(-1)	0,001	1,293	-0,073	-2,254**
D(TQIND(-1))/WTIIND(-1)	-0,005	-3,402***	0,073	1,510*

*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 control growth variables, results of the analysis confirmed positive effect of both physical and human capital accumulation on economic growth in case of both models (the model including tax quota and the model including the WTI).

Statistically significant regression coefficients were estimated for all the fiscal variables in both models. In case of decrease of the state budget deficit caused by the decrease of productive government spending, the effect on growth is negative, ceteris paribus. Quantitatively, the situation is similar in both models. The result confirms the standard Keynesian approach, but only in case of a part of government spending that can be labeled as productive, i.e. investment spending.

Negative regression coefficients are in both models estimated also for unproductive government spending. This means that if such spending is increased at the expense of productive spending, the effect on economic growth is negative, ceteris paribus. That is e.g. the situation when government investments are reduced in favor of social spending.

However, coefficients estimated for the taxation variables are the most important issue in the analysis. Those confirm the stated hypothesis, but only in case of the model where WTI is used as a taxation proxy. These coefficients show that if productive spending is financed by indirect taxes (*WTIIND*), the effect on economic growth is positive, while if the spending is financed by direct taxes (*WTIDIR*) the effect is negative. This means that e.g. an increase of individual income taxes with the aim to finance government investment may be contra productive in the end.

Because the results were not statistically significant in case of the model with the tax quota and thus it is not possible to interpret the results reliably, the analysis was enlarged with a correlation analysis of the relationship between the tax quota (showing the tax revenues for the state budget) and the WTI (showing the real tax burden of economic agents). Using the standard Pearson's coefficient, the analysis has proven that there exist a statistically significant correlation between average values of those variables in the observed period, as shown in the table 2, both in case of direct and indirect taxes.

Table 2. Correlation analysis results

	Pearson's coefficient	Sig.
WTIDIR and TQDIR	0,402	0,019**
WTIIND and TQIND	0,667	0,000***

*Note: *, **, *** stand for significance levels of 10%, 5% and 1%, respectively.*

Source: own calculations.

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The results indicate that, approximately, if the real tax burden increases (WTI), tax revenues also rise, especially in case of the indirect taxes. Thus it is possible to interpret the results of the regression analysis in a way that if the increase in real indirect tax burden is accompanied by an increase in tax revenues that are used to finance the productive government spending, it enhances economic growth. The actual increase in indirect tax revenue is not sufficient to support economic growth, and tax quota is not a suitable indicator to be used in such kind of analysis.

5 Conclusion

The aim of the paper was to confirm or refute the hypothesis about positive effect of indirect taxes on the economic growth in case they are used to finance increasing productive government spending. To achieve this objective, a dynamic panel data analysis was used, approximating the taxation via two alternative indicators of taxation - the tax quota and the World tax Index (WTI).

Results of the analysis significantly confirm the hypothesis, but only in case the WTI is used as a taxation proxy in the model. In addition, further analysis shows that there exist significant correlation between the WTI and the tax quota. Thus the results may be interpreted in a way that the increase in indirect tax revenues must be accompanied by an increase in real tax burden via this type of taxation approximated. Only an increase in effectiveness of tax collection is not sufficient.

It means that e.g. an increase of individual income taxes with the aim to finance government investment may be contra productive in the end. On the other hand, if the real tax burden via indirect taxes rises and there is a simultaneous increase in tax revenues that are used to finance government investments, the effect on growth may be positive. This indicates that economic entities in developed countries are willing to accept a higher tax burden and yet not restrict their activity only in a situation where the government spending is efficient, and only in the case of indirect taxes.

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INTERACTIONS BETWEEN COMPETITIVENESS AND INNOVATION IN SELECTED COUNTRIES OF THE EUROPEAN UNION AND SWITZERLAND

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Abstract
In recent decades, the terms "competitiveness" and "innovation" have been very widely used both separately and in relation to their interaction. The purpose of this article is to verify if the innovativeness of economies has an impact on competitiveness and vice versa. Five countries – four member states of the European Union – two large economies (Germany and Poland) and two small economies (Czech Republic and Austria) and Switzerland which belongs to leaders in both areas – were selected for this purpose. Two indices, i.e. the World Competitiveness Scoreboard, which examines the competitiveness of ca. sixty economies, and the Summary Innovation Index, which measures the rate of innovativeness of European economies, were used as a basis. The interaction of competitiveness and innovation was determined using a correlation analysis from 2001 to 2009.

Keywords
Competitiveness, Innovation, Summary Innovation Index, Global Competitiveness Index, Correlation Analysis.

JEL Classification
O31, O52.

1 Introduction

At the moment, there is ever-growing talk about the importance of innovation as a basis of competitiveness of economies. As stated by Skokan (2005), innovations are fundamental to the competitiveness of states and regions. Cooke et al. (2000) similarly claims that innovations are the key to improving the competitiveness, economic growth and employment. The Economic Commission of the EU takes the view that the competitiveness depends on abilities to support innovations (EC, 2010 b), and the statement that all forms of innovations must be supported in order to ensure competitiveness, prosperity and welfare conditions belongs to generally accepted principles. Though, Cantwell (2005) also points out that if the competitiveness is to make any sense, it must be considered as a comparison of abilities of engaged subjects to develop innovations and growth and not as a mutually antagonistic competition.

The above-mentioned generally accepted practice on the interaction between innovation and competitiveness shall be verified in selected European countries – specifically the Czech Republic, Poland, Austria, Germany (as member states of the European Union) and Switzerland from 2001 to 2009 – using a correlation analysis. For this analysis – in terms of competitive maturity – economies at a different level of development and of various size – both small and large economies (within the EU) – were selected. Two indicators were used to measure innovation and competitiveness – i.e. Summary Innovation Index (SII), which is the main instrument for making a comparison between innovation environment and innovation performance of national economies in Europe, and World Competitiveness Scoreboard (WCS), which tries to express competitiveness to the widest possible range while giving an overall picture of the competitiveness of individual economies as an indicator of a complex method for assessing competitiveness.

Though the time period selected is short (SII index was used, for the first time, in 2001, the final year of 2009 was selected for reasons of non-inclusion of consequences of the economic crisis), it is sufficient to show interactions with regard to the fact that it is a pilot study.

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2 Methodological starting points

Over the past two decades, two methods for measuring complex competitiveness have become of great importance: measurement of the International Management Institute (IMD) in Lausanne and measurement of the World Economic Forum (WEF) when both the institutions publish results of their measurements in their yearbooks. According to the WEF, e. g. Majerová and Nezval (2013), Chudárková and Verner (2013) dealt with measuring the competitiveness of the economies observed. To measure the competitiveness of member states of the European Union, the European Competitive Index (ECI), which measures, compares and identifies the competitiveness of individual economies and their regions within Europe, was developed. According to Huggins et al. (2004), ECI includes an integrated and total scale measuring the competitiveness capacity, performance and sustainability of each nation and region in the EU, Switzerland and Norway.

Several international institutions try to express and measure innovation performance. Nowadays, there are three different methods: partly, it is the Summary Innovation Index (SII), which is built at the level of European economies, and two global innovation indices – Global Innovation Index (GII) built by Boston Consulting Group (BCG) in cooperation with the National Association of Manufacturers (NAM) and Global Innovation Index implemented by the Business School for the World (Institut Européen d'Administration des Affaires, INSEAD) and the World Intellectual Property Organization (WIPO). The last two indices have been built in the recent years, their time series does not correspond to the period examined, therefore, the SII index shall be studied.

2.1 Measuring competitiveness by means of the World Competitiveness Scoreboard

Assessments, which have been published in the World Competitiveness Yearbook (WCY) since 1989, made by the IMD by means of the World Competitiveness Scoreboard (WCS), belong to the first prestigious assessment of competitiveness of national economies. The competitiveness of economies is conditioned by certain prerequisites which can be, according to Garelli (2013), summarized in four large groups and that serve as a basis for calculating the WCS value, see the figure 1. (More about issue of public finance see Halásková and Halásková, 2014)

At the moment, the competitiveness assessment includes less than sixty countries with more than three hundreds of summarized criteria. IMD partly uses hard data and partly soft data, and the same weight is assigned to each of factors – the weight of hard data is equal to one, the weight of soft data is equal to one half. There are no degrees of development of individual economies, however, we can come across the division to economies to twenty million inhabitants and above twenty million inhabitants.

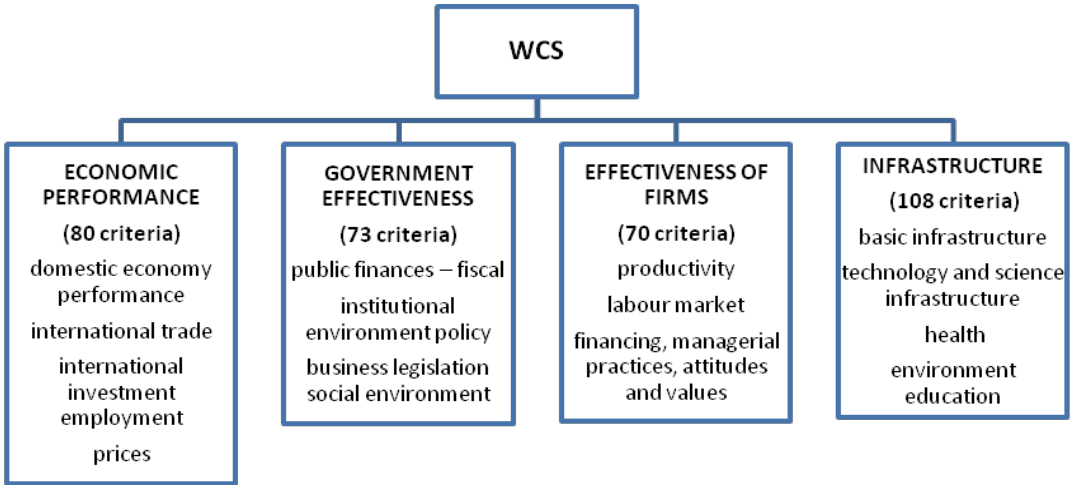

Figure 1. A structure of factors used in WCS (Source: author´s own records)

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The methodology for calculating this indicator is based on the method of standard deviation which measures the relative difference in performance of individual economies (IMD, 2008). For this reason, a relative position of each economy in the value system given can be assessed more exactly. First of all, an average value for the overall population is calculated for each criterion and then, the standard deviation is calculated:

$$S = \sqrt{\frac{\sum \left(x - \bar{x}\right)^2}{N}} \tag{1}$$

where:

S - standard deviation

x - original value

$\bar{x}$ - average value of all economies observed

N - number of economies

Subsequently, the standardized value is calculated:

$$STH = \frac{x - \bar{x}}{S} \tag{2}$$

The development of this assessment of competitiveness of selected economies is shown in the table 1. The numbers are related to the score value, the values in the brackets to the ranking on a scale. The score ranges from 1 to 100 when the higher value means better economy competitiveness and the highest value (100) always gains the most competitive economy (in the last years, it is USA, before, it belonged to Scandinavian countries). The development of competitiveness of all economies observed shows high volatility – we cannot say in any case that economies in this time series strengthened or weakened their competitiveness. The Czech Republic is the case of the least stable development, it achieved the worst result in 2004 when it fell down to the lower limit of competitiveness. A similar fall was also recorded by Switzerland the fall of which by eight places on the scale was the worst result in the period observed. Austria experienced a drop in 2005, Germany and Poland in 2006. As for Poland, its increase in the competitiveness is very significant in the past three years, and it reflects the attempts of this economy to improve its competitive position in the world economy.

2.2 Summary Innovation Index

Innovations cannot be perceived only as introduction of new products and production processes but also as application of changes in the labour organization and management of enterprises or new methods for sales of products. The innovation performance is not related only to abilities of enterprises, however, it is also related to the environment of the overall national system which includes the system of public and private institutions. Their activities and relations ensure creation, transfer and use of new knowledge and their mutual compliance and continuous interactions are important for a well-functioning national innovation system. Not only enterprises, suppliers and their customers but also universities and research establishments and undoubtedly quality of institutions and environment in which the innovation process is implemented play an important part in the innovation process.

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In Europe, the main instrument for the comparison between innovation environment and innovation performance of national economies is the Summary Innovation Index (SII), which has been built since 2001 and that is published in the European Innovation Scoreboard (EIS). Publishing of this scoreboard began based on the Lisbon European Council in 2000, and it provides a comparative analysis of innovation indicators to monitor progress of the EU to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth, with a qualitative and quantitative increase in jobs and greater social cohesion. SII belongs to composite (summary) indicators which summarize data of two or more individual indicators (indicators from the area of innovation, science and research) while enabling consideration of the multi-dimensional essence of innovation performance.

The European Commission (EC, 2010c) takes the view that the SII is an overview of national innovation performance of all European economies and based on results, it divides countries into four large groups:

- innovation leaders – their innovation performance is above the EU average
- innovation followers – their innovation performance is below the level of leaders but above the EU average
- average innovators – their innovation performance is below the EU average
- catching-up economies – their innovation performance is below the EU average but the growth rate is above the EU average in terms of innovations

Similarly to the division of economies to innovation groups, the index structure also experienced significant changes over time which were caused by changing the innovation environment and impacts in national economies as well as in the world´s economy. Though three changes in the construction of SII indicators took place in the period observed (see the figure 2), a possible comparison of individual years is declared in each scoreboard. This assumption was accepted for the purposes of the article and a comparison of economies was made in the years observed.

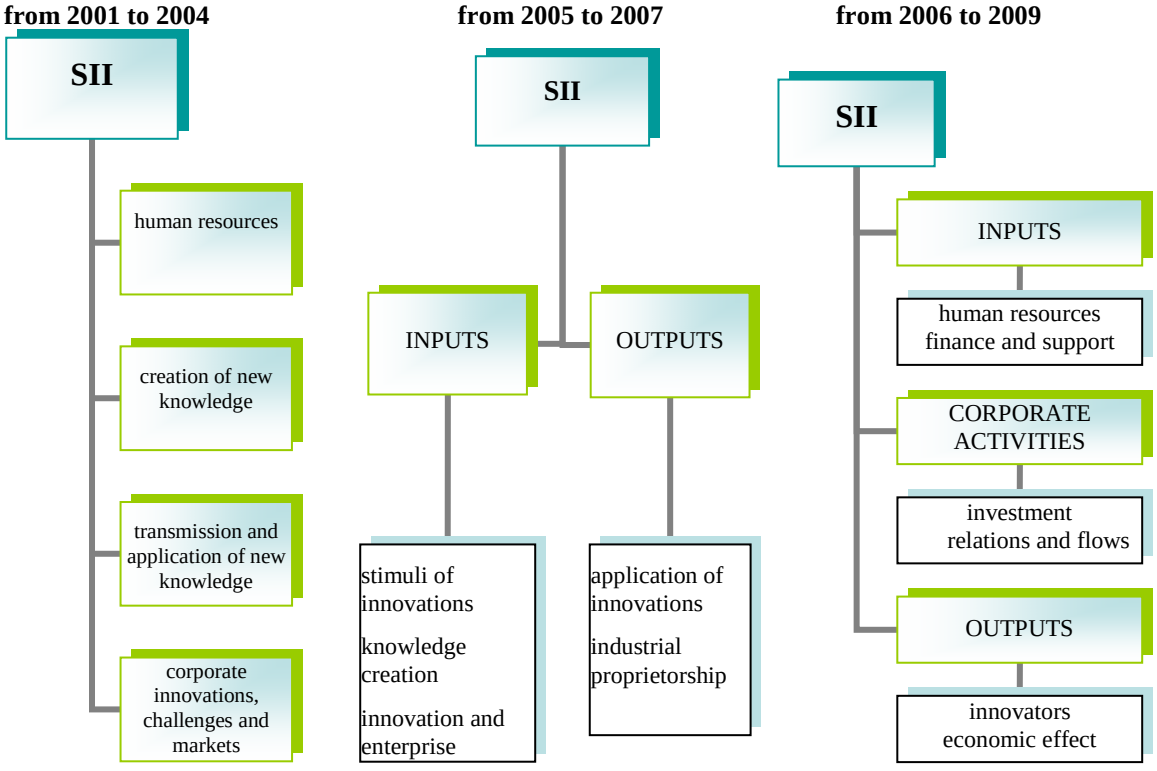

Figure 2. Development of the SII index from 2001 to 2009 (Source: author´s own records based on the EC, 2001-2009)

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Values of the Summary Innovation Index range from 0 to 1, the closer the value is to zero the higher the ability of the economy to produce and implement innovations is. The methodology for calculating this index is used according to Hollanders and Arundel (2004) and is mentioned in the following relations:

$$SII_i = \frac{\sum_{j=1}^{m} q_j y_{ij}}{\sum_{j=1}^{m} q_j} \tag{3}$$

where

$$y_{ij} = \frac{x_{ij} - \min(x_j)}{\max(x_j) - \min(x_j)} \tag{4}$$

x_{ij} is the value of the indicator j for the country i, q_i is the weight of the indicator j in the index and y_{ij} is the value of the adjusted indicator of the economy i.

The development of this SII index in the economies selected and periods observed is shown in the table 1. The year of 2001 is only a simulation for the applicant countries (Czech Republic and Poland) based on the SII unavailability (see Cordis, online).

Table 1. Unmeasurable indicators of competitiveness in the economies observed from 2001 to 2009

	Czech Republic		Germany		Poland		Austria		Switzerland	
	WCS	SII	WCS	SII	WCS	SII	WCS	SII	WCS	SII
2001	46.68	0.27	74.04	0.6	32.01	0.1	72.54	0.47	76.81	0.69
2002	55.29	0.31	70.89	0.6	30.18	0.2	74.64	0.47	79.44	0.69
2003	45.55	0.31	69.77	0.6	21.53	0.2	82.58	0.48	89.73	0.7
2004	56.44	0.31	73.44	0.6	41.95	0.21	78.93	0.48	78.81	0.71
2005	60.13	0.33	67.84	0.6	39.02	0.21	74.33	0.48	82.53	0.69
2006	63	0.34	68.64	0.59	39.96	0.22	79.3	0.48	81.54	0.69
2007	59.62	0.39	78.02	0.57	42.73	0.29	83.18	0.52	90.43	0.66
2008	62.25	0.4	74.74	0.58	47.55	0.31	75.03	0.53	89.66	0.68
2009	62.25	0.42	83.51	0.59	53.93	0.32	79.29	0.54	94.16	0.69

Source: author´s own records based on Cordis (online), IMD (2001-2009) and EC (2001-2010a).

3 Interaction of competitiveness and innovativeness

The assumption of the interaction between competitiveness and innovativeness of economies is verified based on correlation and simple linear regression. The correlation is made by means of the Pearson´s correlation coefficient (see the relation 5) on two significance levels $\alpha = 0{,}05$ and $\alpha = 0{,}01$, and coefficients of determination R^2 have also been specified. By using the Pearson´s correlation coefficient r, the assumption that both variables are random quantities and have common two-dimensional normal division should be followed.

$$r_{xy} = \frac{\sum_i (x_i - \bar{x})(y_i - \bar{y})}{(n-1)s_x s_y} \tag{5}$$

where:

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n - number of measurements

i - 1,…., n

x_i, y_i - normal division of random variables X and Y

$\bar{x}, \bar{y}$ - value average

s_x, s_y - standard deviation

An overview of values of indicators in the time series for individual countries is included in the table 1. Based on these data, regression (equation for a regression line) has been specified.

$$y = \beta_0 + \beta_1 x + \varepsilon \tag{6}$$

where β_0 and β_1 are values of regression line parameters, ε represents a random element. We get these values by estimating b_0 and b_1 (regression coefficients), and they are calculated by means of the method of least squares.

The correlation results are shown in the tables 2 and 3. The first table shows the results of regression analysis correlation in individual years in all five economies observed and points to interactions (in 2001 and 2007 to 2009 for the significance level $\alpha = 0{,}01$). By analyzing interactions in individual years, it was found out that the hypothesis on a mutual positive relation between the competitiveness and innovation shall be applied to both significance levels.

Table 2. Interaction between competitiveness and innovation from 2001 to 2009 in compared economies

year	y	α
2001	0.967072828	**
2002	0.90927147	*
2003	0.918324136	*
2004	0.898412331	*
2005	0.907250624	*
2006	0.858059359	*
2007	0.96823017	**
2008	0.984307302	**
2009	0.996487189	**

*for α=0.05, **for α=0.01
Source: author´s own records.

By means of regression analysis, we have identified a close relation between competitiveness and innovation expressed by complex indicators which is also supported by trends in the figure 3. An exception is the year of 2006 when the coefficient of determination R^2 does not deviate much from the high value (0.75), and it is shown in the graph in the same way. The values of the World Competitiveness Scoreboard WCS are shown on the axis X and the values of the Summary Innovation Index SII on the axis Y.

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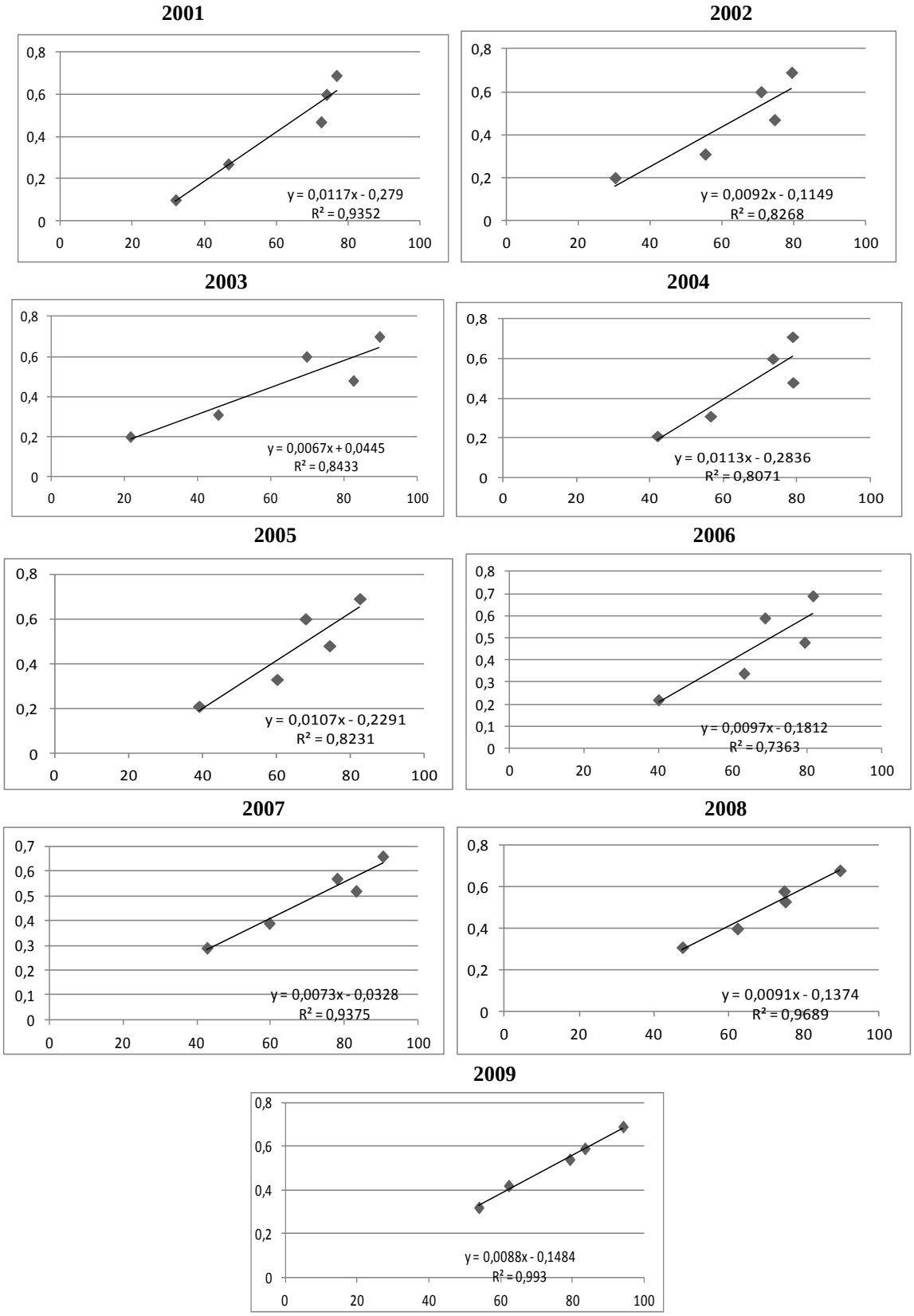

Figure 3. Correlation of the WCS index and SII index in all observed economies from 2001 to 2009 (Source: author´s calculation)

A very interesting fact is that interactions between competitiveness and innovation were very significant from 2007 to 2009. We can think that it was caused by some "automatic safety system"

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of economies the behaviour of which (or behaviour of their economic subjects) had a subconscious leaning towards the recovery of economic growth (and thus towards the state before the crisis) by means of innovation activities as a basis of higher competitiveness, higher productivity, lower unemployment and others.

Further, the correlation and regression analysis in terms of individual economies in all observed years were made. In this case, the hypothesis on the interaction between competitiveness and innovation was confirmed only in case of the former centrally planned economies, i.e. at the significance level $\alpha = 0{,}05$ (see table 3). The answer as to why these economies is not too complicated. A shortage of innovation activities which was apparent at the time of socialism had a strongly negative impact on the competitiveness of these economies. During the period of transition, there was a need to change this trend – the introduction of innovations helped to increase the competitiveness to a larger extent compared to developed countries. And this trend persists. Moreover, both the economies belong, in terms of classification of economies according to their ability to innovate, among close peripheries (see Lebiedzik et al., 2011 for more details), i.e. countries which do not create but only accept innovations. Striving for a "catching-up effect" causes a strong relation of the above-mentioned indicators.

Table 3. Interaction between competitiveness and innovation from 2001 to 2009 in compared economies

country	y	α
Czech Republic	0.744559	*
Germany	-0.49706	
Poland	0.728886	*
Austria	0.307511	
Switzerland	-0.42307	

*for α=0.05, **for α=0.01
Source: author´s own records.

In the Czech Republic and Poland, there is a relatively positive close relation between innovation and competitiveness while in case of other economies, this relation is small, and in case of Germany and Switzerland, even negative (though statistically inconsiderable). The weakest relation was again proven in case of Austria as in the previous cases. It is interesting since the area of Austria is only slightly larger than the area of the Czech Republic and its number of inhabitants is lower, i.e. it is a comparable economy and closer relations between examined variables could be supposed.

4 Conclusion

The article tried to confirm the relation of the innovativeness rate expressed by the innovation index and competitiveness rate expressed by the world competitiveness scoreboard in the economies given and years observed. Switzerland was found out to be the most innovative economy, it was followed by Germany and Austria, further by the Czech Republic and Poland when these results corresponded to the order of unmeasurable indicators of competitiveness. In the years observed, the dependence between competitiveness and innovativeness was confirmed but in terms of individual economies, this hypothesis was confirmed only in case of the Czech Republic and Poland as two catching-up countries.

The most competitive and innovative economy was the smallest economy – Switzerland, which was followed by the largest economy – Germany and the small economy – Austria. The Czech Republic and Poland lag behind both in the area of competitiveness and in the area of innovations. Although the export of the Czech Republic is efficient, however, only thanks to low prices of exported products. Another conclusion is that if the economy is less competitive such as the last two countries named, the relation to innovation is much closer than in the case of economies with better

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assessment of competitiveness which is supported by the situation of Switzerland, Germany or Austria.

5 Acknowledgement

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REGIONAL PATHS OF AGRICULTURAL LABOUR FORCE DEVELOPMENT IN THE CZECH REPUBLIC: GROWTH OF LABOUR PRODUCTIVITY OR TICKING TIMEBOMB?

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Abstract
Agriculture in the Czech Republic has experienced dramatic structural changes in the last two decades. The main paradigm of agriculture has been also gradually reshaped. In the context of the Common Agricultural Policy food production as the main driving force of agriculture is being gradually replaced by post-productionist approach to agriculture. A demonstration of the above mentioned shift includes non-agricultural activities of farmers, growing of energy crops or processing of agricultural production into energies (biogas stations). Nowadays the direction of agriculture should be generally linked more to the requirements for sustainable rural development. The aim of this contribution is to follow how this change is reflected in changes of agricultural labour force before and after EU accession. Population in the Czech Republic engaged in agriculture was analysed on the basis of two agricultural censuses (Agrocensus 2000 and 2010) and basic attention was paid to the regional specifics of agricultural labour force changes. The development of age structure of the farmers in the districts of the Czech Republic (77 units) has been evaluated and basic trends for future have been identified. Changes of agricultural labour force have been also assessed in the context of the quality of natural conditions for agriculture. Widespread dynamic worsening of age structure of farmers and intensive decrease of the number of farmers in areas with average agricultural natural conditions were all found out as the main results of analyses.

Keywords
Labour Force, Agriculture, Czech Republic, Agricultural Geography, Spatial Analysis.

JEL Classification
R1, J61, Q2.

1 Introduction

Agriculture of the Czech Republic has been facing dynamic structural changes in the last quarter of the 21st century. The sector of economy which employed more than a half million people at the end of 1980s has been under conditions of free market economy and its consequences changed into economically not so important sector, which nowadays makes not more than 1.4 % of gross value added in the Czech Republic and gives job to just circa 100 thousands of people (2013). Basic functions of agriculture have been also reshaped and transformed. While previous main paradigm of the agriculture was basically food production and other functions were subordinated, nowadays other approaches like environmental, cultural ones are gradually emphasized. One of the demonstrations of the mentioned trend is support for non-agricultural activities of farmers (e.g. tourism, services etc. – Navrátil, 2013; Konečný, 2014) and an increased support for non-food agricultural production (e.g. energy crops, technical crops etc. – Lupp et al., 2014, Warren 2014) or organic farming (Doležalová, 2009). This post-productionist paradigm of agriculture has been developing in old EU countries since 1980s (Marsden et al., 1996; Ilbery and Bowler, 1998; Evans et al., 2002), dramatic increase of this approach might be placed in case of the Czech Republic in late 1990s, when preparations for EU accession were started (Věžník and Konečný, 2011) and after 2004, when Common Agricultural Policy started to be applied (Věžník et al., 2013).

Agriculture used to be the key employer in rural and particularly peripheral areas, but this role has been lost during the last two decades. As a result of lack of other job opportunities an increase of unemployment of rural population is obvious. Since low qualification level of former agricultural workers and reduced commuting possibilities in peripheral rural regions are obvious (Novotná et al.,

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2013), it is quite difficult for these people to find jobs in other sectors of economy. There were expectations that after 2004, when the Common Agricultural Policy was applied in the Czech Republic, the situation of the Czech agriculture regarding its extent, structure and labour force needs will be stabilized. However, the expected development failed to happen and next massive reductions of the scale of agriculture appeared in the last decade (e.g. a half of pig heads and one sixth of poultry have disappeared since 2004), which concluded in appearance of numerous abandoned agricultural brownfields (Svobodová and Věžník, 2009; Skála et al., 2013; Klusáček et al., 2013). These hardly marketable properties (Frantál et al., 2013; Doleželová et al., 2014) together with yellow fields of rape plant became an integral part of the typical picture of contemporary countryside of the Czech Republic. On the other hand, increases in numbers of other types of animal husbandry like horses (more than 60 %) and sheep (90 %) can be noticed. In case of cultivation of plants, the structure of the sowing areas hasn´t faced such dramatic changes, though an increase of sowing areas of rape plant (50 % in comparison to 2004; rape plant became the second most sown plant) has been recorded along with a huge reduction of potatoes production (80 % in last two decades), which relates to the growing importance of non-food agricultural production and connected post-productionist approach of Czech farming (Svobodová, 2014). As a side-effect of such trend in the agriculture of the Czech Republic a sharp increase in the extent of agricultural land that is used for growing crops for energy purposes can be stressed (Dvořák et al., 2013). And we cannot leave out widely spread agricultural anaerobic digestion plants primarily fed by corn maize instead of using agricultural waste in larger amounts (Martinát et al., 2013a; Martinát et al., 2013b). As an integral part of the recent shifts in the agricultural sector of the Czech Republic agricultural labour forces have also undergone a complicated development and is worth analysing in the context of overall agricultural declines. The aim of this contribution is to analyse the changes of agricultural labour force in the Czech Republic and changing of age and gender structure under different natural conditions during the period before and after EU accession (2000-2012). Data are analysed for both levels of the Czech Republic and individual districts (77 units) and originate from two agricultural censuses, which were conducted by the Czech Statistical Office (www.czso.cz) in 2000 and 2010. Data on agricultural labour force for the Czech Republic as a whole originate from the Ministry of Agriculture of the Czech Republic (from the so called Green Reports 2000-2012).

2 Economic background

According to the data of the Ministry of Agriculture of the Czech Republic agriculture gave jobs to 105 thousand people. As it is illustrated in the table 1, the number of people engaged with agriculture in the Czech Republic has been experiencing long-term decline. While at the end of 1980s circa 553 thousands of people worked in agriculture, by 2012 more than 80 % of those people left for retirement or changed the economic sector. In comparison to data from the turn of millennium, decreases are still highly relevant declining by one third. If we analyse the share of agricultural labour force in labour force of the whole economy of the Czech Republic, we conclude that the importance of agriculture from the point of view of employment is dramatically declining. If in 2000 it was 4 %, twelve years later it was just 2.6 %. Such a huge slump is mirrored in the decline of the economic importance of agriculture. If in 2000 agriculture made 3 % of gross value added of the Czech Republic, in 2012 it is just 1.3 %. It is obvious that the economic importance of agriculture of the Czech Republic is decreasing even more rapidly than the employment in agriculture (see figure 1).

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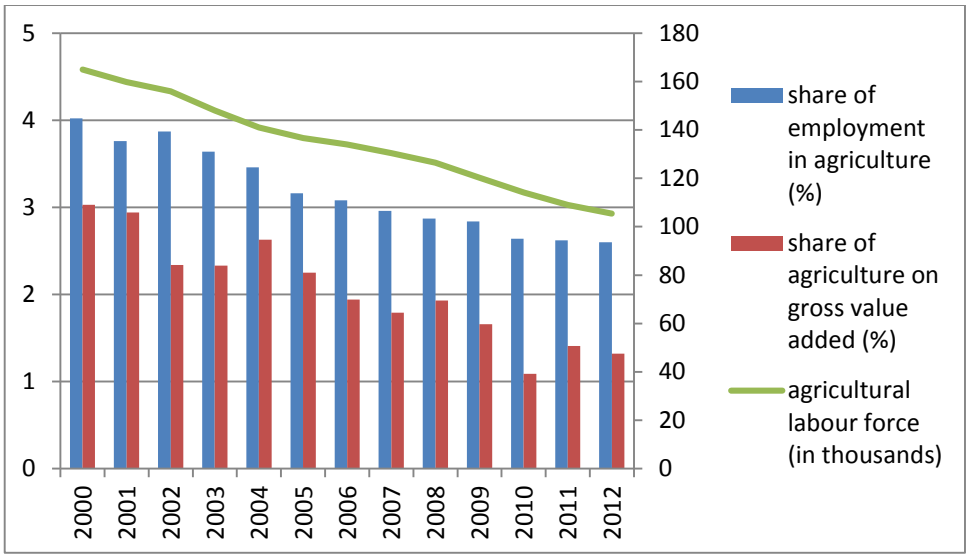

Figure 1. Development of employment in agriculture and share of agriculture on the gross value added in the economy of the Czech Republic in the period 2000-2012 (Source: Czech Statistical Office, Ministry of Agriculture of the Czech Republic – Green Reports 2000-2012; own calculations and processing)

It is evident that such a development gets reflected in the changing of the productivity of agriculture. The development of agricultural productivity for the period 1998-2012 is illustrated in figure 2. As a consequence of the dramatic decline of the employment in agriculture the productivity per person has increased by 50 % (to 939 thousand CZK per head in 2012). On the other hand, the productivity of agriculture recalculated per 1 hectare of agricultural land shows balanced development and its value oscillates around 23 thousand CZK (2012) – see figure 2. Regarding the changing extent of agricultural land in the Czech Republic during the last decade it can be stated that since 2000 this extent has decreased by 53 thousand hectares of agriculture land. It seems at first sight to be of little consequence, however the reduction of open landscape causes plenty of environmental problems (like flooding), which are thus concentrated within regions under the strongest pressure for land use change (e.g. hinterland of large cities etc.). Taking into account the increase of productivity of agriculture together with the growing massive inflow of agricultural subsidies (44 billion of CZK in 2012 in comparison to 20 billion of CZK before EU accession) and dramatic increase of profitability of the Czech agricultural sector (16.4 billion of CZK in 2012), it can be stated that social function of agriculture in rural areas has been significantly suppressed in favour of economic factors.

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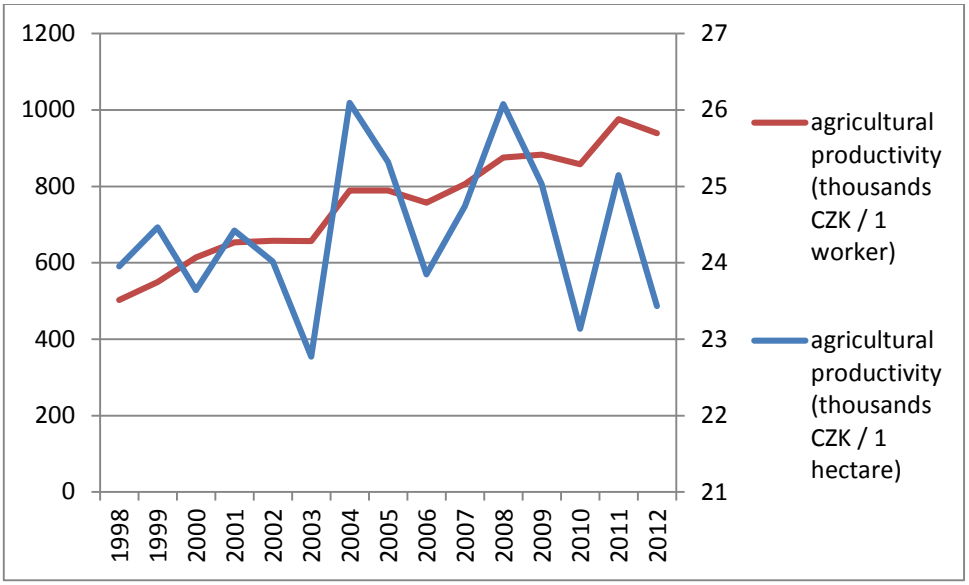

Figure 2. Development of agricultural productivity in the Czech Republic in the period 1998-2012 (in thousands of CZK) (Source: Czech Statistical Office, Ministry of Agriculture of the Czech Republic – Green Reports 2000-2012; own calculations and processing)

3 Methodological remarks

If we are to analyse regional contexts of the mentioned declines of agricultural labour force, it is inevitable to analyse data from agricultural censuses. The so called Agricensuses have been organized by the Czech Statistical Office since 1995 with periodicity of 3-5 years (1995, 2000, 2003, 2007, 2010, 2013). Unfortunately, data provided by Agricensuses are not completely consistent and comparable due to the application of slightly different methodologies for gathering data. While in the censuses of 1995 and 2000 farms with more than 1 hectare of agriculture land were taken into account, starting from census of 2003 these were merely farms with more than 5 hectares. Due to the lack of other reliable statistical sources on agriculture on the district level (77 units), data from agricultural censuses are the only possibility to apply for the detailed analyses on regional aspects of agriculture of the Czech Republic and its development. From the geographer´s perspective agricultural statistical data provided by the Czech Statistical Office on the regional level (14 units) are not able to cover the regional specifics of individual regions (they are too big, inner regional differences cannot be taken into account) and are practically unusable. Thus despite the above mentioned methodological problems Agricensuses can be used for analyses, provided that not all data are available and merely the samples could be analysed. To analyse the agricultural labour force the data from two time horizons were used (2000, 2010). The prior year was chosen to illustrate the state of agriculture before EU accession and the year 2010 to present the most recent available data (data from Agricensus 2013 are not available yet). The main focus of interest was the age structure of farmers and their regional distribution within the districts of the Czech Republic. The natural conditions for agriculture in individual districts were also considered regarding the average price of agricultural land of the given district.

Agricensus 2000 counted 157, 2 thousand persons engaged in agriculture in the Czech Republic (according to the data of the Ministry of Agriculture of the Czech Republic for the year 2000 it was 164,9 thousand, which is a rise by 5 %). Ten years later, during Agricensus 2010, 132.8 thousand persons were counted. According to the data of the Ministry of Agriculture for 2010 it is 114.2 thousand persons, thus a decline by 16 %. Such variance is caused by different methods of calculating (the data used by the Ministry of Agriculture is based more on estimations and thresholds for Agricensuses in 2000, while in case of the year 2010 it was slightly different – see above), but despite this fact both files are comparable and could be analysed as sample files.

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4 Changes in agricultural labour force

Both files on agricultural labour force from Agricensuses 2000 and 2010 were firstly analysed on the national level, then regional analyses based on the district level were performed. If both numbers of agricultural labour force are compared, we come to the conclusion that during the studied decade the number of farmers decreased by 15.5 % (a decline by almost 30 % is evidenced by the data of Ministry of Agriculture). Much more remarkable as well as reliable data are available if age structure of both files is compared. Just a single look at figure 3 clearly shows the dynamics of aging of farmers in the Czech Republic. While in 2000 almost 40 % of farmers fell into the category of 45-54 years, ten years later it was merely one quarter. There is hardly such a strong young generation of farmers to make up for this age gap. By the year 2010 the shares of age categories of 45-54 and 55-64 years were almost even (around 25 %), while the older generation of farmers (between 55 and 64 years) accounted for just 12 % in 2000. In future a dynamic increase of the older generation of farmers (55 years and older) is expected (between years 2000-2010 it was more than doubled). Huge increases are also expected in the oldest age category 64 years and older, it more than tripled (from 1.5 % in 2000 to almost 6 % in 2010). Dynamics of changes of farmer's age structure creates a threat for the future of farming in the Czech Republic, since it is obvious that older generation of farmers prevails and younger farmers, who could take up farming activities, are missing. However, it is necessary to understand this development in consequences of economic development of the Czech society after 1989. Agriculture, despite its massive subsidies, is still considered rather unattractive branch of economy where average salaries do not exceed 80 % of the average wage in the Czech Republic. Moreover, old generation of agricultural entrepreneurs who took up their farms in early 1990s after the fall of communism are leaving for retirement. On the other hand, the youngest age groups of farmers are decreasing, though not so strongly as it could be expected (its number oscillating around one fifth out of the whole group of farmers).

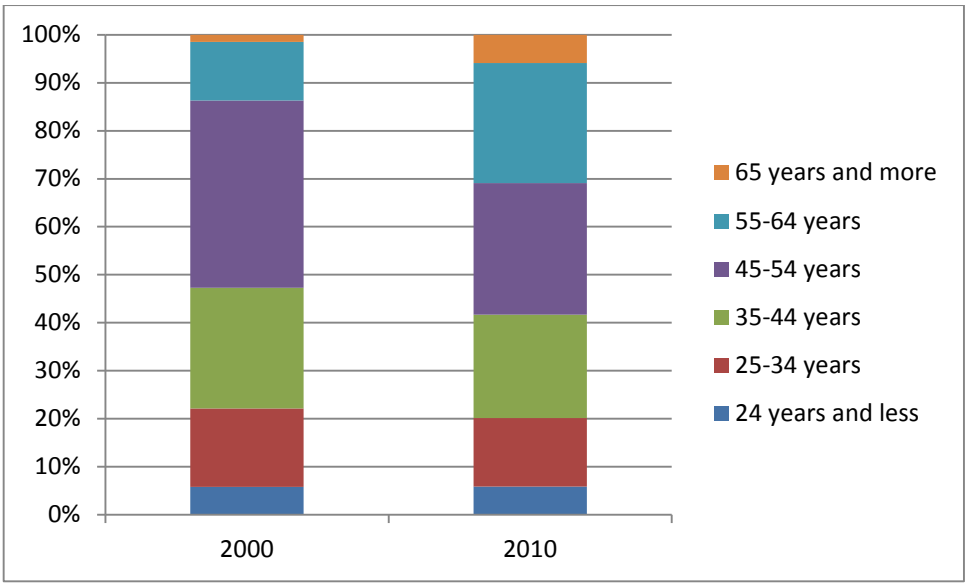

Figure 3. Age structure of agricultural labour force in the Czech Republic in 2000 and 2010 (Source: Czech Statistical Office, Agricensuses 2000, 2010; own calculations and processing)

A slightly different situation occurs if men and women get analysed separately (see figure 4). In the Czech agriculture there were 44,4 thousand of women working in 2010 (one third), but during one decade since 2000 the number of women decreased by 20 %, while in case of men it was merely one tenth. We can state that the proportion of women in Czech agriculture is declining much more intensively than in case of men, which might be explained both by hard work in agricultural sector

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and a reduction of jobs in farms administration, where plenty of rural women used to find their jobs. Such changes generate one more problem for the future. As can be seen from age pyramids of both groups (figure 4), age groups of men and women vary very much. In case of women we can talk about more balanced age structure (one third of women is aged 45-54 years) and in average younger, on the other hand, the most frequented age category for man is 54-64 years. It is worth noticing that the only younger age category that remains stable in absolute numbers is the age category under 24 years of age. The oldest age category (65 years and more) of both women and men more than tripled.

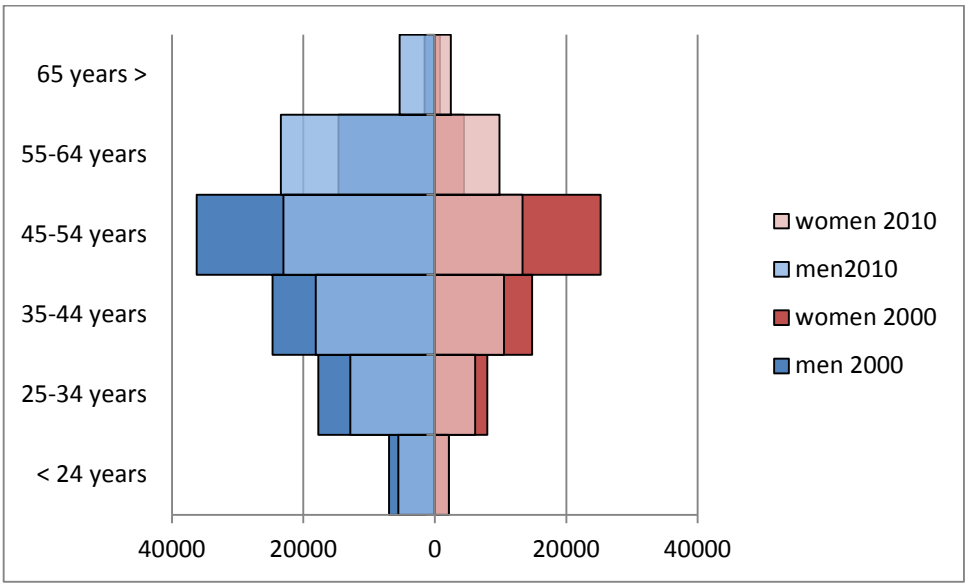

Figure 4. Age structure of agricultural labour force in the Czech Republic in 2000 and 2010 (Source: Czech Statistical Office, Agricensuses 2000, 2010; own calculations and processing)

5 Changes in agricultural labour force in the context of natural conditions

In the next part of our contribution the attention is paid to regional aspects of changes in numbers and age structure of the farmers, and also the changing quality of natural conditions for farming is evaluated. For each individual district in the Czech Republic the average price of agriculture land was calculated (according to the Announcement no. 412/2008 of the Ministry of Agriculture) and the districts were grouped according to the average quality of local agricultural land. It has to be stressed that the stated price of agricultural land was calculated for administration purposes only (it is not market price) and it was calculated for individual cadastre areas on the basis of local natural conditions. Other aspects (position within the settlement system, location, socio-economic conditions etc.) were not taken into account.

To assess the age structures of individual districts a triangular graph was employed. To make this method possible, all six age groups were integrated into three (1) 34 years and younger; (2) 35-54 years; (3) 55 and older. Triangular graphs were developed for both groups (2000, 2010) as a whole and for men and women separately (figures 5, 6, 7). Based on these analyses, concentration or dispersity of given data might be evaluated. Data for 2000 are to be found on the left side, data for 2010 on the right side.

Figure 5 clearly illustrates the divergent development of age structure of the whole studied group of farmers. While in 2000 urban districts (Praha, Brno, Plzeň) as well as the districts located in poor natural conditions (mountain areas) show significant differences (the youngest part of agricultural population up to 34 years is surprisingly the strongest here), ten years afterwards, when farmers as a group grew older, the distribution of districts is much more dispersed and the biggest share of the youngest farmers is recorded merely in mountainous areas (Frýdek-Místek, Ústí nad Orlicí, Jeseník districts), along with a couple of districts located in areas with agricultural land of great quality

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(Mělník, Nymburk districts). The most significant decreases in number of farmers are visible in former "young urban districts of 2000" mentioned above, where young generation of farmers grew in the meantime, yet the youngest generation of urban farmers left agriculture in favour of other, better paid economic branches. It we take a look at the oldest districts and their dynamics of aging in 2010, there are some specifics regarding the urban districts where farmers grow old enormously quickly.

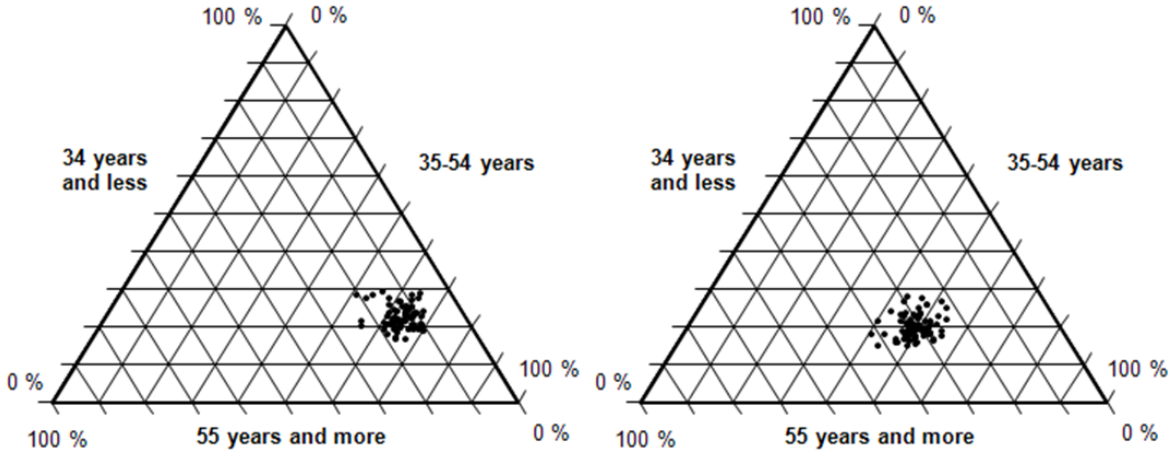

Figure 5. Age structure of agricultural labour force (men and women) in districts of the Czech Republic in 2000 (left) and in 2010 (right) (Source: Czech Statistical Office, Agricensuses 2000, 2010; own calculations and processing)

If we analyse the age structure of women (figure 6) and men (figure 7) in agriculture by means of the triangular graph, we may get quite different results. In case of women, districts are more dispersed and the age group is relatively younger in 2000 (figure 6 left), a decade later the cluster of districts is more concentrated and shows huge dynamics as for aging. In case of men, the development is relatively similar to the results analysing the whole group. However, in both cases the general trends noticed above (aging of farmers, lack of young generation etc.) are identified as well.

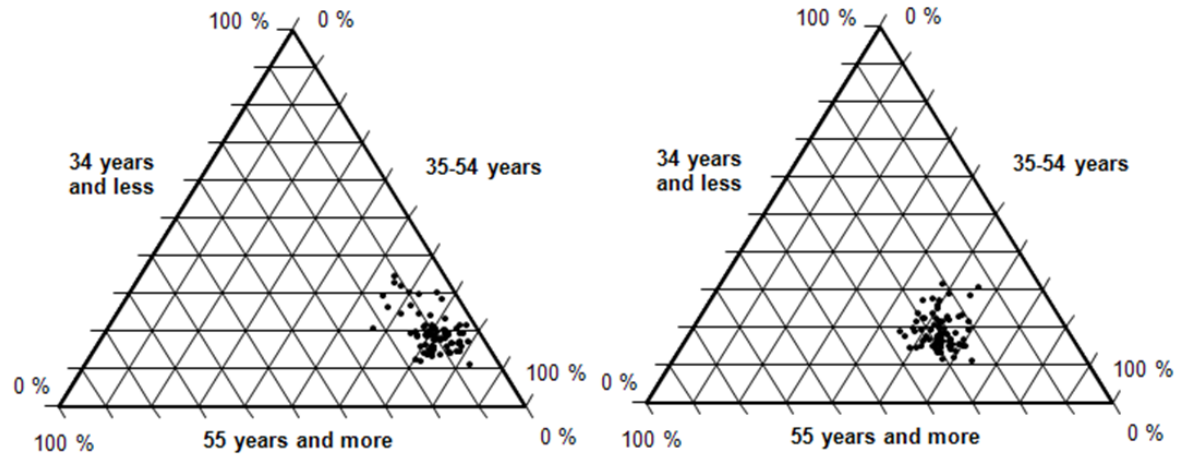

Figure 6. Age structure of agricultural labour force (women) in districts of the Czech Republic in 2000 (left) and in 2010 (right) (Source: Czech Statistical Office, Agricensuses 2000, 2010; own calculations and processing)

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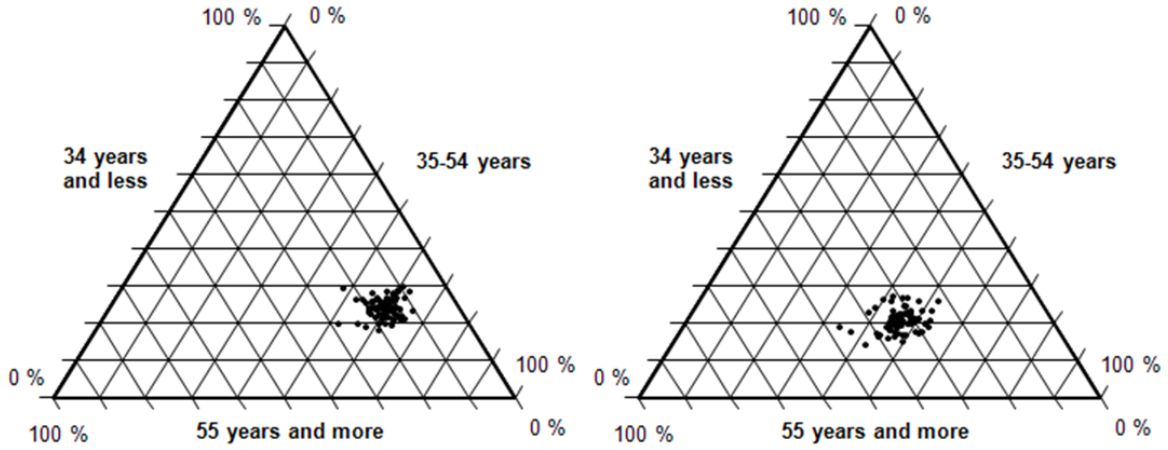

Figure 7. Age structure of agricultural labour force (men) in districts of the Czech Republic in 2000 (left) and in 2010 (right) (Source: Czech Statistical Office, Agricensuses 2000, 2010; own calculations and processing)

To get better results deeper analyses on coherence among age structures of farmers, gender structure of farmers and natural conditions were performed. The districts were grouped according to the quality of their agricultural land and individual groups of district were then evaluated separately. The changing quality of natural conditions in agriculture is represented by an average price of agricultural land in the given district (see above).

As was already stated above, the share of women in agricultural population of the Czech Republic slightly decreased within the studied period (circa 2 percentage points) and there was also found out an interrelation between the share of women farmers and changing natural conditions. In both time horizons (2000, 2010) the share of women was rising with improving natural conditions in agriculture (see table 1). This might have been caused by tougher working conditions in the mountain and sub-mountain regions whereas in localities out of mountain areas there are a lot of women working in administration for larger farms. The smaller farms that make the majority of agricultural companies in less favourite and mountain areas are not in need of so many staff administration. If we take a closer look at the decreases in number of farmers in individual types of districts (see table 2), it might come as a surprise that the most stable agricultural population is concentrated in the districts with the worst natural conditions for agricultural activities, i.e. mountain regions (districts with an average price of agricultural land up to 2.99 CZK / m^2). In this category, the number of farmers decreased merely by 5 % (2000-2010), which in comparison to the general decrease (15.5 %) makes a very low number. On the other hand, the districts with an average price of agricultural land (6-6.99 CZK / m^2) show the most significant decreases (up to 31 % within the studied period – see table 2). With further increasing price of agricultural land and thus improving natural conditions for farming, the declines are more moderate. With a certain level of generalisation is can be assumed that this relation is deeply rooted in the system of agricultural subsidies for less favourite areas. These subsidies make farmers stay on their land in mountain areas and make their businesses profitable. On the other hand, in areas with agricultural land of great quality farmers are stable because of profitability of their farming and subsidies help them to improve their budget. It is a matter of discussion whether the agricultural subsidies for areas with a great land quality are justifiable enough when they might be able to make profit even without subsidies. With a certain degree of generalisation, we can say that while districts with both very good conditions for farming as well as very bad conditions (which are subsidised) are the winners of contemporary development of agriculture in the Czech Republic, on the other hand, the districts with merely average conditions are losers of this "competition", since they are not heavily supported, but also located in not such good conditions to be more profitable. The question arises if it would not be better to shift the support from the most fertile areas to the areas with average land

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quality, as some of them are located in peripheral rural areas with a lack of other than agricultural employment.

Table 1. Share of women in agricultural labour force in the Czech Republic in 2000 and 2010 in categories of districts according average price of agricultural land

year	< 2.99 CZK / m^2	3-3.99 CZK / m^2	4-4.99 CZK / m^2	5-5.99 CZK / m^2	6-6.99 CZK / m^2	7-7.99 CZK / m^2	8 < CZK / m^2
2000	32.0	34.7	35.3	36.6	36.8	36.6	36.5
2010	31.3	32.8	32.3	32.9	34.8	36.1	35.3

Source: Czech Statistical Office, Agricensuses 2000, 2010; own calculations and processing.

Table 2. Gender structure of agricultural labour force in the Czech Republic in 2000 and 2010 with categories of districts according average price of agricultural land

	2000			2010			index of change (2000=100)		
	total	men	women	total	men	women	total	men	women
< 2.99 CZK / m^2	21880	14868	7012	20794	14227	6517	95.0	96.0	92.9
3-3.99 CZK / m^2	46177	30165	16012	39005	26217	12788	84.5	86.9	79.9
4-4.99 CZK / m^2	22407	14491	7916	17992	12189	5803	80.3	84.1	73.3
5-5.99 CZK / m^2	9140	5799	3341	7661	5142	2519	83.8	88.7	75.4
6-6.99 CZK / m^2	11800	7460	4340	8143	5309	2834	69.0	71.2	65.3
7-7.99 CZK / m^2	17380	11012	6368	14679	9383	5296	84.5	85.2	83.2
8 < CZK / m^2	28448	18066	10382	24476	15841	8635	86.0	87.7	83.2
total	157232	101861	55371	132750	88358	44392	84.4	86.7	80.2

Source: Czech Statistical Office, Agricensuses 2000, 2010; own calculations and processing.

The above mentioned hypotheses are proved by looking at the age structure of agricultural labour force in different types of natural conditions (see table 3) and we can see dependencies. In 2000 it was obvious that with the increase in the average price of agricultural land the age category of younger farmer (up to 34 years) decreased, while the age category of the oldest farmers worked in the areas with average natural conditions. It is assumed that in future problems concerning bad demographic structure of farmers will be concentrated in these areas. This trend seems to be proved by data for 2010 when farmers older than 55 years accounted for nearly one third in the districts with average natural conditions.

Table 3. Age structure of agricultural labour force in the districts of the Czech Republic in 2000 and 2010 with average price of agricultural land

	2000			2010		
	34 years and less	35-54 years	55 and more years	34 years and less	35-54 years	55 and more years
< 2.99 CZK / m^2	23.6	64.0	12.3	20.8	47.8	31.4
3-3.99 CZK / m^2	23.0	63.4	13.6	19.9	48.9	31.2
4 -4.99 CZK / m^2	22.7	64.4	12.9	20.9	49.8	29.3
5-5.99 CZK / m^2	21.5	65.4	13.1	19.8	48.8	31.5
6-6.99 CZK / m^2	20.7	63.5	15.7	18.5	48.1	33.4
7-7.99 CZK / m^2	21.3	63.9	14.8	20.0	48.7	31.1
8 < CZK / m^2	20.4	65.6	14.1	19.9	50.0	30.1

Source: Czech Statistical Office, Agricensuses 2000, 2010; own calculations and processing.

6 Conclusion

The aim of this contribution was to analyse the changes of selected aspects of agricultural labour forces in the Czech Republic in 2000 and 2010. First of all, analyses of age and gender structures of

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farmers in the districts of the Czech Republic were performed. After that the quality of natural conditions suitable for agricultural activities was taken into account assessing the average price of agricultural land in individual districts.

The dependencies between the age structure of farmers and the quality of natural conditions were detected. The most stable farmers from the point of view of age were identified in areas with the worst natural conditions. On the other hand, the most significant declines were found in urban districts. This might be caused by the system of agricultural subsidies which support farms in these areas. The dependence between the share of women and changing natural conditions was also detected. Regarding the demographic structure of farmers we can conclude that in future the most vulnerable districts will be the ones with average natural conditions for agriculture. They should be just these average regions located in peripheral areas to which stronger support should be directed.

Within the next steps that should follow the performed analyses, more detailed and deeper analyses of all six individual age groups in context of natural conditions could be carried out and multicriterial statistical evaluation could be employed. To prove hypotheses concerning dependencies between age structure and natural conditions, more indicators could be added (educational structure, size of farms etc.). Such solution could explain mutual dependencies more precisely.

7 Acknowledgement

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ASSESMENT OF SOCIOECONOMIC DEVELOPMENT OF VISEGRAD FOUR NUTS 2 REGIONS USING COMPOSITE INDICES

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Abstract
Socioeconomic development largely determined by the level of disparities between regions and countries is recently an important topic in the frame of enlarged European Union. Regions are nowadays drivers of economy and the locomotives of performance in conditions of European Integration. Paper concentrates on regional analysis and evaluation of economic, social and territorial disparities that influenced the level of socioeconomic development in 35 NUTS 2 regions of Visegrad Four during reference period 2000-2011. The aim of the paper is to propose original methodology for assessing the socioeconomic development of regions based on construction of composite indices calculated from selected indicators of socioeconomic development on regional level using Factor analysis. The innovative aspect of this methodology takes into account newly identified variables calculated as square deviations from the medians and their respective weights are not set arbitrarily but on the base of factor loadings of each variable that indicate relative importance to each extracted factor. All composite indices of disparities are calculated on the basis of Z-score standardized variables using squared Euclidean distance with median as the measurement of central tendency.

Keywords
Composite Indices, Disparities, Socioeconomic Indicators, Factor Analysis, NUTS 2, Visegrad Four.

JEL Classification
C38, O18, R11.

1 Introduction

Disparities measurement and evaluation at any level of territorial development is associated with the lack of integrated approaches and methodology in most cases. Within this paper, the application of integrated approach by using construction of three composited weighted indices are introduced in the topic of socioeconomic development of the Visegrad Four (V4) countries, i.e. Czech Republic, Hungary, Poland and Slovakia. Disparities in the frame of regional development are a major obstacle to the balanced and harmonious development of the regions, but also of the whole territory. Analysis of disparities brings the important information about the key problematic issues in region (and thus in country) on the one side and its development potential on the other side. The main goal of the paper is a verification of composite indices approach through evaluation of economic, social and territorial disparities that reflect the level of socioeconomic development and cohesion in evaluated regions in reference period 2000-2011. For this purpose, the paper determinates and computes three synthetic weighted indices of economic, social and territorial disparities. The hypothesis of the paper is based on the generally accepted concept stated by Molle (2007) that countries (regions) with the lower level of regional disparities achieve the higher level of cohesion in the territory that provide better conditions and assumptions for socioeconomic development potential, and vice versa. The paper, in content of previous hypothesis, intends to establish the general presumption that in NUTS 2 regions of V4 countries which will be evaluated as the areas with the lowest level of disparities and highest derived level of development potential, the agglomeration of capital cities will be located.

There are different approaches to definition of regional disparities in the European Union (EU) and therefore this term can be understood as a multidimensional problem (Kutscherauer et al., 2010). According to the horizontal classification, there are three types of regional disparities: economic, social and territorial. *Economic disparities* represent different level of economic convergence of countries and regions that can be measured by economic indicators. *Social disparities* are related to how people perceive spatially differentiated quality of the life, standard of living or social inequality and they are mostly measured by the indicators of the labour market. Territorial disparities reflect the

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strong inequalities in the EU competitiveness factors. Territorial disparities are expressed by the significant differences in the economic performance, geographical potential and transport and technical infrastructure, capacity for innovations or quality of environment (Molle, 2007).

In the European concept, the level of disparities can be regarded as a *measure of cohesion*. By Molle (2007), the cohesion can be expressed by such level of differences between countries, regions or groups that are politically and socially tolerable. Based on typology of disparities, three dimensions of cohesion are recognized, i.e. economic, social and territorial. *Economic cohesion* evaluates economic convergence and can be expressed by disparities reducing development levels of countries and regions by economic indicators. *Social cohesion* tends to achieve objectives in employment and unemployment, education level, social exclusion of different groups and in demographic trends. *Territorial cohesion* is a supplementary term to economic and social cohesion. This concept develops economic and social cohesion by transferring the basic objective of EU, i.e. balanced and sustainable development into territorial context (Kutscherauer et al., 2010).

2 Measurement and Evaluation of Regional Disparities in the context of the European Union

The existing approaches to regional disparities measurement and assessment in the EU context use many disparities indicators that are processed by various mathematical and statistical methods. We can differentiate two main groups of quantitative methods – *univariate statistical methods* (UVA) and *multivariate statistical methods* (MVA) that are used separately or they are combined with each other. Following part of the paper is focused on the brief overview of selected methods used for measuring and assessing regional disparities in empirical studies.

2.1 Selected Methods of Regional Disparities Measurement and Evaluation

Within simple UVA, regional disparities are mostly analysed by measures of central tendency (mean, modus or median) and measures of absolute or relative variability (range, variance, standard deviation or coefficient of variation). Univariate statistical methods are suitable for analysing of wider qualitative characteristics of selected regional disparities indicators. UVA describe the development of one indicator in a given year and in given region. They do not evaluate the indicators in relation to other indicators and do not say anything about the development of indicators and thus about disparities between regions. For that reason, univariate analysis is mostly used in the first, descriptive stages of regional disparities empirical research, before being supplemented by multivariate analysis. MVA is based on the statistical principle of multivariate statistics, which involves observation and analysis of more than one statistical outcome variable at a time. MVA refers to all statistical techniques that simultaneously analyse multiple measurements on individuals or objects under investigation (Hair et al., 2009). Many multivariate techniques are extensions of univariate analysis i.e. analysis of single-variable distributions and bivariate analysis (cross-classification, correlation, analysis of variance, simple regression used to analyse two variable).

Multivariate statistical methods take into account the multidimensionality of the data and they are able to examine relationships and differences in data (see e.g. Hair et al., 2009; Stevens, 2012; Johnson and Wichern, 2014). The UVA and simple MVA of regional disparities measurement and evaluation in the frame of regional management can include according to Kutscherauer et al. (2010): point method, traffic light method (scaling) and method of average (standard) deviation; also method of standardized variable and method of distance from the imaginary point. The advantages of these methods consist in low calculation difficulty, high informative level and applicability of the results in practise. These methods summarize the different units of measure under the one synthetic characteristic, which is the dimensionless figure. From the perspective of the practical utilization, the traffic light method can be applied in phase of the identification and quantification of variables (see e.g. Tuleja, 2008, 2010; Melecký and Skokan, 2011). Another group of frequently used methods for measuring and assessing regional disparities are simple univariate or multivariate statistical methods,

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in which the use of regional disparities are frequently evaluated in terms of EU using different measures of variability or dispersion, such as the absolute deviation, mean deviation, relative mean deviation (see e.g. Tuleja 2008; Kutscherauer et al., 2010), standard deviation (see e.g. Matlovič et al., 2008) and coefficient of variation (see e.g. Matlovič et al., 2008; Tvrdoň and Skokan, 2011; Melecký and Staníčková, 2011; Tvrdoň, 2012).

More sophisticated MVA for measuring and evaluation of regional disparities represent *Cluster analysis* (CA) and *Factor analysis* (FA) used in many empirical analyses (see e.g. Soares et al., 2003; Rovan and Sambt, 2003; Zivadinovic et al., 2009; Rydvalová and Žižka, 2011; Melecký, 2012). Cluster analysis enables to classify regions into homogenous groups according to similarity of their characteristics. Thus we can define the significant differences between determined clusters and compare their development. Factor analysis belongs to multivariate methods of data reduction when we can take many variables and explain them with a few "factors" or "components". Correlated variables are grouped together and separated from other variables with low or no correlation. Factor analysis is useful in the process of determination of factors that significantly contribute to regional differences.

Alternative and not broadly extended approach (in comparison with MVA) to regional disparities measurement represents multi-criteria decision-making (MCDM) methods (see e.g. Tzeng and Huang, 2011, Saaty and Vargas, 2012; Staníčková, 2012). One of the most popular techniques dealing with MCDM problems in the real world are Analytic hierarchic process (AHP) and the Technique for Order Preferences by Similarity to an Ideal Solution (TOPSIS) (see e.g. Dai and Zhang, 2011; Poledníková, 2014).

2.2 Composite Synthetic Indices as Instrument for Disparities Measurement and Evaluation

Relatively independent and in recent years frequently used approach to the measurement and evaluation of disparities in socioeconomic development is the construction of comprehensive integrated indicators and composite indices. *Composite indicators* (CIs) which compare country or region performance are increasingly recognised as a useful tool in policy analysis and public communication. The number of CIs in existence around the world is growing year after year (for a recent review see e.g. Bandura (2006), which cites more than 160 composite indicators). Such composite indicators provide simple comparisons of countries or regions that can be used to illustrate complex and sometimes elusive issues in wide-ranging fields, e.g., environment, economy, society or technological development. CIs can be much "better" to describe (instead of ten values for each region we have only one) than to examine several independent indicators separately. On the other hand, can send misleading messages to policy makers if they are poorly constructed or interpreted as evidenced by Nardo et al. (2005). Composite indicators are much like mathematical or computational models. As such, their construction owes to universally accept scientific rules for encoding. With regard to models, the justification for a composite indicator lies in its fitness for the intended purpose and in peer acceptance (Rosen, 1991).

Within the aim and scope of the paper, construction of specific composite synthetic indices of economic, social and territorial disparities has been proposed because these indices can summarise complex and multi-dimensional view of regional disparities and are easier to interpret than a battery of many separate indicators. Therefore these synthetic indices of disparities reduce the visible size of a selected set of indicators without dropping the underlying information base. Own construction design of composite synthetic indices of economic, social and territorial disparities presents *two-phase model* based on selected mathematical and multivariate statistical methods. In the first phase, method of standardized variable (Z-score) and method of distance from the imaginary point (square Euclidean distance from median) is used. In the second phase, FA for partial calculation of factor loadings (saturation) is used. Factor loadings present the correlation coefficients between the original variable and extracted factor and show how much of the variability of the factor explains. Factor loadings therefore represent a full explanation of the role of each character (variable) in the definition

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of the factor, as explained further e.g. Meloun et al. (2005). Factor loadings obtained from the FA play the key role in the second phase of construction of composite indices. They are used as normalized weights of standardized individual indicators of economic, social and territorial disparities. Normalized factor loadings for each indicator and dimension of disparities are therefore included in the calculation of Index of economic disparities (IED), Index of social disparities (ISD) and Index of territorial disparities (ITD). This procedure is recommended by Nardo, et al. (2005) and used in construction of aggregate synthetic indices of disparities in several empirical analysis (see e.g. Kutscherauer et al., 2010; Svatošová and Boháčková, 2012; Žižka, 2013).

Synthetic indices of economic, social and territorial disparities are from a statistical point of view designed as modified weighted squared Euclidean distance defined by equation (1):

$$ID_{r,t} = \sum_{d=1}^{j} \sum_{i=1}^{k} zw_i D^*_{ES}(zx_{i,r,t}, z\tilde{x}_{i,r}), \tag{1}$$

where:

$ID_{r,t}$ index of disparities for *d-th* dimension and *r-th* region in time *t*; index = {IED, ISD, ITD};

zw_i normalized weights based on factor loadings for *d-th* dimension and i-*th* indicator (sum of weights in each dimension for all indicators is equal to one);

$D^*_{ES}(zx_{i,r,t}, z\tilde{x}_{i,r})$ modified square Euclidean distance of *i-th* indicator for *r-th* region in time *t*;

$zx_{i,r,t}$ standardized value of *i-th* indicator for r-*th* region in time *t*;

$z\tilde{x}_{i,r}$ median of *i-th* indicator for *r-th* region in whole time period;

r region; r = {1 = CZ01, … , 8 = CZ08, 9 = HU10, ..., 15 = HU33, … , 16 = PL11, …, 31 = PL63, 32 = SK01, …, 35 = SK04};

d dimension of disparities; d = {1 = economic, 2 = social, 3 = territorial};

i indicator of disparities; i = {1= GDPpc, …, 24= IMR};

t time; t = {2000;…,2011}.

3 Empirical Analysis of Regional Disparities in V4 NUTS 2 Regions

Analysis of economic, social and territorial disparities is based on 24 selected indicators of disparities. Each dimension of disparities is presented by 8 selected indicators listed in Table 1 placed in Annex. The reference period 2000-2011 is determined by selection of all indicators and their data availability in territorial unit NUTS 2 for 35 regions of V4 countries.

3.1 Procedure of Empirical Analysis

Construction of synthetic indices of disparities (IED, ISD and ITD) consists of two phases as it mentioned above. Standardization of initial indicators of disparities indicators by Z-score transformation and complete Exploratory Factor analysis based on Principal Component Analysis as methods of factor extraction in each dimension of disparities have been provide by statistical software IBM SPSS Statistics 22 and all other following computations have been realized by Microsoft Excel 2010. Procedure of empirical analysis of regional disparities in V4 NUTS 2 regions is based on the scheme listed in Table 1.

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Table 1. Basic Scheme of Empirical Analysis

Input data analysis
» Collection of convenient selected indicators of regional disparities for 35 V4 NUTS 2 regions»
» Data normalization (Z-score transformation) »
» Dataset of normalized variables for 35 V4 NUTS 2 regions »
» Bivariate correlation of normalized variables for 35 V4 NUTS 2 regions »
Calculation of synthetic indices of disparities
» Calculation of median as the measure of central tendency »
» Calculation of square Euclidean distance (square deviation from the median) »
» Calculation of Exploratory Factor analysis and factor loadings for each indicator »
» Calculation of weighted synthetic indices of economic, social and territorial disparities »
» Descriptive characteristics of synthetic indices variability »
Results and discussion
» Comparison of regional disparities across all dimensions »
» Interpretation of results and discussion »

Source: own elaboration.

In the first phase of proposed construction of synthetic indices of regional disparities, the data matrix of regional indicators for the entire reference period 2000-2011 in a standardized form has been verified on suitability for FA. An essential prerequisite for the application of factor analysis is that, input source matrix contained sufficient correlation. Three *Correlation Matrixes* reproducing the level of bivariate correlation individually within a set of economic, social and territorial indicators has been calculated. In order to maintain a coherent structure of indicators characterizing the most complex dimension of economic, social and territorial cohesion several variables in the individual dimensions were excluded based on recommended values of Pearson's correlation coefficient. In the field of economic disparities no indicators were excluded, indicators of social disparities were eliminated up two indicators (PATE, AAP) and in the structure of territorial indicators four indicators were eliminated (TAE, ATAE, VRA, IMR) Total number of indicators for the assessment of economic, social and territorial cohesion has been reduced from the original 24 indicators to 18 indicators. In the second phase the assumption criteria of factorability defined by Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity has been tested and successfully fulfilled.

The adequate indicators of economic, social and territorial disparities observed at level of NUTS 2 regions can be identified within the *Reports on Economic, Social and Territorial Cohesion* that evaluate the trends of disparities and cohesion in the EU Member States and their NUTS 2 regions (see European Commission, 2007, 2010). However, the determination of appropriate and comparable regional statistics has faced the significant problems of the limited availability at the required territorial level (NUTS 2) and length of time series (2000-2011), only 24 relevant indicators of regional disparities, available in Eurostat database for the reference period 2000-2011 with same scope of availability, has been chosen for the empirical analysis. The economic disparities are thus covered by 8 selected indicators, social disparities are reflected by 8 selected indicators and territorial disparities are covered also by 8 selected indicators. Selected indicators, their initial units, criterion of optimization and source are shown in Table 1 displayed in Annex.

3.2 Overview of Calculated Results

Most of individual results obtained from computed synthetic indices based on dataset of 18 selected disparities indicators revealed that in 35 NUTS 2 regions of V4 countries indicate *positive development trend* (i.e. narrowing) of economic, social and territorial disparities recorded in reference period 2000-2011. Results in all dimensions of disparities indicate that most of computed scores of IED, ISD and ITD values of synthetic indices for each NUTS 2 region converge to *optimal value* (i.e. to median) more at the end of reference period (2011) than at the beginning of reference period (2000).

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Calculated values of IED, ISD and ITD can be analysed through selected descriptive characteristics of central tendency and variability that provides Table 2 with record of the maximum, minimum, mean and median value of each synthetic index for whole reference period. Scores represent mainly the *arithmetic mean*, i.e. the sum of all values divided by their number and *standard deviation* as an arithmetic mean of the absolute deviations of each set of values from the mean value. Statistics presented as *Range* is the difference between biggest (maximum) and the smallest (minimum) computed value of synthetic indices and provides and indicative characteristic of absolute variability in dataset. The minimum (lowest) value of this statistics indicates the existence of minimal modified square Euclidean distance, i.e. minimal differences of calculated values from median value of synthetic indices in each dimension of disparities among all NUTS 2 regions and the maximum (highest) value presents the highest achieved modified square Euclidean distance, i.e. maximal differences of calculated values from median value of synthetic indices in each dimension of disparities in indicators across all NUTS 2 regions. The *coefficient of variation* indicates the relative variability related to the median and is calculated as the ratio of standard deviation and arithmetic mean. The coefficient of variation is used to compare the variability of characters having different units or varying levels of position. It is stated as index or in a percentage and usually helps to detect outliers. If the coefficient of variation exceeds 0.5 (50%) it means that the dataset of results is highly heterogeneous (containing outliers) as it seen in the case of scores of ISD in following Table 2.

Table 2. Descriptive Statistics of Synthetic Indices of Disparities

	N	Range	Minimum	Maximum	Mean	Median	Std. Deviation	Variance	Variation Coefficient	Skewness	Kurtosis
IED	420	19.163	0.259	19.422	11.737	12.483	4.101	16.818	0.349	-0.766	0.200
ISD	420	16.397	0.005	16.403	4.859	4.225	3.523	12.411	0.725	0.817	0.119
ITD	420	17.733	2.492	20.225	15.614	16.310	3.052	9.313	0.195	-1.847	4.780

Source: own calculation and elaboration, 2014.

Table 2 shows that the *biggest range* of values is presented in economic disparities where indices scores differ from minimum 0.259 in region CZ01 (Praha) to maximum 19.422 in region PL33 (Świętokrzyskie). The *smallest range o*f synthetic indices values is presented in social disparities where indices scores differ from minimum 0.005 in region CZ01 (Praha) to maximum 16.403 in region PL62 (Warmińsko-Mazurskie). In the middle of these ranges there are values of synthetic indices of territorial disparities where scores differ from minimum 2.492 in region CZ01 (Praha) to maximum 20.225 in region PL12 (Mazowieckie). Other selected descriptive characteristics of absolute and relative variability of all synthetic indices are presented in Table 2.

Fig. 1 shows the graphical results of computed (median) values of synthetic indices of economic (IED), social (ISD) and territorial (ITD) disparities for 35 NUTS 2 regions of V4 countries in the reference period 2000-2011. Average values of computed indices for all 35 NUTS 2 regions define the area of three polygons in Fig. 1. The optimal form of illustrated polygons will be such a one point that would corresponds with zero modified squares Euclidean distances in each dimension. *Smaller area of polygon* marks the *lower rate of disparities* and therefore the *higher level of cohesion* and derived socioeconomic development in selected V4 NUTS 2 regions. *Bigger area of polygon* marks the *higher rate of disparities* in each dimension and therefore the *smaller level of cohesion* and derived socioeconomic development in selected V4 NUTS 2 regions. Average values of synthetic indices for whole period, as well as individual values for each year of the period, sign out that the rate of regional disparities in NUTS 2 regions with agglomeration of capital cities (CZ01, HU10, PL12 and SK01) is rather smaller than in rest of NUTS 2 regions in V4 countries. *Synthetic index of economic disparities* for all selected NUTS 2 regions, illustrated in Fig 1, have reached best results (i.e. smallest level of disparities) in traditionally economic powerful regions in the *Czech Republic* such as for example NUTS 2 region CZ01 (Praha, 1th position) or CZ06 (Jihovýchod, 5th position), *Hungary* such as NUTS

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2 region HU10 (Közép-Magyarország, 2nd position), *Poland* such as NUTS 2 region PL12 (Mazowieckie, 4th position) and *Slovakia* such as NUTS 2 region SK01 (Bratislavský kraj, 3rd position).Based on the results of *synthetic index of social disparities*, social disparities are the smallest in absolute values in comparison with level of disparities in other dimensions but the most heterogeneous among V4 regions. The smallest value of ISD is represented by Czech NUTS 2 regions CZ01 (Praha, 1st position), CZ02 (Střední Čechy, 3rd position) and CZ03 (Jihozápad, 4th position). There is also Slovak region SK01 (Bratislavský kraj, 2nd position) and Hungarian HU10 (Közép-Magyarország, 7th position) with the smallest value of social disparities. As Fig. 1 demonstrates, the highest level of disparities is overall recognized in territorial dimension. Based on *synthetic index of territorial disparities*, mainly NUTS 2 regions with agglomeration of capital cities have reached best results (except NUTS 2 region PL12 - 32nd position). The highest value of ITD has been reached in Polish NUTS 2 region PL63 (Pomorskie, 35th position), PL11 (Łódzkie, 34th position) and PL62 (Warmińsko-Mazurskie, 33rd position).

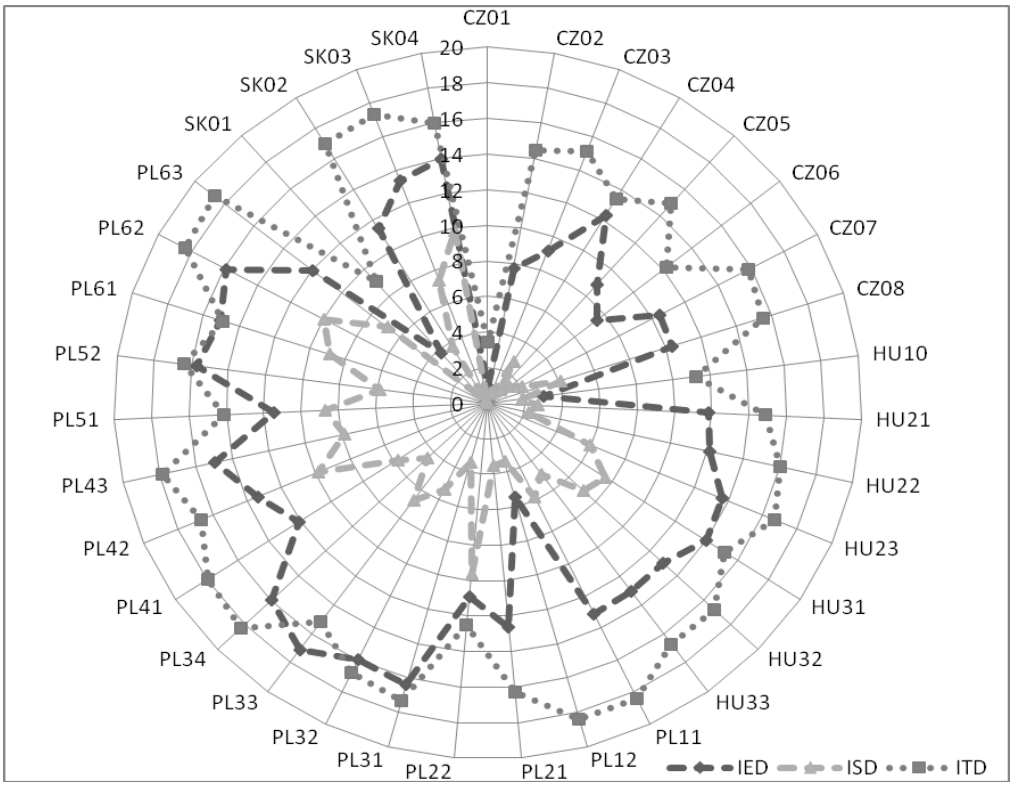

Figure 1. Synthetic Index of Economic, Social and Territorial Disparities 2000-2011 (Source: own calculation and elaboration, 2014)

Based on the analysis of the results mentioned above the *initial presumption of the paper*, that in NUTS 2 regions of V4 countries which will be evaluated as the areas with the lowest level of disparities and highest derived level of development potential, the agglomeration of capital cities will be located, *has been confirmed*.

4 Conclusion

The measurement and evaluation of regional disparities in economic, social and territorial dimension within this paper analysis has been performed through construction of weighted synthetic indices as examples of composite indicators calculated from standardized values of disparities by modified square Euclidean distance and Exploratory Factor analysis. The main advantage of used approach consists namely in ability to summarize the different units of measure under the one synthetic

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characteristic (index), which is the dimensionless figure. The analysis showed that, for the most part, there was a consensus in the trends of V4 NUTS 2 regions in terms of attainment level of disparities and development potential, depending on the level of existing disparities.

Construction of synthetic indices and calculation of disparities showed that since the year 2000 positive economic, social and territorial development has been monitored in NUTS 2 regions of Visegrad Four and thus level of cohesion recorded increasing trend thanks to mostly decreasing volume of regional disparities. In spite of narrowing rate of economic, social and territorial disparities and convergence process in level of cohesion, the significant regional disparities between V4 countries still remain. In relative terms (without affecting the absolute values) index of social disparities in V4 countries achieved the highest rate of relative variability and index of territorial disparities achieved the smallest rate of relative variability presented by coefficient of variation.

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Annex

Table 1. Selected Indicators of Regional Disparities for V4 NUTS 2 Regions

Type of disparities	Indicator	Abbreviation	Criterion	Source
Economic disparities	GDP per capita	GDPpc	Maximum	Eurostat
	Disposable income of households	DI	Maximum	Eurostat
	Labour productivity per person employed	LP	Maximum	Eurostat
	Total intramural R&D expenditure	GERD	Maximum	Eurostat
	Gross fixed capital formation	GFCF	Maximum	Eurostat
	Human Resources in Science and Technology	HRST	Maximum	Eurostat
	Patent applications to the European Patent Office	EPO	Maximum	Eurostat
	Employment in technology and knowledge-intensive	ETKI	Maximum	Eurostat
Social disparities	Employment rate	ER15to64	Maximum	Eurostat
	Employment rate of woman	ERw15to64	Maximum	Eurostat
	Employment rate of older workers	ER55to64	Maximum	Eurostat
	Unemployment rate	UR15to64	Minimum	Eurostat
	Unemployment rate of youth	URy15to24	Minimum	Eurostat
	Long-term unemployment	LtUR	Minimum	Eurostat
	Population aged 25-34 with tertiary education	PATE	Maximum	Eurostat
	Annual average population change	AAP	Maximum	Eurostat
Territorial disparities	Volume of municipal waste	VMW	Minimum	OECD
	Density of railway	DR	Maximum	Eurostat
	Density of motorway	DM	Maximum	Eurostat
	Hospital beds	HB	Maximum	Eurostat
	Number of tourist accommodation establishments	TAE	Maximum	Eurostat
	Arrivals at tourist accommodation establishments	ATAE	Maximum	Eurostat
	Victims in road accidents	VRA	Minimum	Eurostat
	Infant mortality rate	IMR	Minimum	Eurostat

Source: European Commission, 2007, 2010; Eurostat, 2014; own elaboration.

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TAXATION OF SELF-EMPLOYED IN THE CZECH REPUBLIC – ARE THE LUMP SUM EXPENSES THE ONLY PROBLEM?

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Abstract
The tax revenues from individuals filing tax return (which is often confused with tax revenues from self-employed) are dramatically decreasing in the last few years. While before 2005 the tax revenues had reached more than 20bn CZK nowadays the tax revenue is below 5bn CZK. Many people say that this problem is caused mainly by lump sum expenses which are considered as too high to reflect the real expenses needed for running a business. However, there are more aspects which can be discussed as a reason for the drop in tax revenues and this is trying to capture them by analyzing the development of the tax revenues and the tax law changes. According to the availability of data the analysis compares the years 2005 and 2012 as well as describes the composition of tax liability in 2012. The main finding of the paper is that the tax revenue is considerably influenced by employees that are filing tax returns and by child tax credit. Moreover there were less than 20% of self-employed in the 2012 with positive tax liability.

Keywords
Self-employed, Tax Revenues, Lump Sum Expenses, Fiscal Policy.

JEL Classification
E62, H24, H21.

1 Introduction

Individuals in the Czech Republic, as for tax treatment, can be divided into two groups – employees and self-employed persons. International organizations such as OECD (e.g. OECD 2010, 2011) or European Commission (2014) regularly point out the differences between these two groups. At the same time tax revenues from personal income taxes – from employment and from self-employed substantially differ. However, it is not easy to identify the tax revenue from self-employed. The tax revenue from self-employed is a part of the tax revenue from tax returns but these two terms are not exactly the same and people should be very careful about interpretation of the numbers published by Financial Administration.

This paper focuses on the composition of the tax revenue from the tax returns and tries to explain the reasons for significant decrease in the tax revenue in the last years through analyzing the data from Automated Tax Information System (Automatizovaný Daňový Informační systém - ADIS). This database contains all tax returns which were filed during certain taxable period.

2 Tax revenue from self-employed

In the Czech Republic it is very difficult to say how much tax revenue goes from self-employed persons. The reason is that the tax administration only publishes data for tax revenue from dependent activity (employment), from tax returns and from withholding tax.

2.1 Who files tax return?

Tax revenue from the tax returns is often confused with the tax revenues from self-employed however, it is not entirely true. Whoever decides to file the tax return (e.g. employee) is automatically shifted to "tax revenue from tax returns" category however, everything he had paid during the year as an employee remains in "tax revenue from dependent activity" category.

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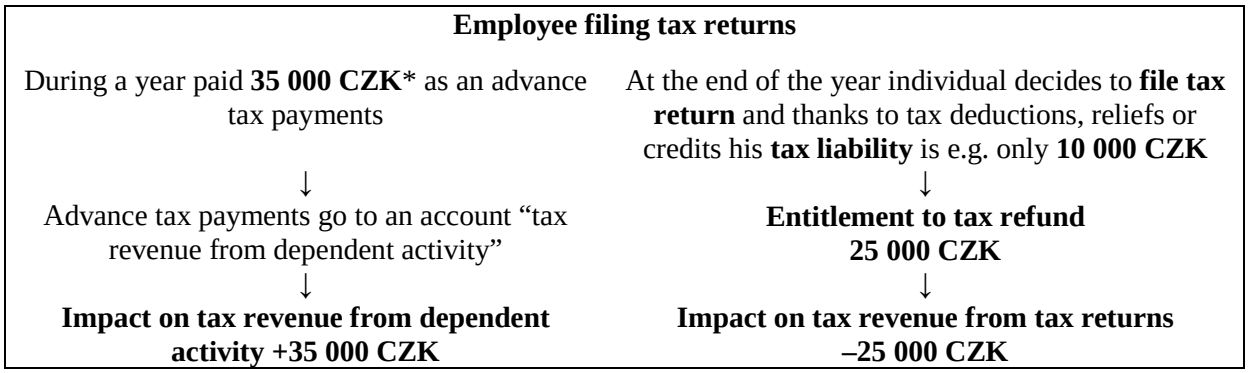

* corresponds to average wage in the Czech Republic

Figure 1. Impact of employee filing tax return on tax revenue categories (Source: own calculations)

Apart from employees who usually can decide whether to file tax returns or not, filing tax return is in certain cases obligatory e.g. if you have income from rent, capital income or other income (such as from occasional activities).

Table 1 contains information about the distribution of tax returns according to the type of declared income. The table helps us to understand why the tax revenue from self-employed is not the same as the tax revenue from the tax returns. The table is divided into two sections – one contains number of tax returns in which only one type of income is declared (e.g. row "employment" means that almost 700 000 tax returns were filed containing only income from employment). The other section contains the number of tax returns in which specific income is declared no matter if there is also another income or incomes declared (e.g. row "employment" in this section shows that almost 1.2 million of tax returns were filed containing income from employment – only income from employment, income from employment together with business income or income from employment together with capital or rent income etc.).

Important message from Table 1 is that only 26% of tax returns were filed by "pure" self-employed (taxpayers having income only from business activity) and less than half of the tax returns contain at least some income from business activity. On the other hand almost 35% of tax returns were filed by taxpayers who have only income as employees. This fact can of course heavily influence the tax revenue.

Table 1. Distribution of tax returns according to type of declared income, taxable period 2012

	Only from specific income		Contain specific income	
	Number of tax returns	Share on total	Number of tax returns	Share on total
Employment	697 776	34.7%	1 165 645	57.9%
Business income (self-employed)	525 618	26.1%	979 532	48.7%
Capital income	5 462	0.3%	184 747	9.2%
Rent income	61 780	3.1%	270 865	13.5%
Other income	11 899	0.6%	95 695	4.8%
Combination of incomes	709 842	35.3%	n.a.	n.a.
Total tax returns	2 012 377	100.0%	2 012 377	100,0%

Source: ADIS.

2.2 Development of tax revenues from personal income tax

Now let's focus on the development of tax revenues from personal income taxes – namely on tax revenue from employment (dependent activity) and tax returns. Even if it is impossible to compare the tax revenue from employment with the tax revenue from tax returns in total (simply because the

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number of employees is much higher than the number of self-employed persons - according to Ministry of Finance (2014) in the Czech Republic there were about 4 millions of employees and 900 thousands of self-employed persons in 2013), Figure 2 shows a reverse trend in development of the revenues. While the tax revenue from employment is mostly increasing during 2002-2013, the tax revenue from tax returns is declining. From 2002 to 2005 the tax revenue from tax returns was over 20 bn. CZK but in the last years it is only around 3 bn. CZK. When analyzing reasons of these dramatic declines it has to be kept in mind that the taxable period and the tax revenue (in cash basis) differ. For instance if the tax rate starting from year *t* is decreased, the tax revenue from tax returns is expected to change from *t+1* as tax return is filed and tax is paid in the year following the taxable period. However, the impact on tax revenue from employment is immediate as tax is paid through advance payments during the year *t*.

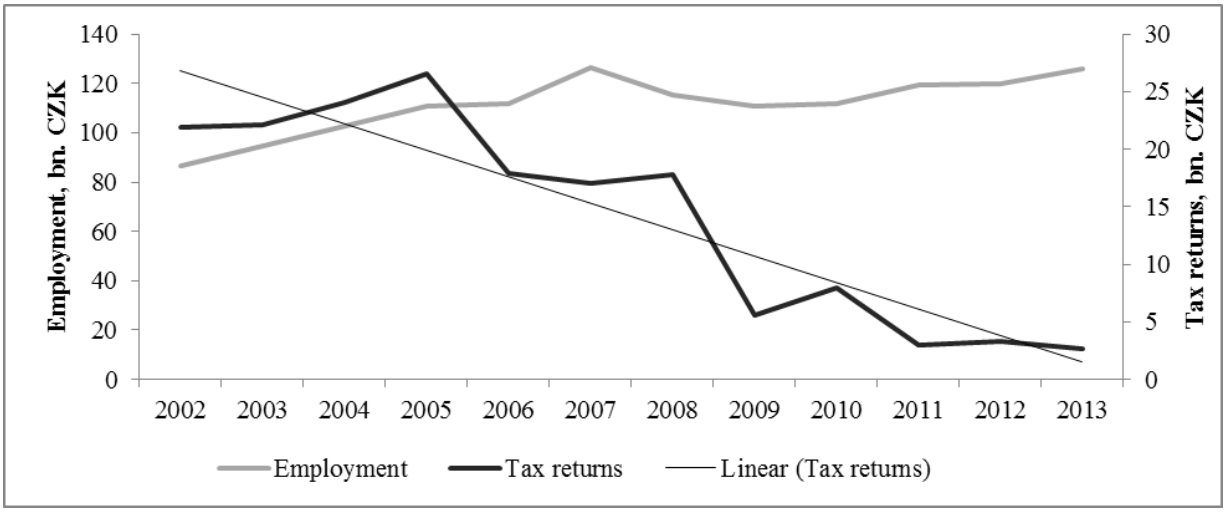

Figure 2. Tax revenue from employment and tax returns (Source: Financial Administration)

The most significant decreases in the tax revenue from tax returns can be observed between years 2005-2006, 2008-2009 and 2010-2011. To provide a brief overview, below is list of the main changes in the tax legislation or economic environment with potential substantial impact on the tax revenue.

a. Child tax credit
   Child tax credit was introduced in 2005. It enables taxpayers not only to reduce their tax liability but at the same time in case the tax payer is entitled tax credit which is higher than his tax liability he pays zero tax plus can claim a tax bonus. Even though there are some rules for qualifying for the tax bonus, the tax bonus is vulnerable to be misused. At the time of introduction the tax credit was 6 000 CZK per child per year and the maximum tax bonus was 30 000 CZK per taxpayer per year. However the child tax support was more than doubled during the last years and starting from 2012 the tax credit is 13 404 CZK and the maximum tax bonus 60 300 CZK.

b. Lump-sum expenses
   Tax base of self-employed persons is formed as the difference between income and expenses. The self-employed can choose from two possibilities: either to apply real expenses or lump-sum expenses. As Lachová and Tepperová (2013) mention, the main argument for introduction of lump-sum expenses was to decrease the administration burden however, it can be also used as a powerful instrument for supporting small business. The share of self-employed using lump sum expenses is gradually increasing all the time: from 27% in taxable period 2005 to 52% in 2012. Lump-sum expenses are mostly used by self-employed having

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yearly income between 100 and 400 thousands CZK. On the other hand self-employed who have yearly income above 2 million CZK and are at the same time using real expenses declare on average real expenses of about 84% of the declared income. All these figures were gained by analyzing data from ADIS.

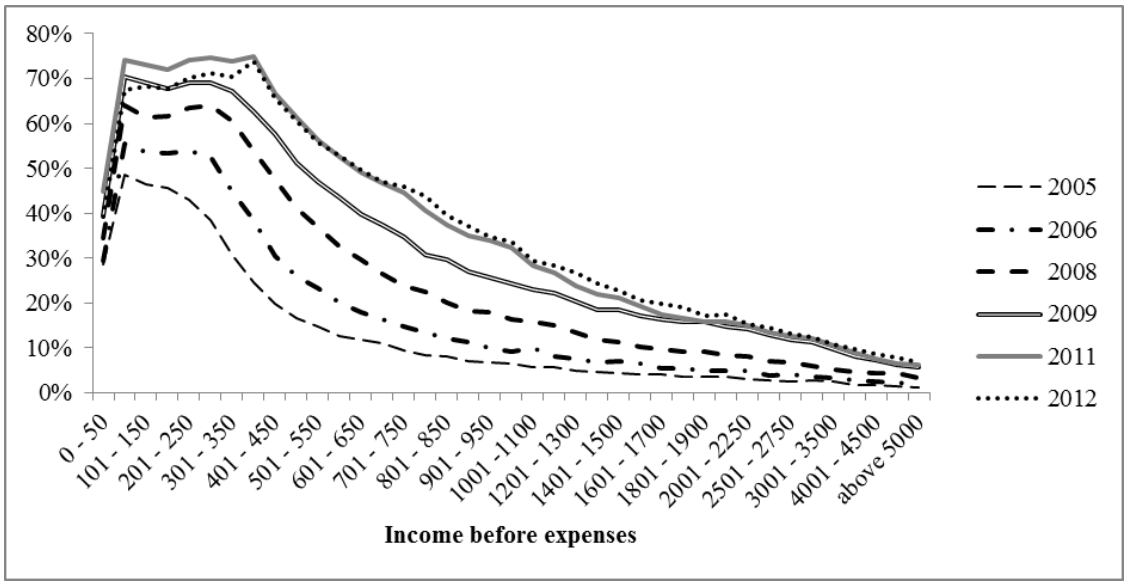

Figure 3. Share of self-employed using lump sum expenses according to income level (Source: General Financial Directorate data, own calculations)

c. Tax reform in 2008
As from 2008 the new tax system for individuals was introduced. Before 2008 the personal income tax rates were progressive starting from 12% for the lowest income to 32% for the highest income. After 2008 only one single rate is applicable – 15%. However there is a significant difference between tax base for income from employment and for business income. While the tax base for employment income is increased by social security contribution paid by the employer (around 34% of the income), the tax base for self-employed is the difference between income and expenses. Therefore since 2008 the self-employed are dealing with a much lower effective tax rate than employees. The other important change brought by this tax reform was a cancelation of minimum tax base for self-employed. Up to 2008 self-employed were required to pay tax from the minimum tax base which was incorporated in the Act on Income taxes.

d. Economic recession
Self-employed persons are, as well as other businesses, vulnerable to the development of economy. The Czech economy went through an economic recession in 2009 and 2012 when the gross domestic product had declined by 4.5% and 1.0% respectively (Ministry of Finance, 2014). The recession could have undoubtedly impact on incomes of self-employed and therefore on the tax revenue.

3 Analysis of differences between tax revenue in 2006 and in 2013

Starting from this point the paper will focus only on tax revenue from tax returns. To analyze the differences of the slump in tax revenue and to be able to identify the reasons it was decided to compare the years 2006 and 2013 which actually mean the taxable periods 2005 and 2012. As it has been already mentioned previously in the text there is a timing difference between taxable period and tax revenue. Tax revenues from 2006 and 2013 correspond to taxable period in 2005 and 2012

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respectively. All data and figures in this analysis were gained by combining various commands in ADIS database.

3.1 Differences in personal income taxation in taxable period 2005 and 2012

Taxation of personal income has dramatically changed during the last few years. The most significant change occurred between 2007 and 2008 when a new tax reform was introduced and the Czech tax system shifted from progressive to linear taxation. For the purpose of the analysis were chosen the years 2005 and 2012 as they capture many of these changes – progressive versus linear tax rate, different calculation of the tax base, increased lump-sum expenses, higher tax credit and tax bonus and last but not least shift from non-taxable amount to tax credit. In order to compare both amounts it is needed to first recalculate the impact of non-taxable amount on the tax liability. For instance consider an individual with taxable income (income minus expenses including social security contribution paid during the year of 20 000 CZK) of 100 000 CZK and the tax rate is 15%. In 2005 he could apply basic non-taxable amount of 38 040 CZK which would decrease his tax base to 61 960 CZK, the tax liability would be then 9 294 CZK. In the scenario of 2012 social security contribution cannot be included in tax deductible expenses therefore the tax base is 120 000 CZK and the tax liability is 18 000 CZK. Thanks to the basic tax credit of 24 840 CZK there will be no tax liability. This is only a basic example to show the difference between tax credit and non-taxable amount therefore specific rules may be ignored.

Table 2. Personal income taxation in 2005 and 2012

	2005	2012
Tax base	Income less expenses (including social security contribution)	Income less expenses (social security contribution cannot be deducted)
Lump-sum expenses (depending on type of activity)	50 / 30 / 25 / 25%	80 / 60 / 40 / 30%
Tax rate	15-32% progressive	15% linear
Basic tax credit/non-taxable amount	38 040 CZK non-taxable amount	24 840 CZK tax credit
Child tax credit per child	6 000 CZK	13 404 CZK
Child tax bonus (total maximum)	30 000 CZK	60 300 CZK
Spouse tax credit/ non-taxable amount	21 720 CZK non-taxable amount	24 840 CZK tax credit

Source: Act No. 586/1992 Coll., Act on Income Taxes.

3.2 Tax revenue from tax returns in 2006 and 2013

The tax revenue from tax returns as published by Financial Administration (2014) has reached 17.85 bn. CZK in 2006 and 2.68 bn. CZK in 2013. Not the whole amount of tax revenues can be explained by ADIS. The reasons are following: some taxpayers pay tax in advance during the year, there is a timing discrepancy between tax revenue and taxable period and sometimes it happens that people do not pay exactly the same amount which is recorded on the tax return. Therefore, to be precise, instead of 2006 and 2013 tax revenue the paper will analyze tax liability based on ADIS data and other items in taxable period 2005 and 2012 which have an impact on the tax revenue.

According to data from ADIS the expected tax revenue from taxable period 2005 was 17.3 bn. CZK and 2.3 bn. CZK in 2012 which roughly corresponds to the real tax revenue in 2006 and 2013.The expected revenue consists of three main parts: tax liability (after all tax allowances and credits) which contributes to tax revenue, tax advance payments from employment that decreases tax revenue (the reason for that is explained in chapter 2.1) and finally child tax bonus which has also a negative impact on the tax revenue (explained in chapter 2.2).

First notion about the reason of the decrease in the tax revenue between 2006 and 2013 is showed in Figure 4. There can be seen a decrease in tax liability and at the same time increase in both tax advance payments from employment and child tax bonus.

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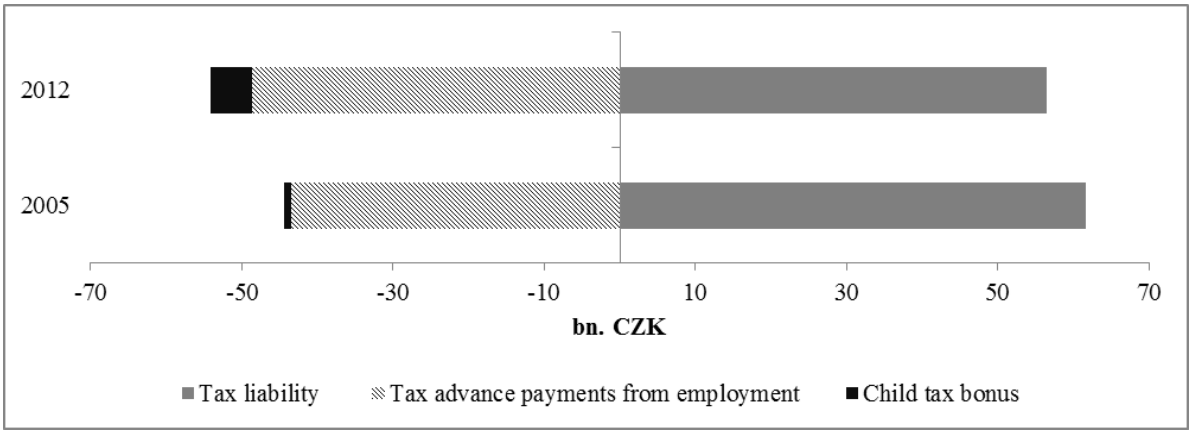

Figure 4. Tax liability, advance payments from employment and child tax bonus development in taxable period 2005 and 2012 (Source: ADIS, own calculations)

The decrease of 15 bn. CZK in the tax revenue can now be decomposed to:

a. Decrease of the tax liability by 5.2 bn. CZK
b. Increase of the tax advance payments from employment by 5.2 bn. CZK
c. Increase of the child bonus by 4.6 bn. CZK

3.3 Decomposition of the difference in tax revenue between 2006 and 2013

Now the paper will look at the particular items separately. It was decided to focus mainly on the tax liability and the tax advance payments from employment because the reason for the increase in the child bonus is quite obvious. Between 2005 and 2012 the child tax credit as well as the child tax bonus was more than doubled and also the number of people filing tax return and having the right to tax bonus increased.

To decompose the decrease of the tax liability between taxable periods 2005 and 2012 all tax returns were divided into four main groups depending on the type of income. The whole decomposition is shown in Figure 5. The most negative impact on the tax liability have self-employed persons whose tax liability has decreased by almost 7 bn. CZK. Moreover the tax liability of persons having income only from self-employment has decreased by 2.4 bn. CZK after increasing the number of such persons by more than 40% (by 150 000 persons). This group seems to be the most problematic as at the same time the number of persons due to pay tax (with non-zero tax liability) decreased by 75% (more than 200 000 persons) resulting in the fact that in 2012 only 14% self-employed pay any tax. According to the analysis, the group of self-employed who have income from self-employment plus other income (that means plus capital and/or rent and/or other income) their tax liability decreased by 4.4 bn. CZK. The number of persons due to pay tax decreased by 73% (350 000 persons) resulting in the fact that only 19% of them pay any tax in 2012. To compare this figures with employed persons please note that in 2012 there were more than 60% of persons having income only from employment who have paid tax. One of the main reasons of this decline could be lump-sum expenses with the combination of lower income tax rate. During the last years not only the lump-sum expenses have increased (Table 2) but also the number of self-employed using them. The other important fact is that in 2005 a minimum tax base for self-employed was in force.

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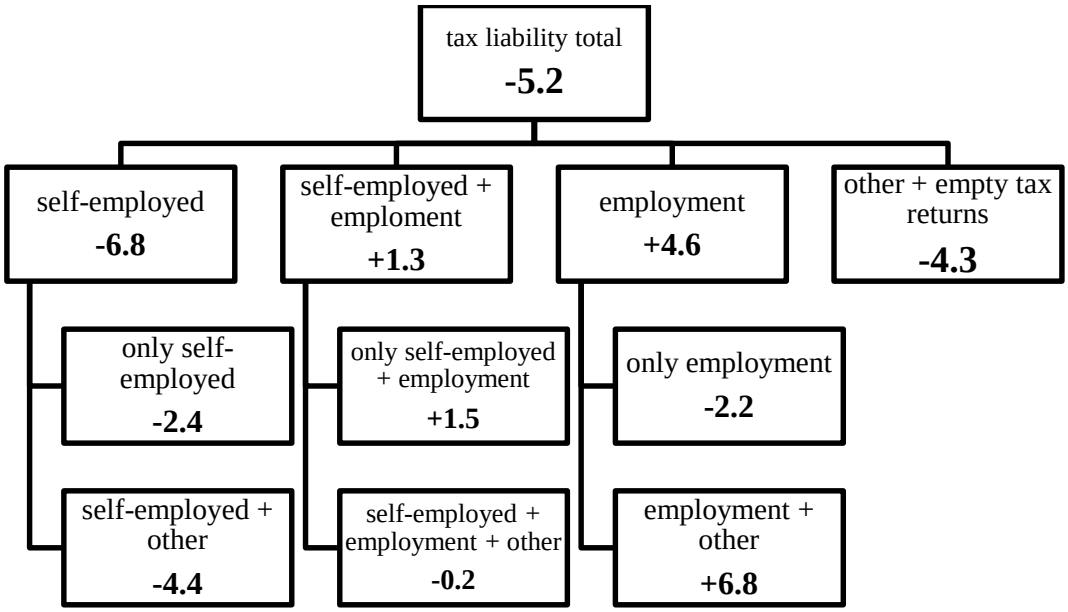

Note: Term „other" means capital and/or rent and/or other income as discussed earlier in this paper

Figure 5. Decomposition of the decrease of the tax liability between taxable periods 2005 and 2012, in bn. CZK (Source: ADIS, own calculations)

From Figure 5 it can be seen that between 2005 and 2012 the tax liability of employees has increased. From this point of view it seems that employees positively contributed to the tax revenue from the tax returns. However, to evaluate the real impact of employees on the tax revenue, negative impact of the tax advance payments has to be kept in mind. The tax advance payment overall increased between 2005 and 2012 by 5.2 bn. CZK. For instance in the group of persons who have only income from employment the tax advance payment exceeded the tax liability by 4 bn. CZK in 2012.

4 Discussion and conclusion

The main goal of this paper was to point out that the tax revenue from self-employed should not be confused with the tax revenue from tax returns. It was clearly shown what is the mix of persons filing tax returns and how they can influence the final tax revenue. On the other hand there is no doubt that the tax liability of self-employed persons is dramaticaly decreasing all over the time. The main reason in my opinion is a steadily decreasing tax base which is caused mainly by higher lump-sum expenses and cancelation of the minimum tax base. The problem of lump-sum expenses is being discussed in newspapers, academical articles as well as on the political level. That is why the lumps-sum expenses were partially reduced in 2013.

However, the reduction is questionable as it relates to maximal annual amount which is allowed to be claimed when applying for lump-sum expenses and to restriction of using child and spouse tax credits. The first reduction affects only persons with income higher than 2 mil. CZK (only about 10% of self-employed having income higher than 2 mil. CZK is using lump-sum expenses) while the second is against the family policy of the Czech government. Much more effective but less popular of course would be to reduce percentages of lump-sum expenses or to re-introduce minimum tax base.

5 Acknowledgement

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THE IMPACT OF FTT INTRODUCTION ON JOBS IN THE EU: LESSONS FROM ITALY AND FRANCE

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Abstract
The introduction of FTT could in the long run result into a loss of jobs, with a detrimental impact on Member States if jobs are lost to other financial centres outside the EU. The Commission´s Impact Assessment reports that the potential labour market effect in financial centres depends on the business strategies of the institutions affected. The share of the employment by NACE K in total employment for EU27 was 2.73% in 2012. However, individual results varied across countries from 1.74% in Estonia to 11.22% in Luxembourg. In case of EU11 the results ranged from 1.74% also in Estonia to 3.90% in Austria. The FTT has been implemented in France in August 2012 and in Italy in March 2013 on Securities and in September 2013 on derivatives. Despite of the fact that the total employment in France decreased from 26.965 to 26.955 million people in 2012, as well as the quarterly growth of real GDP, both employment by NACE K increased by 4,300 people and its share on the total employment. The aim of the paper is to discuss the possible impacts of FTT introduction on the unemployment in the EU based on the development in Italy and France after FTT introduction.

Keywords
Financial Transaction Tax, Enhanced Cooperation, Employment, European Union.

JEL Classification
H20, G01.

1 Introduction

The recent global economic and financial crisis had a serious impact on EU economies and the public finances. The financial sector has played a major role in causing the economic crisis whilst governments and European citizens at large have borne the cost. Due to this fact, the discussion concerning the implementation of a financial transaction tax (hereinafter as FTT) in Europe has increased. Initiatives for taxing the financial sector were brought back into the debate as of 2008 when the massive financial interventions by governments around the globe were made in favour of the financial sector. Therefore, there is a strong consensus within Europe and internationally that the financial sector should contribute more fairly given the costs connected with the crisis and the current under-taxation of the sector.

Legal basis for the taxation of the financial sector in EU, specifically financial transactions, can be found in two basic documents. The first represents the Council Decision 2013/52/EU of 22 January 2013 authorising enhanced cooperation in the area of financial transaction tax. Under that decision eleven Member States are authorised to establish enhanced cooperation in the area of financial transaction tax. The second document represents the proposal for a Council Directive implementing enhanced cooperation in the area of financial transaction tax of 14 February 2013[3] (hereinafter as FTT Proposal).

FTT Proposal covers "all actors, all instruments and all markets" within the group of the EU11 Member States who signed up the enhanced cooperation in the area of FTT. There have been huge discussions about what the financial impact of the FTT will be on economy and on participating/non-participating Member States.

Another concern raised due to the implementation of the FTT is the loss of jobs. Across the EU the financial services sector employs approximately 6.1 million people (Eurostat). If the relating sectors are taking into the account, total amount is around 10 million people (4.5% of the EU workforce). The introduction of FTT could result into a loss of jobs in the long run, with a detrimental

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impact on Member States if jobs are lost to other financial centres outside the EU11. The aim of the paper is to discuss the possible impacts of FTT introduction on the unemployment in the EU based on the development in Italy and France after the introduction of financial transaction tax.

2 Theoretical Background

There can be found number of literature discussing the impacts of financial transaction tax. As one of the very first proponents of this type of tax can be considered (Keynes, 1936) who mentioned that introduction of financial transaction tax could restrict the impacts of speculative bubbles. He was followed by (Tobin, 1978) proposing to introduce one percent tax on all foreign exchange transactions levied internationally in order to limit cross-border flows of capital. Other proponents of financial transaction tax (Stiglitz, 1989) and (Summers and Summers, 1989) mentioned that introduction of this tax would decrease short-term speculations.

On the other hand, there can be also found opponents (Schwert and Senguin, 1993) or (Habermeier and Kirilenko, 2003) arguing, that the introduction would increase the cost of the capital for the companies and would resulted into the lower prices of assets. Both of the authors also expressed that the above mentioned could lead to the reduction of liquidity which could cause higher price volatility. Another negative effect which mentions (Matheson, 2010) in connection with the introduction of financial transaction tax is the possibility of tax evasion.

The discussion of the negative effects lead contemporary proponents to consider remarkably lower tax rates than originally proposed by Keynes or Tobin. (Pollin and others, 2002), (Spratt, 2006), (Kapoor and others, 2007) and (Schulmeister, Schratzenstaller and Picek, 2008) suggest the tax rate as one-half basis point to avoid the decrease in liquidity and tax evasion in the form of driving the activity off-shore. Some authors as (Schulmeister, Schratzenstaller and Picek, 2008) mention, that the revenue could be even ten times higher in case of inclusion of derivates into the tax base. According to (Schulmeister, Schratzenstaller and Picek, 2008) if the tax would be levied on currency transactions only (in the form of Tobin tax) at the rate of 0.005 % the revenue would be 25 bn. EUR.

The idea which can be clearly seen from the review of the literature in that field is that while at the beginning the imposition of the tax was understood as the regulation of the financial markets, in last few years it is considered mainly as the tool for raising of the revenue. Moreover, the literature also lacks systematic research of the impacts of financial transaction tax introduction on the employment.

3 Results

The Commission Impact Assessment reports that the potential labour market effect in financial centres depends on the business strategies of the institutions affected. For example, if the tax is not passed on to clients, it could be absorbed by reduced margins, reductions in salaries, particularly in bonus payments, or other measures changing business models. Further, based on an assumption that in the start-up phase when IT systems need to be optimized and new business model developed, new jobs might be created. Thus there is assumed any negative effect for jobs, but a positive effect on jobs is not unlikely. However, as mention (PwC, 2012), one basic condition must be fulfilled so that no negative employment effects are to be expected for the EU11 economy, the received FTT revenues have to trigger demand in sectors outside the financial services industry.

Contrary to the statement of the Commission, the research by (PwC, 2012) revealed that the proposed FTT would result in to the loss of jobs in the financial centres as London City. The assumption is that approximately one out of every four jobs would be lost. Further, due to the fact, that repo operations are also within scope of the directive, the FTT would have a major effect in raising bank´s short-term funding costs with the result of transfers to the private sector with consequential negative effects on investment, employment and output.

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With respect to the global situation in the EU and from the long term point of view, negative employment effects are more likely to arise. Percentage changes of the employment by NACE K (Financial and insurance activities) during 2010/Q4 to 2013/Q3 for EU15, EU27 or EA17 are declining almost at all cases as well as amount of person employed in this area. For details see Figure 1 below.

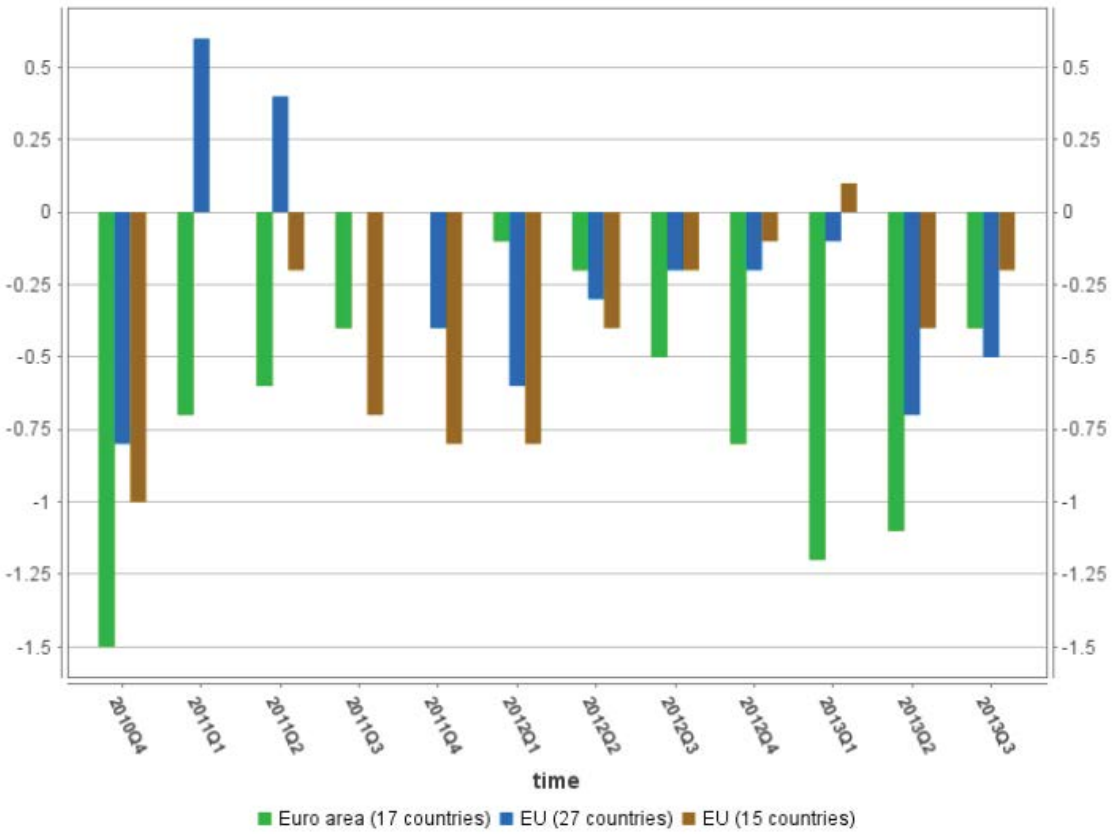

Figure 1. Employment by NACE K Rev.2 – Financial and insurance activities, percentage change Q/Q-4 (Source: Eurostat, National accounts)

However, the individual percentage changes varied across countries from -11.5% in Lithuania to 9.3% in Estonia in 2013/Q3. In EU11 result ranged from -2.8% in Slovenia to 9.3% in Estonia. Moreover, it is important to note that only percentage changes of employment in France, Luxembourg and Malta were permanently increased during the selected period 2010/Q4 to 2013/3. In addition, for the year 2013 following countries showed increasing or stagnant results - Ireland, Slovakia, United Kingdom and Norway. For details see Tab. 1 below.

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Table 1. Employment by NACE K Rev.2 – Financial and insurance activities - percentage change Q/Q-4 in %

	2010 Q4	2011 Q1		2011 Q2	2011 Q3	2011 Q4	2012 Q1		2012 Q2	2012 Q3	2012 Q4	2013 Q1		2013 Q2	2013 Q3	
EA17	-1.5	-0.7		-0.6	-0.4	0	-0.1		-0.2	-0.5	-0.8	-1.2		-1.1	-0.4	
EU27	-0.8	0.6		0.4	0	-0.4	-0.6		-0.3	-0.2	-0.2	-0.1		-0.7	-0.5	
EU15	-1	0		-0.2	-0.7	-0.8	-0.8		-0.4	-0.2	-0.1	0.1		-0.4	-0.2	
BE	-0.7	0.7		0	0.7	0.7	-0.7		0	-0.7	-1.4	2.2		2.2	1.4	
BG	0.5	6.1		4	4.5	3.5	-2.5		-4.3	-1.5	-3.7	0.8	b	-1.6	-1.4	
CZ	-0.9	0.6		1.6	2.2	-0.4	2.7		3.2	3	3.7	4.4		0.1	-0.3	
DK	-8.2	-3.1		0	2.2	2.2	-4.3		-4.3	-4.3	-3.3	-2.2		0	0	
DE	-0.5	-0.5		-0.3	-0.7	-0.9	-0.6		-0.5	-0.3	-0.3	-0.3		-0.3	-0.1	
EE	2.9	14.6		-4.8	-3.2	19	3.6		16.5	6.6	-10.4	-9.6		13	9.3	
IE	-9.9	-4.8		0.1	-1.3	4.9	-2		-7.4	3.3	-0.1	1.5		1.8	0.8	
EL	-2.3	-1.3		-3.3	-1.3	2	4.3		9.4	-7.2	-11.2	-11		-14.8	3.8	
ES	-6	-3.7		-3.9	-1.8	-2.5	-2.9		-3.4	-4.1	-1	-0.9		1.4	3.1	
FR	**0**	**0.3**		**0.6**	**0.9**	**1.3**	**1.2**		**1**	**0.7**	**0.5**	**0.4**		**0.1**	**0.2**	
IT	-1.4	-1		-0.5	-0.5	-0.3	0.7		0.8	0.6	-0.4	-1.9		-2.2	-2.4	
CY	2.5	2.7		3.8	2.7	0.9	-0.1		-0.5	-0.6	-0.5	-0.5		-0.6	-4.4	
LV	-4.7	-6.6	b	3	4.9	5.1	-2.5		-6.5	-2.4	-1.1	-1.6		-2.2	-9.1	
LT	-4.9	-15.7		-5.1	-4.4	-23.7	4.5	b	5	-0.7	1.2	1.9		-12.7	-11.5	
LU	**0.3**	**1**		**1.8**	**2.1**	**2.1**	**2.2**		**2.2**	**2**	**1.7**	**1**		**0.8**	**1**	
HU	-1.1	6.5		1	1.4	-0.2	-1.6		-2.7	-4.1	-3.8	-3.1		-2.6	-2.3	
MT	**4.6**	**8.9**		**4.2**	**4**	**1.6**	**1.6**		**1.8**	**0.6**	**1.3**	**3.4**		**4.6**	**5.3**	
NL	-2.4	-1.6		-2.1	-1.9	-1.1	-2.1		-2.3	-2.7	-2.7	-3.2		-3.1	-3.2	
AT	-0.5	-0.1		0.2	0	0.2	1.7		1.1	0.9	0.4	-1.6		-2.6	-2.3	
PL	2.8	12		0.1	-1	10.1	5.7	b	-1.1	1.5	-1.2	-1.3		3.9	-4.9	p
PT	-0.4	1.7		2.5	1.7	-0.2	-1.9		-1.8	-2.8	-3.1	-4.1		-4.5	-1.5	
RO	6.8	15.6		9.1	9.7	-2.3	-4.3		-2.4	-3.7	-2.8	-12.9		-12.1	-4.6	
SI	0.5	-1.7		-2.4	-4.5	-3.6	-1.2		-1.5	-1.1	-2.3	-2.7		-3	-2.8	
SK	-2.7	-0.6		0.8	1.5	3	3.4		2.9	2	3.2	1.7		1.5	1	
FI	-5.9	1.8		-2.5	1.8	12.6	3.5		-0.8	0	-7.2	-2.5		-1.3	-2.2	
SE	0	3.4		1	2.3	-0.2	-6.2		-0.9	-1.2	-0.6	3.2		1	1.7	
UK	1.9	3		1.1	-2.2	-3.5	-2.4		-0.7	1.8	2.8	4.6		2.1	0.2	p
NO	-1.9	0		-2	-3.8	-1.9	-2		2	2	0	2		0	0	
CH	0.4	1.8		2.1	2.5	1.9	0.1		0.8	:	:	:		:	:	

:=not available b=break in time series p=provisional

Source: Eurostat, National Accounts.

The share of the employment by NACE K in total employment for EU27 was 2.73% in 2012. However, individual results varied across the countries from 1.74% in Estonia to 11.22% in Luxembourg. In case of EU11 the results ranged from 1.74% also in Estonia to 3.90% in Austria. For more details see Table 2 below.

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Table 2. Share of financial and insurance employment on the total employment

	2008	2009	2010	2011	2012
EU27	2.71	2.74	2.74	2.72	2.73
EA17	2.74	2.80	2.77	2.77	2.76
Belgium	**3.12**	**3.10**	**3.6**	**3.4**	**3.1**
Bulgaria	1.53	1.66	1.75	1.85	1.83
Czech Republic	1.76	1.83	1.83	1.83	1.89
Denmark	3.42	3.44	3.24	3.31	3.22
Germany	**2.98**	**3.1**	**2.98**	**2.91**	**2.87**
Estonia	**1.87**	**1.66**	**1.80**	**2.00**	**1.74**
Ireland	4.67	5.5	4.73	5.5	5.6
Greece	**2.25**	**2.34**	**2.35**	**2.54**	**2.48**
Spain	**1.96**	**2.10**	**2.3**	**2.2**	**2.8**
France	**2.96**	**3.4**	**3.4**	**3.6**	**3.8**
Italy	**2.59**	**2.61**	**2.59**	**2.58**	**2.58**
Cyprus	4.65	4.75	4.86	4.91	5.7
Latvia	2.00	1.95	1.99	2.4	1.99
Lithuania	1.11	1.55	1.68	1.27	1.26
Luxembourg	12.1	11.56	11.39	11.30	11.22
Hungary	2.53	2.38	2.35	2.35	2.26
Malta	3.79	3.86	4.2	3.98	4.1
Netherlands	3.19	3.14	3.8	3.2	2.94
Austria	**3.25**	**3.21**	**3.16**	**3.12**	**3.9**
Poland	2.23	2.24	2.32	2.52	2.57
Portugal	**2.00**	**2.12**	**2.14**	**2.17**	**2.20**
Slovenia	**2.56**	**2.57**	**2.64**	**2.59**	**2.54**
Slovakia	**1.87**	**1.86**	**1.83**	**1.85**	**1.91**
Finland	1.78	1.89	1.78	1.97	1.83
Sweden	2.10	2.12	2.11	2.6	2.3
United Kingdom	3.87	3.70	3.76	3.61	3.66
Norway	1.95	2.4	2.1	1.94	1.90

Source: Eurostat, National Account, own processing (EU11 is highlighted).

Further, it is necessary to highlight the divergence in results of countries which are considered as financial centres - Luxembourg (11.22%), Cyprus (5.7%), Ireland (5.6%), Malta (4.1%) and UK (3.66%), in contrast with the rest of the countries. For details see Fig. 2 below. Their shares on the employment by NACE K in total employment are at minimum twice higher than the results of the rest of countries. In case of Luxembourg the share on the employment is more than five times higher.

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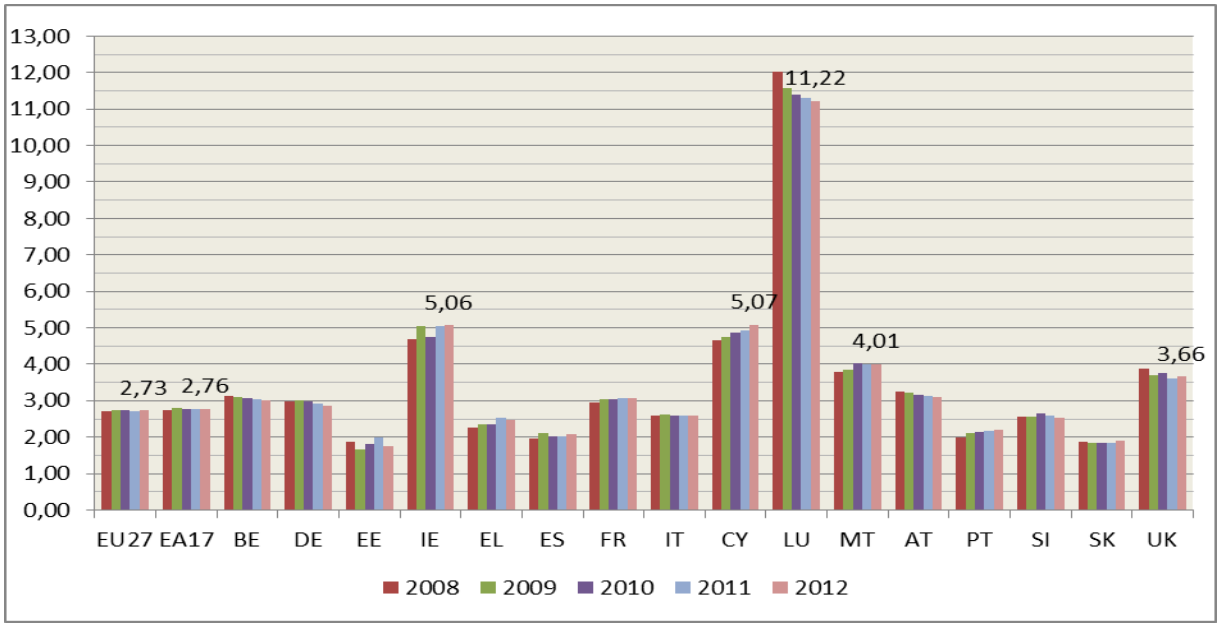

Figure 2. Share of financial and insurance employment on the total employment in EU11 and selected countries (Source: Eurostat, National Accounts, own processing)

With respect to the all the above mentioned results the question is, how the FTT implementation will affects the employment in EU11 and EU27. The employment in the EU can be characterised in most of the cases as stagnant or declining. The increasing trend of employment can be identified only in France, Luxembourg and Malta. When answering the question, it is possible to employ the experiences of France and Italy. The FTT has been implemented in France in August 2012 and in Italy in March 2013 on securities and in September 2013 on derivatives. The Table 3 below summarizes the overall results of employment in those countries.

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Table 3. Summary of results for France and Italy with an emphasis on the effects of FTT

		2008	2009	2010	2011	2012	2013Q3*
Total employment in France	in 1000 person	27,137.3	26,782.7	26,797.8	26,965.8	26,955.8	n.a.
Total employment in Italy		25,255.8	24,839.5	24,659.8	24,739.1	24,661	n.a.
Employment by NACE K – France		803.7	815.1	815	825.3	829.6	829.6
Employment by NACE K - Italy		654.8	647.4	639.4	639	637	625.1
Share of employment in K on total – France	in %	2.96	3.04	3.04	3.06	3.08	n.a.
Share of employment in K on total – Italy		2.59	2.61	2.59	2.58	2.58	n.a.
		2012Q2	**2012Q3**	**2012Q4**	**2013Q1**	**2013Q2**	**2013Q3**
Employment by NACE K Percentage change Q/Q-4 – France	in %	1	0.7	0.5	0.4	0.1	0.2
Employment by NACE K Percentage change Q/Q-4 – Italy		0.8	0.6	-0.4	-1.9	-2.2	-2.4
The growth of real GDP – percentage change over previous quarter - France	in %	-0.3	0.2	-0.2	-0.1	0.6	0.0
The growth of real GDP – percentage change over previous quarter - Italy		-0.6	-0.4	-0.9	-0.6	-0.3	0.0

*data for all year 2013 not yet available

Note: In France the FTT was implemented in August 2012, contrast with Italy, where the FTT was implemented in March 2013 (FTT on Shares) and in September 2013 (FTT on derivatives).

Source: Eurostat, OECD. Stat, National Account, own processing and calculation.

Despite of the fact that the total employment in France decreased from 26.965 to 26.955 million people in 2012, as well as the quarterly growth of real GDP, employment by NACE K increased by 4,300 people as well as its share on the total employment. However, if the French results would be compared with Italian, there are different effects. Trend of the total Italian employment is decreasing as well as the employment by NACE K and its percentage change. Moreover, the period from 2012 to 2013Q3 is characterised with 11,900 job loss, nevertheless that there is the positive quarterly growth of real GDP from Q32013. Similar results as in Italy were reached by (Schwabish, 2004) researching the impact of the FTT on New York City and on its employment in the financial sector. Based on its results, it can be concluded that the implementation of the FTT affects the financial sector significantly, particularly in New York - $2.5 billion of wages were lost, costing 10,000 to 11,000 jobs. Further, the analysis highlighted the cascade effect of the financial transaction tax, when the job losses in financial sector can cause job losses in other sector, after that the overall impact of the FTT on employment losses is estimated 23,000 to 33,000 jobs.

4 Conclusion

As indicated in the literature, the introduction of the FTT will probably bring a negative consequences as decrease in the future GDP, an increase in the cost of capital, job losses, distortion of competition, cascade effect, extra-territorial impact, economic incidence on the level of the final consumers, an increase market volatility and reduce market liquidity; that outweigh over positives like as tax revenues. Further, the implementation under enhanced cooperation will bring divergent impacts on the participating and non-participating Member States. For instance, all EU Member States would benefit from the improvement of the internal market, as amongst EU11 would be used one approach to financial sector taxation, therefore simplifications and reduced administrative burdens for business,

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more transparency, less compliance costs and competitive distortions are expected. Non-participating Member States would benefit from the relocation outside of the FTT jurisdiction as their business without FTT would be more attractive than in participating Member States. However, there is no comprehensive assessment of FTT on non-participating Member States and extraterritorial effects.

Moreover, based on both the analysis of development of employment in sector K and on the experiences of Italy and France, the impact of FTT introduction on the employment will probably be negative as well. In case of Italy there was observed 11,900 job loss, contrary to 4,300 new jobs in case of France, that represents altogether with Luxemburg and Malta only three countries with permanently increased percentage changes of employment in sector K during the period 2010/Q4 to 2013/3 in Europe. As another empirical evidence serves also New York City and its loss of jobs after FTT implementation. Thus, at a time of fragile economic growth across the EU and the increased risk of recession in Europe, the introduction of the FTT should be undesirable.

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SOURCES OF INEFFICIENCY: LABOUR UTILIZATION IN THE EU

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Abstract
Resource utilization and cost efficiency have been paid closer attention since the global crisis outbreak. Macroeconomic analysis focusing on national economies may be interested in the extent of the main production factors utilization so as to reveal wasted sources of growth. In the paper, a measure of labour input utilization is adopted employing data envelopment analysis method. The model used exploits difference in the measures of efficiency obtained as classical measure of technical efficiency and a modification of the program reflecting labour considered a variable input in the short-run period. The results show prevailing underutilization of labour across European economies in the pre-crisis period of 2008 as compared to 2013.

Keywords
Production Factor, Labour, Capacity Utilization, Data Envelopment Analysis.

JEL Classification
C61, E10.

1 Introduction

Since the global crisis, a closer attention has been paid to efficiency and capacity utilization in all the segments of economy as well as at the firm level in the form of cost minimization or technological innovation. At the micro level, one can easily assess efficiency of the production process by a considerable amount of financial indicators. To address the problem of efficiency evaluation at the macro level, the classical parametrical production-function approach seems not to be sufficient. Defining technical efficiency in a Pareto-Koopmans sense requires to abandon the assumption of operating at the maximum level given by the production function and let the subjects transform inputs into less-than-possible outputs as well. Efficient units forming the efficiency frontier would be those whose performance cannot be improved by reducing any input without worsening output or increasing other input. The distance to boundary could be defined as efficiency measure. One could also get around the problem of assigning weights (prices) while aggregating macro indicators.

Non-parametrical approach to capacity utilization followed the development of DEA techniques. Most commonly, capacity utilization rate is defined as "the ratio of actual output to the potential output which is determined by the maximum amount that can be produced per unit of time with existing plant and equipment, provided that the availability of variable factors of production is not restricted (Färe et al., 1984). DEA modeling was used in efficiency evaluation of hospitals (Färe et al., 1989a) or measuring plant capacity, plant capacity utilization and technical change in the short-run for multi-product firms in Färe et al. (1989b). More recent developments comprise analyses of Ray et al. (2005) on an aggregated industry level in the US or Helali and Kalai (2012) constructing minimal-cost-based efficiency frontier.

In our investigation, a non-parametric approach will be used on an aggregated level of national economies, the main interest being labor utilization in the European economies before the crisis outbreak in 2008 compared to the period of 2013. The question is, whether cost minimization efficiency increasing pressures on the firm level have translated into aggregate data. In Section 2, as a standard tool in DEA analysis, an SBM model will be used and proposed modifications applied to obtain measure of capacity utilization (CU) in line with Cooper et al. (2007). Section 3 provides empirical analysis comprising data description, variables used and tables of results. Section 4 concludes.

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2 Non-parametrical approach to productivity analysis

In this study, we use data envelopment analysis to assess the level of labor utilization employing slack-based measure of efficiency. This goes around possible problems with *weak efficiency* which radial models may suffer from and captures all sources of inefficiency. A modification in constraints enables one to evaluate input utilization which may be sufficient for managerial purposes.

2.1 Data envelopment analysis

Working with a considerable amount of data requires arrangement. Economic subjects under evaluation are called DMUs – Decision Making Units – to reflect their independent economic behavior. Let´s assume to have *n* DMUs transforming *m* inputs into *s* outputs. Inputs are organized in the matrix **X**, element x_{ij} meaning amount of input *i* used by DMU *j*, the similar way in the output matrix **Y**.

$$X = \begin{bmatrix} x_{11} & x_{12} & \dots & x_{1n} \\ x_{21} & x_{22} & \dots & x_{2n} \\ . & . & \dots & . \\ x_{m1} & x_{m2} & \dots & x_{mn} \end{bmatrix}, \quad Y = \begin{bmatrix} y_{11} & y_{12} & \dots & y_{1n} \\ y_{21} & y_{22} & \dots & y_{2n} \\ . & . & \dots & . \\ y_{s1} & y_{s2} & \dots & y_{sn} \end{bmatrix}$$

Assessing technical efficiency involves considering a general ratio

$$efficiency = \frac{outputs}{inputs} \tag{1}$$

In classical DEA, every DMU aggregates its inputs and outputs by means of individually set weights so that the ratio (1) is maximized. In order to avoid unboundedness of maximization problem, the constraint is imposed so that normalized efficiency cannot exceed unit which also holds in case of using the weights of DMU under consideration (denoted DMU_0) for any other of *n–1* DMUs. Formally:

$$\max \quad h_0(\mathbf{\mu}, \mathbf{\nu}) = \frac{\sum_{r=1}^{s} y_{r0}\mu_r}{\sum_{i=1}^{m} x_{i0}\nu_i} \tag{2}$$

$$\text{s.t.} \quad \frac{\sum_{r=1}^{s} y_{rj}\mu_r}{\sum_{i=1}^{m} x_{ij}\nu_i} \le 1 \qquad (j = 1, 2, ..., n) \tag{3}$$

$$u_r \ge 0 \qquad (r = 1, 2, ..., s)$$

$$v_i \ge 0 \qquad (i = 1, 2, ..., m)$$

The fractional program can be transformed into the linear one called CCR model as introduced by Charnes et al. (1978) which was first to evaluate performance in a non-parametric way. The model though suffered from the problem of weak efficiency enabling DMUs to assign zero weights to "unfavorable" inputs or outputs to maximize efficiency value.

2.2 Slack-based measure of efficiency (SBM)

The slack-based model (SBM) by Tone (2001) is one of the powerful developments to capture all sources of inefficiency addressing the problem of weak efficiency. The objective function has two important properties:

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- unit invariance,
- monotonicity.

A function $\rho = \dfrac{1-\frac{1}{m}\sum_{i=1}^{m} s_i^- / x_{i0}}{1+\frac{1}{s}\sum_{r=1}^{s} s_r^+ / y_{r0}}$ meet the requirements of the both, moreover, it can be also shown that $0 < \rho \leq 1$ (Tone, 2001).

Evaluation of efficiency takes the form of a fractional program:

$$\begin{aligned} \min_{\boldsymbol{\lambda},\mathbf{s}^+,\mathbf{s}^-} \quad & \rho = \frac{1-\frac{1}{m}\sum_{i=1}^{m} s_i^- / x_{i0}}{1+\frac{1}{s}\sum_{r=1}^{s} s_r^+ / y_{r0}} \\ \text{s.t.} \quad & \mathbf{x_0} = X\boldsymbol{\lambda} + \mathbf{s}^- \\ & \mathbf{y_0} = Y\boldsymbol{\lambda} - \mathbf{s}^+ \\ & \boldsymbol{\lambda} \geq 0,\ \mathbf{s}^- \geq 0,\ \mathbf{s}^+ \geq 0. \end{aligned} \tag{4}$$

Using substitution $t = \dfrac{1}{1+\frac{1}{s}\sum_{r=1}^{s} s_r^+ / y_{r0}}$ one can obtain a linear program:

$$\begin{aligned} \textit{(SBMt)} \quad \min_{t,\boldsymbol{\lambda},\mathbf{s}^+,\mathbf{s}^-} \quad & \tau = t - \frac{1}{m}\sum_{i=1}^{m} t s_i^- / x_{i0} \\ \text{s.t.} \quad & \mathbf{x_0} = X\boldsymbol{\lambda} + \mathbf{s}^- \\ & \mathbf{y_0} = Y\boldsymbol{\lambda} - \mathbf{s}^+ \\ & \boldsymbol{\lambda} \geq 0,\ \mathbf{s}^- \geq 0,\ \mathbf{s}^+ \geq 0,\ t > 0 \\ & . \end{aligned} \tag{5}$$

Substituting $t\mathbf{s}^- = \mathbf{S}^-$, $t\mathbf{s}^+ = \mathbf{S}^+$ a $t\boldsymbol{\lambda} = \boldsymbol{\Lambda}$, *SBMt* is converted into

$$\begin{aligned} \textit{(SBMt)} \quad \min \quad & \tau = t - \frac{1}{m}\sum_{i=1}^{m} S_i^- / x_{i0} \\ \text{s.t.} \quad & t\mathbf{x_0} = X\boldsymbol{\Lambda} + \mathbf{S}^- \\ & t\mathbf{y_0} = Y\boldsymbol{\Lambda} - \mathbf{S}^+ \\ & \boldsymbol{\Lambda} \geq 0,\ \mathbf{S}^- \geq 0,\ \mathbf{S}^+ \geq 0,\ t > 0. \end{aligned} \tag{6}$$

Linearization is important with respect to computational considerations as well as properties implied by duality of linear programs. After solving *SBMt* formulated by (5) or (6), one can go back to $\mathbf{s}^{0+}$, $\mathbf{s}^{0-}$, $\boldsymbol{\lambda}^0$ as optimal solutions of *SBM* and determine ρ^0 for DMU_0. Efficient DMUs will have values of ρ equal unit and zero slacks. Inefficient ones will have $\rho < 1$ due to positive slack variables $\mathbf{s}^{0+}$, $\mathbf{s}^{0-}$ which express deviation from the frontier or "potential". Projections to the frontier are thus

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given by

$$\hat{\mathbf{x}}_0 \Leftarrow \mathbf{x}_0 - \mathbf{s}^{-0}$$
$$\hat{\mathbf{y}}_0 \Leftarrow \mathbf{y}_0 + \mathbf{s}^{+0} \tag{7}$$

Indexes of variables $\lambda_j > 0$ constitute the reference set R_0 (efficiency frontier), every frontier point $(\mathbf{x}_0^*, \mathbf{y}_0^*)$ being positive linear combination of the other elements of the reference set:

$$\hat{\mathbf{x}}_0 = \sum_{j \in R_0} \mathbf{x}_j \boldsymbol{\lambda}_j, \ \hat{\mathbf{y}}_0 = \sum_{j \in R_0} \mathbf{y}_j \boldsymbol{\lambda}_j$$

It obvious from the construction of ρ that it takes into account all the sources of inefficiency and therefore $\rho_{\mathrm{SBM}} \leq h_{\mathrm{CCR}}$. *SBM* efficient DMUs are also CCR efficient but not the other way round. It is possible to give model input or output orientation in order to reflect preferences and feasibility of the policy. Output orientation is carried out by omitting *slacks* in (4).

Returns to scale might cause significant differences in case of evaluating efficiencies of the DMUs showing considerable range of size. The question of optimal scale and scale efficiency arises. The DEA programs mentioned up until now have assessed constant returns to scale (CRS) efficiency. As proposed in Banker et al. (1984), one can impose the assumption of variable returns to scale (VRS) by adding constraint on $\boldsymbol{\lambda}$ in the form of $\mathbf{e}^{\mathrm{T}}\boldsymbol{\lambda} = 1$ to the primal problem. Obviously, the value of the objective function would be at least the value before additional constraint had been imposed or higher. Thus, ratio score(CRS) / score(VRS) ≤ 1 would indicate *scale inefficiency* in case the inequality holds. The sum $\sum_{i=1}^{n} \lambda_i$ in computation results under CRS may be informative as to indicating returns to scale. DMUs with $\sum_{i=1}^{n} \lambda_i > 1$ operate at decreasing returns to scale while the opposite gives evidence for increasing returns to scale (Cooper et al., 2007). The output oriented SBM with variable returns to scale takes the form of the program

$$\begin{aligned} \textit{(SBM-O-V)} \qquad \max \quad & \rho = 1 + \frac{1}{s} \sum\nolimits_{r=1}^{s} s_r^+ \big/ y_{r0} \\ \text{s.t.} \quad & \mathbf{x}_0 = X\boldsymbol{\lambda} + \mathbf{s}^- \\ & \mathbf{y}_0 = Y\boldsymbol{\lambda} - \mathbf{s}^+ \\ & \mathbf{e}^{\mathrm{T}}\boldsymbol{\lambda} = 1 \\ & \boldsymbol{\lambda} \geq 0, \ \mathbf{s}^- \geq 0, \ \mathbf{s}^+ \geq 0. \end{aligned} \tag{8}$$

This measure of efficiency can be used for further analysis.

2.3 Input utilization

In case of two types of inputs – fixed and variable – it could be reasonable to think about capacity utilization. The classical example is invested capital as fixed input and office hours or employees as variable ones in the short-run. Following Cooper et al. (2007), we base assessing of capacity utilization on two efficiency measures. Let DMU_0 employ two types of inputs – variable and fixed denoted $\mathbf{x}^{\mathrm{V}}$ and $\mathbf{x}^{\mathrm{F}}$ respectively. Consider SBM model (8). Let us denote it *SBM-Restricted* as all inputs are considered fixed, the implied measure of efficiency ϕ^* would represent the potential for increasing output keeping inputs fixed. DMU_0 solving the optimization problem determines optimal

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values of $\boldsymbol{\lambda}$ (denoted λ^*) and slacks $\mathbf{s}^+$. In case of inefficiency ($\phi^* > 1$) the benchmark values for inputs are given by

$$\tilde{x}_{i0}^V = x_{i1}^V \lambda_1^* + \ldots + x_{in}^V \lambda_n^*, \quad (i = 1,2,\ldots,v) \tag{9}$$

Now relax the model *SBM-Restricted* by omitting the variable-input constraint from optimization program and denoted it *SBM-Relaxed* (Fixed-input model) obtaining efficiency measure ϕ^*_F, for which $\phi^* \leq \phi_F^*$ holds (F stands for fixed-input-constraint model). Now the ratio ca be defined

$$\kappa = \frac{\phi^*}{\phi_F^*} \ (\leq 1) \tag{10}$$

as a measure for capacity utilization. Obviously, $\kappa < 1$ implies that in *SBM-Restricted* the variable-input constraint had been active and there is a potential of increasing the average rate of output expansion ϕ^* by deleting this constraint. Optimal values for SBM-Relaxed denoted λ^{**} determine variable input benchmarks

$$\hat{x}_{i0}^V = x_{i1}^V \lambda_1^{**} + \ldots + x_{in}^V \lambda_n^{**}, \quad (i = 1,2,\ldots,v) \tag{11}$$

These can be greater or less than the observed input values. Fot *i*-th variable input is then individual utilization measure given by the ratio of projection and the actual value of x^V:

$$\delta_{i0}^* = \frac{\hat{x}_{i0}^V}{x_{i0}^V} \tag{12}$$

The above defined measures can be used for empirical investigation.

3 Empirical analysis

Empirical investigation involves determining labor utilization measure using aforementioned approach. The national economies are considered as DMUs transforming two production factors into GDP. 29 European countries were analyzed in two periods of 2008 and 2013.

3.1 Data and computation

In the analysis, standard inputs capital and labor were used along with GDP as an output measure. To account for price differences, capital and output were adjusted using price level indices for gross fixed capital formation and GDP respectively so as to obtain comparable volumes of inputs. Thus GDP was measured in mil. PPS. The data on the net capital stock come from AMECO database, the rest is Eurostat data. Considerable differences in size of economies which justify variable returns to scale assumption are documented in Table 1. In the table, descriptive statistics of the data used are provided along with the correlations between the variables.

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Table 1. Descriptive statistics and correlations

	2008			2013		
	K	L	Y	K	L	Y
Max	6643052	38542	2321462	6909251	40450	2393304
Min	12988	160	8064	13730	177	8578
Average	1199108.7	7909.9	427702.8	1269585.9	7716.8	423589.7
SD	1782953.1	9801.7	594115.8	1870357.6	9894.5	595487.2

Correlation	K	L	Y	K	L	Y
K	1	0.956	0.983	1	0.954	0.979
L	0.956	1	0.984	0.954	1	0.988
Y	0.983	0.984	1	0.979	0.988	1

Source: Eurostat, AMECO, the author´s computation.

To obtain desired measures of labor utilization, labor input is assumed to be variable in order to apply the approach described in Section 2.3. For this purpose, SBM output-oriented measures were computed both in the restricted and variable-input-omitted form which enables to determine projections employing (11) proceeding to establishing labor input utilization using (12). Scale inefficiencies are not the subject of this study. This is why variable returns to scale assumption is imposed directly taking into account a considerable variability in size of European economies. This procedure applied on 2008 as well as 2013 dataset involving 29×2×2 optimizations computed by DEA-Solver by Saitech.

3.2 Results

Firstly the detailed results of computation SBM measures of 2013 are reported in Table 2. The reported scores are inverted values of the objective functions in optimization programs of the form (8) and represent the efficiency measures, the unit value standing for efficient DMU operating on the frontier and inefficient units scoring below 1. In the Table 2, three of the DMUs appear efficient – Germany, Lithuania and Romania exhibiting score equal to 1 in the *Restricted* model. In the next column "Y ineff.", the total penalty for outputs inefficiency is shown, in the case of a single output it is simply equal to the score subtracted from the unit. Clearly, zero inefficiency can only have efficient DMUs.

After relaxing the constraints for input L (labor), one obtains scores in the second part of the table labeled "F" which cannot be clearly better than the former one. There is a correspondence between the score and optimal values of slack variables and λs from (8). Nonzero λ_i correspond to the peer DMUs from which one can get projected (boundary) values of individual inputs or outputs. λs are acting as weights for inputs of peer units. Sum of weighted inputs (11) provides the projected value which can be higher as well as lower than the original value.

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Table 2. SBM models, selected countries, 2013

	Restricted model		Fixed-output model							
DMU	Score	Y ineff.	Score	Reference set (lambda)				L	L_proj	δ
Belgium	0.9779	0.0226	0.59817	Poland	0.7710	Romania	0.2290	4530	14121	3.12
Czech Rep.	0.8212	0.2177	0.63625	Poland	0.3056	Romania	0.6944	4937	11179	2.26
Germany	1	0	1	Germany	1			40450	40450	1
Estonia	0.7251	0.3791	0.53914	Lithuania	0.7733	Malta	0.2267	621	1040	1.67
Latvia	0.9742	0.0265	0.97415	Lithuania	0.4946	Malta	0.5054	894	729	0.82
Lithuania	1			Lithuania	1					
Hungary	0.8940	0.1185	0.83294	Romania	0.6869	Slovakia	0.3131	3938	7081	1.80
Netherlands	0.9771	0.0234	0.71994	Poland	0.9100	United Kingdom	0.0900	8365	16850	2.01
Austria	0.8752	0.1426	0.51400	Poland	0.7472	Romania	0.2528	4175	13970	3.35
Portugal	0.7329	0.3644	0.52617	Poland	0.3586	Romania	0.6414	4514	11514	2.55
Romania	1			Romania	1					
Slovenia	0.8266	0.2097	0.49751	Lithuania	0.2765	Slovakia	0.7235	906	2043	2.25
Finland	0.8819	0.1340	0.52668	Poland	0.1576	Romania	0.8424	2457	10244	4.17
Norway	1	0	0.55391	Poland	0.3978	Romania	0.6022	2602	11762	4.52
Switzerland	0.8822	0.1335	0.54457	Poland	0.7270	Romania	0.2730	4461	13842	3.10

Source: Eurostat, AMECO, the author´s computation.

To assess labor utilization change over time, two periods´ characteristics are given in Table 3. Like in the previous table, two measures of efficiency are shown – restricted model and the fixed-input model (F). As was said before, F cannot be better, therefore the inequality given by (10) holds. δ was computed according to formula (12) using reference sets of the two periods.

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Table 3. Scores, projections and labor utilization 2008 and 2013

	2008				2013			
DMU	restricted	F	κ	δ	restricted	F	κ	δ
Belgium	0.9736	0.5654	0.5807	3.57	0.9779	0.5982	0.6117	3.12
Bulgaria	0.8147	0.7867	0.9657	1.13	0.7384	0.7384	1	0.89
Czech Republic	0.8586	0.6168	0.7183	2.42	0.8212	0.6363	0.7748	2.26
Denmark	0.9276	0.5472	0.5899	3.84	0.9413	0.5979	0.6352	3.73
Germany	1	1	1	1	1	1	1	1
Estonia	0.7504	0.5321	0.7091	1.95	0.7251	0.5391	0.7435	1.67
Ireland	0.9661	0.5003	0.5178	5.26	0.9767	0.5222	0.5346	5.42
Greece	0.7800	0.4565	0.5852	3.50	0.7149	0.3919	0.5482	3.78
Spain	0.8534	0.6919	0.8108	1.34	0.9332	0.6495	0.6960	1.63
France	1	0.8304	0.8304	1.26	1	0.8131	0.8131	1.33
Croatia	0.9310	0.6793	0.7297	2.24	0.8424	0.6216	0.7379	1.58
Italy	0.9638	0.7161	0.7430	1.41	0.9182	0.6716	0.7314	1.48
Cyprus	0.8193	0.4425	0.5402	3.33	0.7423	0.4237	0.5708	2.65
Latvia	1	1	1	1	0.9742	0.9742	1	0.82
Lithuania	1	1	1	1	1	1	1	1
Hungary	0.9957	0.7559	0.7591	2.28	0.8940	0.8329	0.9317	1.80
Malta	1	1	1	1	1	1	1	1
Netherlands	0.9755	0.7446	0.7633	2.07	0.9771	0.7199	0.7368	2.01
Austria	0.8736	0.4879	0.5585	3.83	0.8752	0.5140	0.5873	3.35
Poland	1	1	1	1	1	1	1	1
Portugal	0.7155	0.5018	0.7013	2.51	0.7329	0.5262	0.7179	2.55
Romania	1	1	1	1	1	1	1	1
Slovenia	0.8878	0.5087	0.5730	3.47	0.8266	0.4975	0.6019	2.25
Slovakia	1	0.8693	0.8693	1.74	1	1	1	1
Finland	0.9143	0.5099	0.5577	4.37	0.8819	0.5267	0.5972	4.17
Sweden	0.8807	0.5436	0.6172	3.27	0.9303	0.5958	0.6405	2.88
United Kingdom	1	1	1	1	1	1	1	1
Norway	1	0.5287	0.5287	5.00	1	0.5539	0.5539	4.52
Switzerland	0.8528	0.4823	0.5655	3.74	0.8822	0.5446	0.6173	3.10

Source: Eurostat, AMECO, the author´s computation.

The results reveal that there were 10 technically efficient economies in 2008 – Germany, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, United Kingdom, and Norway, only Latvia worsening its score in the next period. Other countries don´t have any clear-cut pattern, half of them improving and the other half worsening the performance over time. As for resource utilization in the pre-crisis period, values of δ imply that there was an overuse of labor in all inefficient countries except Norway, France and Slovakia. This picture didn´t changed five years qualitatively except for Slovakia getting efficient. The main change consists in reducing δ in the most of the countries, Bulgaria and Latvia even below the unit which is interpretable as underuse of labor capacity. It is noticeable that labor utilization worsened in Ireland, Greece, Portugal, Spain, France, Italy and Portugal.

4 Conclusion

A comparative statics of efficiency measures show that the crisis had an impact on labor utilization in European economies. Economic policy measures regarding maintaining employment counteracting firm-level pursuit to cut costs had different results across the analyzed economies. It is obvious that countries endangered by a debt crisis show signs of inefficiency evolution. In the particular case of this analysis, labor utilization has worsened since 2008 just in PIIGS countries and France which should be considered a sign of unhealthy development in the latter.

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One can also observe certain clustering of analyzed countries which can be read off the reference set. Among the efficient economies, Poland and Romania represent benchmarks for 13 countries – as contrasted to no more than 5 for other efficient economies. It could be surprising to find the two post-communist countries acting as benchmarks. One should though remind oneself of the measures of GDP and capital in purchasing power units, and then the high values of the efficiency of technical transformation make sense. To give a picture of relative contributions of individual inputs to overall efficiency determining their relative importance it could possible to use input-oriented modification of the model.

The proposed measure of labor utilization could be challenged with respect to assumption of labor as perfectly variable input in the short-run which is easier to impose at the micro level when firms are more free in employing as many working hours as needed. Economic policy has no tools to affect labor demand in the short-run but it can be still argued that labor is variable as an input composed of individual variable inputs. For economic policy is labor utilization measure hopefully useful as an indicator complementing monitoring of economic development.

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REGIONAL DISPARITIES IN WORKING LIFE QUALITY AS A FACTOR OF THE HEALTH OF THE SLOVAK POPULATION

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Abstract
Individual's health is determined by a number of factors stemming from the objective as well as subjective assumptions of life. Health depends on the maturity of the country, health care, and not least from the lifestyle of the individual. Selection of profession and occupation significantly affects health. Conditions and work environment is crucial. The aim of this paper is to identify the determinants of quality of working life, resulting from the work environment that affect physical and mental health of employees in Slovak Republic and its regions. The contribution will focus on the analysis of risk conditions of workplaces in the regions of Slovakia, various factors of working conditions and, on the other hand, number of work injuries, as well as the work incapacity that affect the quality of working life.

Keywords
Quality of Working Life, Health, Determinants of Health, Working Conditions.

JEL Classification
I14, J81.

1 Introduction

The quality of working life is influenced by a host of factors of physical and psychosocial nature. The particular factors exert a positive or a negative influence on the health of an individual, which may then result in various long- or short-term health issues.

This paper provides an analysis of risk-factors in working life quality in the regions of Slovakia and their impact on population health. The purpose of the present paper is to identify the determinants of working life quality which stem from the work environment and influence the physical and mental health of employees in the Slovak Republic and its particular regions.

2 The quality of working life and health: a characteristic

There is no singular definition of the quality of working life. The relevant literature provides a variety of particular definitions, with every author dealing with these issues providing their own interpretation and adopting it to given conditions.

One of the definitions was formulated by E. Lawler in 1982: the quality of working life is a complex of factors involved in an individual's mental and physical well-being (Lawler, 1982). Martel's and Dupui's 2006 definition describes the quality of working life as a corresponding state perceived by the individual in his or her dynamic search for hierarchically organized goals in domains of work (Martel and Dupuis, 2006). According to Ballou's and Godwin's definition of 2007, the quality of working life encompasses those aspects of life which influence one's subjective well-being throughout the working day. They are the wage, benefits, equipment (instruments), conditions of development (working conditions and the satisfaction with them) and the balance between family and working life.

The above definitions confirm that different authors emphasize different moments in explaining the quality of working life. For some authors, these are the physical factors, while for others they are mental or subjective; material, immaterial or value-based. To every individual, the quality of working

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life means something else, depending on their age, position and their very profession. Job satisfaction is an important part of the quality of life which determines our physical and mental health.

Health plays an important role in society, as attested by the statement that "human health and life are tremendous values not just to the individual and the family, but to society as a whole" (Pechová, 2012). Work and working life are among the decisive factors and there is a direct relationship between working life quality and health.

3 Factors influencing the regional disparities in working life quality in the Slovak Republic

Factors of working life quality stem from the working conditions and work environment. The work environment is the entirety of conditions in which employees pursue their working activity. These conditions affect them and are themselves affected by the general level of development of human society (Chinoracká, 2013). According to A. Jurovský, working conditions entail anything that may bear influence upon the components of work and thereby discernibly increase or decrease their efficiency (Jurovský, 1976). Human resources and their knowledge, skills and attitudes, including the health condition of the employee, also belong among the components of work. If these factors satisfy the required levels, the efficiency of human resources in an enterprise increases.

The factors of working life quality influencing the health of population can be divided, according to their nature, into:

- physical factors,
- psychosocial factors.

The factors of working life quality can be observed in the particular regions of the Slovak Republic. What follows in the next part is their analysis.

3.1 Physical factors of working life quality

The first group of factors which influence individual health at work are physical risks. These are the factors primarily affecting the physical health and predispositions of an individual. Various factors may be at work in a given work environment, such as work with hazardous substances, work in an excessively noisy environment, in high or low temperatures or the inhalation of harmful substances during work. In general, these characteristics form the overall term "work in tiring conditions".

Based on EU data we identify the particular positions where at least a quarter of the working time of employees takes place in tiring conditions.

As is clear from the chart, with 36% Slovakia is third along with Denmark. Working conditions are least tiring in the Czech Republic, which came first with 31%, while the Netherlands is second. These are all economically developed countries. The least favorable conditions with regards to positions with tiring conditions are in Greece with 68%, but high percentages were also recorded in France, Cyprus and Finland.

In a particular case, tiring working conditions presuppose the presence of at least one risk factor in the workplace. The next chart shows the gender differences in work involving physical risks. Among the risks reflected in the data are vibrations at work, noise, excessive heat or cold, the inhalation of fumes, work with hazardous substances, radiation, tiring positions and the carrying of heavy loads.

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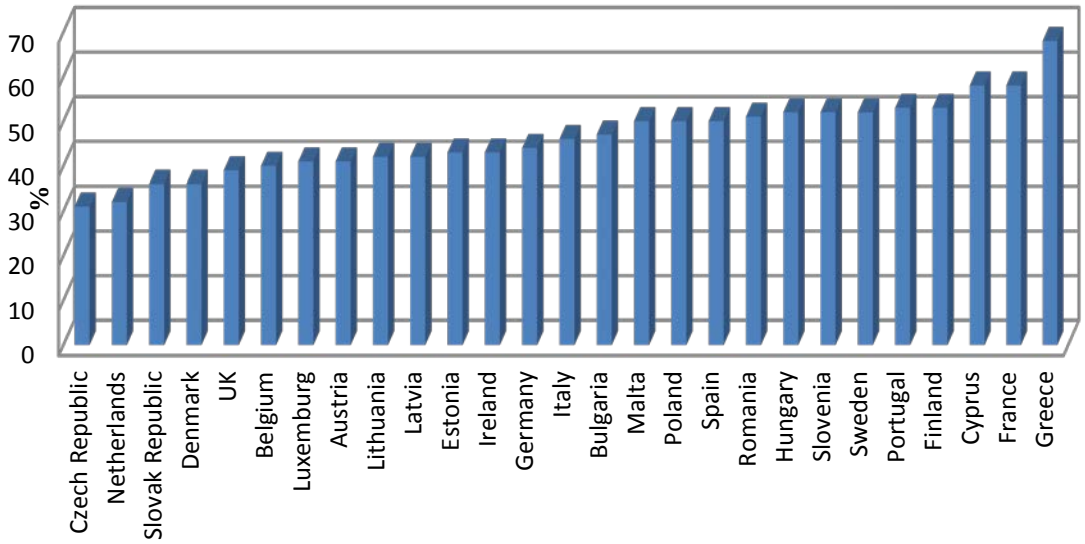

Figure 1. Work involving positions where at least a quarter of the working time takes place in tiring conditions (%) (Source: Eurofound, 2012)

It is also interesting to observe the indicator in the case of particular branches of the economy. This is shown in the next chart.

We can see three significant risk factors – vibrations, noise and hazardous substances. Noise is the most frequent factor, to which mostly employees in mining and manufacturing, but also in energy industry, are exposed. In general, in terms of the risk factors mentioned above, mining and manufacturing are the most hazardous branches of the EU member states' economies. On the other hand, these factors play the least significant role in the financial sector, where vibrations account for 3%, noise for 1% and hazardous substances for 0%.

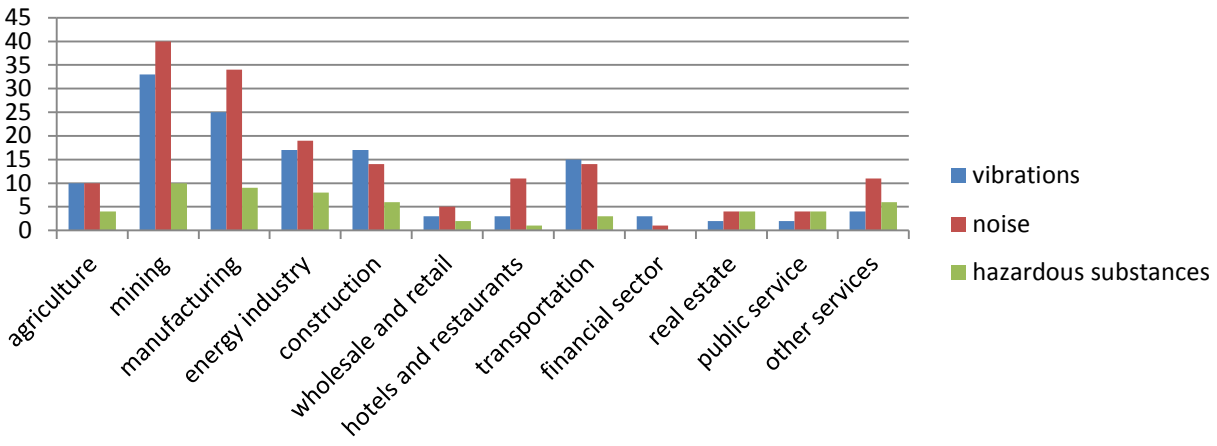

Figure 2. Work involving physical hazards by branch (%) (Source: Eurofound, 2003)

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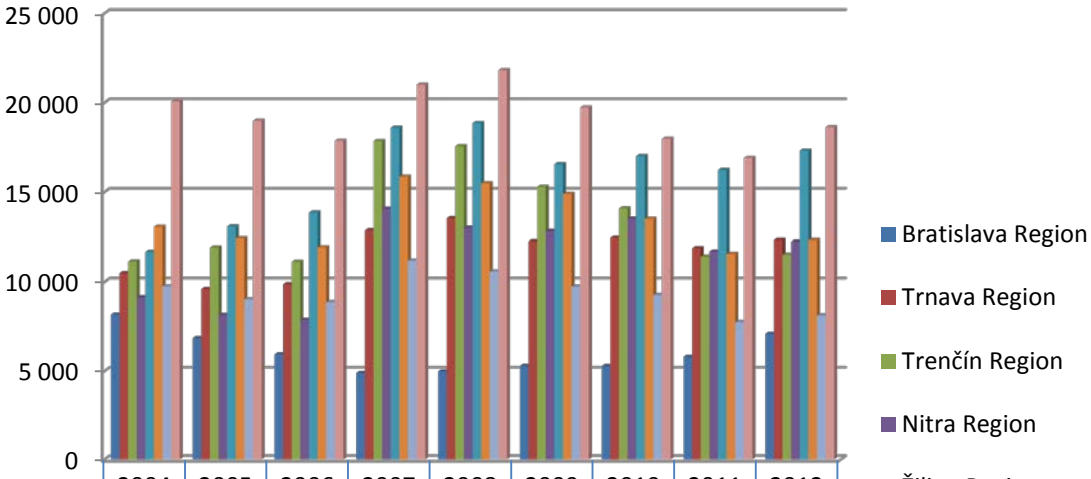

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bratislava Region	8 174	6 857	5 940	4 892	4 983	5 290	5 282	5 807	7 094
Trnava Region	10 490	9 604	9 868	12 860	13 538	12 257	12 442	11 880	12 328
Trenčín Region	11 134	11 916	11 122	17 848	17 563	15 287	14 076	11 411	11 518
Nitra Region	9 144	8 149	7 884	14 062	13 015	12 828	13 508	11 693	12 233
Žilina Region	11 675	13 072	13 852	18 592	18 855	16 553	17 005	16 232	17 312
Banská Bystrica Region	13 053	12 415	11 932	15 853	15 478	14 889	13 498	11 563	12 319
Prešov Region	9 756	9 022	8 867	11 190	10 582	9 738	9 265	7 758	8 122
Košice Region	20 075	18 983	17 863	21 000	21 811	19 728	17 975	16 898	18 624

Figure 3. Slovak employees in at-risk positions by region (Source: Štatistický úrad SR)

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Table 1. Employees in at-risk positions by gender and region, Slovakia (%)

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bratislava Region									
Men	60.7%	64.4%	61.9%	66.3%	65.8%	62.6%	62.9%	64.0%	65.7%
Women	39.3%	35.6%	38.1%	33.7%	34.2%	37.4%	37.1%	36.0%	34.3%
Trnava Region									
Men	79.9%	78.9%	79.1%	79.6%	78.7%	77.4%	78.0%	78.9%	78.6%
Women	20.1%	21.1%	20.9%	20.4%	21.3%	22.6%	22.0%	21.1%	21.4%
Trenčín Region									
Men	78.3%	76.6%	74.9%	78.3%	78.1%	79.5%	81.0%	82.3%	82.2%
Women	21.7%	23.4%	25.1%	21.7%	21.9%	20.5%	19.0%	17.7%	17.8%
Nitra Region									
Men	77.4%	79.6%	78.3%	82.3%	82.5%	81.6%	80.6%	77.4%	76.2%
Women	22.6%	20.4%	21.7%	17.7%	17.5%	18.4%	19.4%	22.6%	23.8%
Žilina Region									
Men	65.1%	69.9%	62.4%	66.4%	65.0%	65.9%	66.5%	66.2%	68.1%
Women	34.9%	30.1%	37.6%	33.6%	35.0%	34.1%	33.5%	33.8%	31.9%
Banská Bystrica Region									
Men	69.2%	70.8%	72.5%	76.4%	77.1%	75.8%	76.4%	79.7%	82.0%
Women	30.8%	29.2%	27.5%	23.6%	22.9%	24.2%	23.6%	20.3%	18.0%
Prešov Region									
Men	67.1%	63.9%	64.5%	70.9%	71.6%	73.5%	74.0%	75.0%	78.0%
Women	32.9%	36.1%	35.5%	29.1%	28.4%	26.5%	26.0%	25.0%	22.0%
Košice Region									
Men	81.4%	81.4%	84.9%	86.4%	87.6%	87.1%	88.2%	88.1%	89.0%
Women	18.6%	18.6%	15.1%	13.6%	12.4%	12.9%	11.8%	11.9%	11.0%

Source: Štatistický úrad SR.

3.2 Psychosocial factors of working life quality

The second group of determinants which influence individual health are the psychological or psychosocial factors. These are the hazards associated with common job descriptions involving heightened levels of stress, decreases in work performance due to deteriorated social relations, lack of autonomy or loss of employment security (Eurofound, 2012). These hazards affect both physical and mental individual health.

The management of psychosocial factors of working life quality is also entailed by the legal regulations of the Slovak Republic and the European Union. Regulation no. 542/2007 of the Slovak Ministry of Health Care (article 2, section 1, point f) on the details of protecting health against physical, psychological and sensory stress at work, defines psychosocial stress as a factor causing stress to the organism and requiring psychological activity, psychological processing and coping with the requirements and influences of the environment, mostly resulting from social processes and social relations, interactions among individuals in a group, crowd and such. The Council Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work, which is the reference piece of legislation for EU member states, implicitly and explicitly deals with psychosocial issues. This directive and the regulations it requires at the level

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of member states put work-related stress into the center of the framework of occupational health and safety (European Agency for Safety and Health at Work, 2012).

According to the European Agency for Safety and Health at Work, psychosocial risks include (European Agency for Safety and Health at Work, 2012):

- excessive workloads;
- conflicting demands and lack of role clarity;
- lack of involvement in making decisions that affect the worker and lack of influence over the way the job is done;
- poorly managed organizational change, job insecurity;
- ineffective communication, lack of support from management or colleagues;
- psychological and sexual harassment, third party violence;
- personal and working life imbalance.

A specific psychosocial factor is stress. More than one in four employees in Europe is adversely affected by work-related stress. Short-term stress, such as one associated with deadlines, is commonly not a problem; in fact, it may help one in maximizing the utilization of their abilities. It becomes a hazard to safety and health when it is long-term.

Some of the key factors associated with stress are (European Agency for Safety and Health at Work, 2012):

- excessive workloads and exposure to physical hazards,
- the degree of employee autonomy with regard to the way the job is done,
- employees' understanding of their duties,
- interpersonal relationships in the workplace and issues like violence and bullying,
- support from management or colleagues,
- training required by employees for performing their tasks.

In Table 2, we list the effects of stress on the human body in the short, medium and long term.

Table 2. Effects of stress on the human body

Demands on	Immediate and short-term effects	Medium and long-term, chronic effects
Physiology	Increased heart rate, blood pressure, adrenaline secretion.	General psychosomatic difficulties and diseases (affecting the heart, vessels and the digestive system).
Psychology	Tension, anxiety, frustration, anger, irritation, fatigue, feelings of monotony and "saturation".	Dissatisfaction, repression.
Individual behavior	Performance swings, lack of focus, increased error rate, deterioration in sensory-motor coordination.	Increased alcohol, nicotine and drug intake, increased absence from work.
Social behavior	Increase in conflicts, arguments and aggression toward others, increased isolation at work and outside work.	

Source: Poradca podnikateľa, 2008.

4 The effects of working life quality factors on population health in the Slovak Republic

Our work environment is constantly changing due to the introduction of new technologies, changes in the organization of work and shifts in the economic, social and demographic conditions. Changes in professional life bring about new risks at work. Thus, the incidence of some of the occupational diseases is on the rise (see Table 3).

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Table 3. Average percentage of incapacity for work

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bratislava Region									
total incapacity	2.11	1.92	1.868	1.953	2.169	2.337	2.284	2.201	2.144
diseases	1.95	1.744	1.694	1.749	1.956	2.126	2.083	2.014	1.969
work accidents	0.051	0.055	0.05	0.031	0.034	0.028	0.026	0.026	0.025
other accidents	0.109	0.121	0.124	0.173	0.178	0.183	0.174	0.161	0.151
Trnava Region									
total incapacity	2.733	2.594	2.87	3.342	3.354	4.138	4.039	3.891	3.923
diseases	2.455	2.298	2.528	2.948	2.955	3.693	3.601	3.447	3.508
work accidents	0.087	0.086	0.09	0.086	0.085	0.07	0.072	0.077	0.075
other accidents	0.191	0.21	0.252	0.308	0.314	0.375	0.365	0.367	0.341
Trenčín Region									
total incapacity	3.332	2.924	3.225	3.442	3.599	4.313	4.037	3.933	4.235
diseases	2.91	2.528	2.749	2.937	3.104	3.79	3.554	3.462	3.731
work accidents	0.125	0.12	0.157	0.128	0.122	0.1	0.092	0.088	0.097
other accidents	0.297	0.276	0.318	0.376	0.374	0.423	0.39	0.383	0.406
Nitra Region									
total incapacity	3.043	3.2	3.315	3.216	3.393	4.01	3.783	3.721	3.81
diseases	2.773	2.865	2.931	2.848	3.031	3.612	3.408	3.351	3.451
work accidents	0.075	0.086	0.095	0.081	0.078	0.068	0.067	0.07	0.064
other accidents	0.196	0.249	0.29	0.287	0.285	0.33	0.308	0.301	0.295
Žilina Region									
total incapacity	2.902	3.258	3.385	3.348	3.744	4.354	4.184	4.227	4.662
diseases	2.523	2.754	2.847	2.836	3.238	3.808	3.648	3.695	4.087
work accidents	0.075	0.088	0.1	0.083	0.078	0.061	0.06	0.055	0.051
other accidents	0.304	0.416	0.438	0.429	0.427	0.485	0.476	0.477	0.524
Banská Bystrica Region									
total incapacity	2.923	2.619	2.784	2.918	3.196	3.602	3.348	3.246	3.291
diseases	2.553	2.236	2.358	2.495	2.786	3.159	2.923	2.843	2.884
work accidents	0.094	0.098	0.105	0.091	0.087	0.074	0.066	0.066	0.067
other accidents	0.276	0.286	0.321	0.331	0.323	0.369	0.358	0.338	0.34
Prešov Region									
total incapacity	3.407	3.309	4.199	4.269	4.27	6.159	6.059	6.213	7.063
diseases	3.114	2.971	3.744	3.793	3.827	5.622	5.548	5.669	6.484
work accidents	0.082	0.091	0.11	0.102	0.097	0.086	0.085	0.079	0.089
other accidents	0.211	0.247	0.346	0.374	0.346	0.451	0.427	0.466	0.489
Košice Region									
total incapacity	2.975	2.73	3.034	3.35	3.232	4.304	4.248	4.374	4.695
diseases	2.733	2.476	2.732	3.041	2.931	3.983	3.927	4.042	4.355
work accidents	0.071	0.068	0.077	0.066	0.058	0.053	0.047	0.049	0.05
other accidents	0.172	0.187	0.225	0.243	0.243	0.268	0.274	0.283	0.29

Source: Štatistický úrad SR.

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Occupational diseases and accidents are a heavy burden to both employers and employees. In Europe, there are 4 million workplace accidents every year, which presents significant costs to the economy. A major part of these costs is borne by the systems of social insurance and public finance.

Occupational diseases were mostly reported in environments of long-term, one-sided stress to the human body, resulting in bone, joint, muscle, blood vessel and nerve issues etc., see Figure 4.

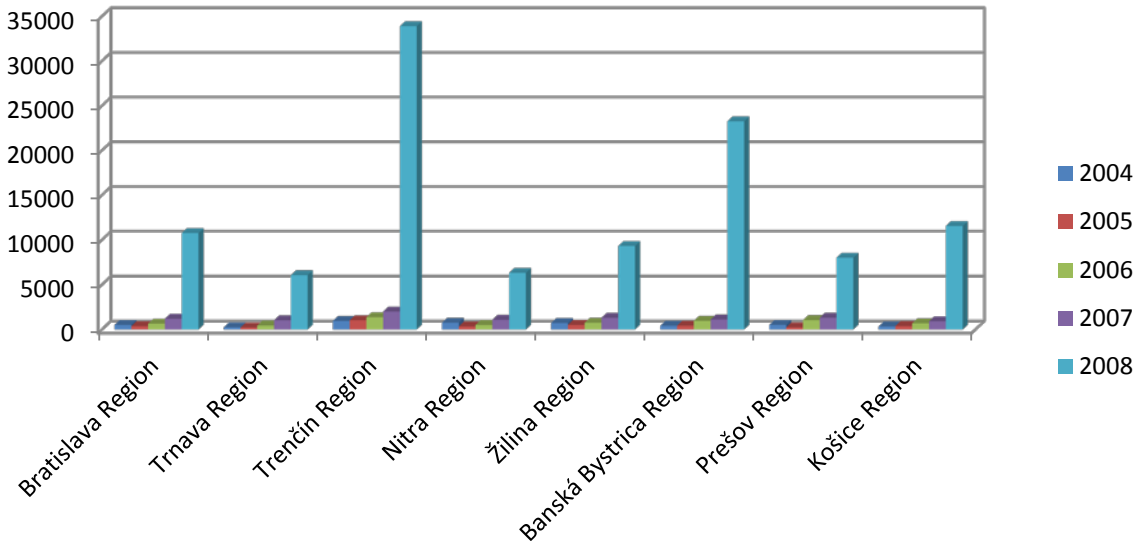

Figure 4. Number of employees compensated for work accidents and occupational diseases (Source: Štatistický úrad SR)

In 2008, the incidence of serious work accidents was the highest in employees aged 50 to 60, followed by the age group 40–50. Throughout the week, work accidents are most frequent on Mondays. The most frequent cause of work accidents is the lack of personal qualifications for the job, physical predispositions, sensory deficiencies, adverse personal characteristics and acute psycho-physiological conditions, as well as the disregard for safety regulations, where employees apply hazardous work methods, act without permission, against management guidance and directions or remain in hazardous areas. Improper organization of work is also a factor. Other work accidents (i.e., those less serious) were most frequent in the age group 18–20 (Lorko, Lajčinová 2010).

5 Conclusion

The standards of working conditions often reflect the economic possibilities of employers. These justify the failure to carry out certain tasks associated with occupational health and safety with the poor economic condition of their organization. However, the state of affairs described above is also a result of an insufficient legal awareness on the part of both employees and employers. Still, many small businesses have come to realize that the implementation of occupational health and safety regulations in the workplace not only helps avoid the high costs associated with accidents or losses in production, but also enables employers and employees to achieve better results for themselves, for their enterprise and for their clients.

It is necessary to further increase the legal and social awareness of employees and employers with regard to occupational safety and health, especially where serious deficiencies were most frequent, to promote the most recent information in the area of occupational safety and health, to implement new regulations into practice, with emphasis on preventing work accidents and occupational diseases, and to improve working conditions and the culture of work.

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THE MEASUREMENT OF REGIONAL DISPARITIES IN THE MORAVIAN-SILESIAN AND ZILINA REGION AND THEIR RELATIONSHIP TO FDI

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Abstract
European Union under the objective Cohesion emphasizes the balanced development that reduces differences (disparities) between the regions. Differences in regional GDP and the unemployment rate are among the most problematic area, which the individual EU states are trying to address. Foreign direct investments (FDI) are fully related with the reduction of regional disparities, because they help to develop the economy and impact on labor productivity, provide new capital, technological know-how and contribute to increase the knowledge of economy. This paper is devoted to the aforementioned of regional disparities and FDI. The disparities will be monitored and measured in two geographically close regions (Zilina and Moravian-Silesian Region), although these regions are located in two different states of EU. The aim of this paper is by using the point method to measure regional disparities and evaluate their relationship to FDI. For assessing of their relationship correlation coefficient will be used interdependence between FDI and the level of regional GDP per capita, between FDI and unemployment rate and between FDI, and between FDI and disparities discovered under point method.

Keywords
Regional Disparities, Foreign Direct Investments, Point Method, Unemployment, GDP.

JEL Classification
E24, H71, R11.

1 Introduction

The EU under the objective Cohesion emphasizes the balanced development that reduces differences (disparities) between the regions. Despite of the EU efforts to continuously reduce disparities between regions, there are still significant differences between regions. GDP per capita and unemployment rate belong to important indicators of regional disparities. FDI is used as a tool for individual states to reduce these differences.

This paper is devoted to issue of above mentioned regional disparities and FDI in individual regions. For the analysis of this issue, we have selected two regions at NUTS III namely the Moravian-Silesian Region (MSR) and Zilina Region (ZR). These regions have been chosen because of comparing regions of two EU countries which entered the EU together (in 2004), and because of their geographical proximity, when they are neighbors connected with trade, migration of the population for work, etc. The article analyzes period from 2001 to 2011. The years 2012 and 2013 are not included in the analysis due to inaccessibility of data.

The theoretical issue of regional disparities and FDI will be defined in the first part of the paper. In the next chapter there will be analyzed the development of regional disparities in the ZR and MSR and the analysis of the evolution of FDI. At the end of this chapter the goal of the paper will be filled when regional disparities will be measured and assessed their relationship with FDI. For assessing of their relationship correlation coefficient will be used interdependence between FDI and the level of regional GDP per capita, between FDI and unemployment rate and between FDI, and between FDI and disparities discovered under point method.

2 Regional disparities, FDI and point method

This chapter will deal with the theoretical bases of regional disparities and foreign direct investment.

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2.1 Regional disparities

Regional disparities primarily help the citizens to raise awareness of the region and their position relative to other regions. Thanks to them it is possible to determine the differences between entities of the region, their performance, structure, activities, etc. The focus here is primarily about what the total level of regions is and what the region offers for the living conditions of its inhabitants namely from the social, economic and environmental point of view (Hučka and Kutscherauer, 2011).

For the analysis of regional disparities a limited number of indicators are selected s in areas that represent all three types of disparities. From the perspective of classification of disparities as economic, social and territorial particular groups include:

- in economic indicators – indicators groups in economy, research and development,
- in social indicators - indicators groups in the labor market,
- in the territorial indicators include indicators of the population and territory, information society and transport infrastructure (Kutscherauer et al, 2010).

These areas often overlap and for some indicators allow the inclusion of disparities in multiple areas. In the context of this paper there will be analyzed two regional indicators namely regional GDP per capita and regional unemployment rate.

2.2 FDI

FDI is an investment in the other country in order to obtain a share of common stock and decision-making powers ownership in at least 10%. Condition is permanent interest of investor in the company and its share in the proceedings. Foreign investments have a positive impact on labor productivity growth. Enterprises owned by foreign capital in the Czech Republic have higher labor productivity per worker than the domestic companies. FDI contributes to the development of the knowledge economy. From the macroeconomic point of view foreign companies contribute to increase the rate of economic growth due to their strong export orientation.

For regional development the entry of investor can have influence to the creation of new jobs that arise with the entry of new investors. Direct investments may also lead to the creation of new companies in the required sectors in the region which has not been represented. The arrival of foreign investors into the region has also risks, there could be cause destruction of small and medium enterprises and lead to reduced domestic competition.

2.3 Point method

The point method is one way of measuring of regional disparities. M. K. Bennet is the author of the point method. One advantage of point method is its ability to summarize characteristics captured in different units of measurement in one synthetic characteristic. The result is a dimensionless number that does not possess a real sense, but it can be used either to determine the order of the regions or to determine the regional differences that are associated with different categories of indicators. Specific form for using the point method is to determine the economic value of the index of regional disparities using weighted average of points (1) that each region will receive for the relevant indicators.

$$EI_{RD} = \frac{1}{p}\sum_{i=1}^{p}\frac{x_{ij}}{x_{imax}}, resp.\frac{x_{imin}}{x_{ij}} \quad (1)$$

where: x_{ij} represents the i-th variable for the j-th country
x_{max} represents the maximum value of the i-th indicator
x_{min} –represents the minimum value of the i-th indicator

Based on this calculated index we can determine the order of the regions, or identify differences in individual years (Tuleja, 2009).

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3 Evaluation and development of regional disparities and FDI

In this chapter, we will monitor the development of indicators of the registered unemployment rate and FDI in the Moravian-Silesian and Zilina Region. There will also be applied the point method for measuring the above mentioned regional disparities. The conclusion of this chapter will be devoted to the correlation analysis, which will try to show a direct correlation between the growth of FDI and a decline in the unemployment rate.

3.1 Registered unemployment rate

At the beginning of the period there did not exist large differences in the rate of registered unemployment in selected regions (Fig. 1). In 2001, the registered unemployment rate was in the MSR 15.11% and in ZR 16.13%. In the reporting period, the unemployment rate in the two regions has similar trend. Since 2001 (in the MSR since 2003) unemployment rate has begun to decline gradually until the economic crisis started, when the increase of unemployment rate was demonstrated with delay in 2009. At the end of the reporting period, both regions have almost identical unemployment rate (MSR - 11.18% and ZR - 11.92%). In the monitored regions we could in the years 2003 - 2009 record significant difference in the unemployment rate when the Zilina Region was able to solve much easier the problem of unemployment.

A significant difference between the regions is that, at what level the region is in its country. The MSR belongs to the regions with the highest unemployment rate in the Czech Republic (CR) throughout the reporting period. In contrast, although ZR is characterized by a similar rate of unemployment as the MSR, so throughout the reporting period it is below the average of the Slovak Republic (SK). In both regions in 2011 there was not only to decrease of the gap in unemployment rates between themselves, but also there was decrease in disparities between regions and the national average.

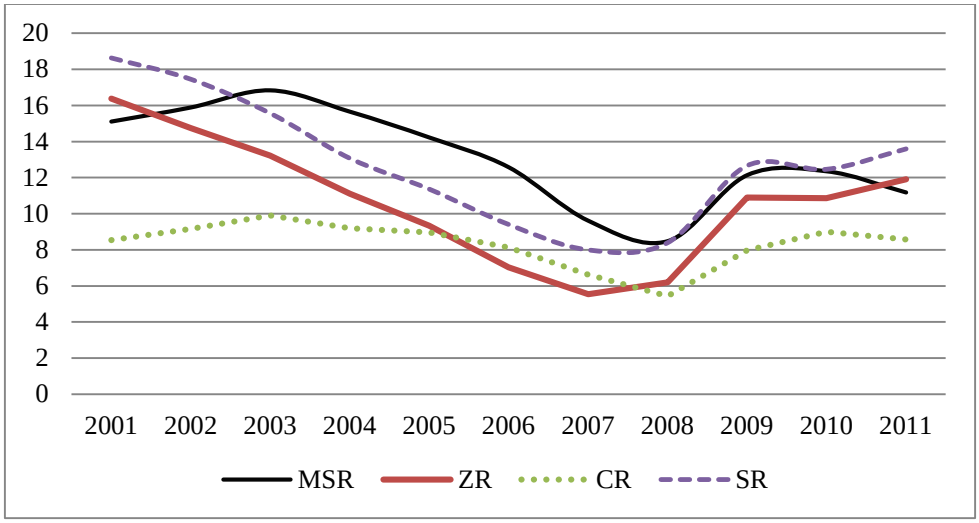

Figure 1. Registered unemployment rate.[1] (Source: author's processing based on data by CSO and SOSR)

[1] In the Czech Republic into 2003 there was a different way of calculating the registered unemployment rate. The new methodology has had a small effect on the unemployment rate since 2004.

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3.2 Regional GDP

Figure 2 shows the evolution of GDP per capita in both regions and in the Czech Republic and Slovak Republic. The chart shows that the development of regional GDP has the same trend in the ZR and in the MSR. Although in the period the differences in GDP per capita was changed, so the difference at the end of the reporting period is identical to the difference in the beginning of the period (MSR has a higher GDP per capita by 1900).

In comparison the MSR and average of the Czech Republic there was showed the problems of the region. The MSR has GDP per capita throughout the period below the national average. Compared with the unemployment rate there has been a deeping in this disparity between the MSR and the national average, when at the beginning of the reporting period the difference was 1,500 EUR at the end of 1,900 EUR per capita. If we compare the ZR with the average of the Slovak Republic, so there is a similar situation as in the Czech Republic. The ZR is below the average of the Slovak Republic. Difference between average of the Slovak Republic and the Zilina Region was increasing in the reporting period, when the situation became worse from the difference by 800 EUR to the difference by 1,800 EUR.

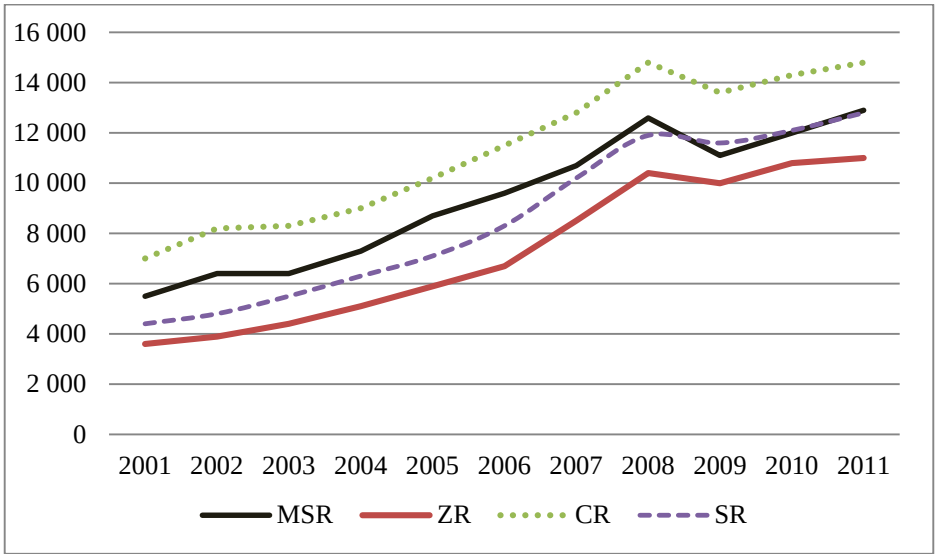

Figure 2. GDP at current market prices (EUR per inhabitant). (Source: author's processing based on data by Eurostat)

3.3 FDI

Figure 3 shows the evolution of foreign direct investment in the MSR and in the ZR per capita in thousand EUR. The chart shows that support for the MSR in the context FDI was much higher than support in the ZR. In 2011 the amount of FDI per capita was in MSR 11.39 thousand EUR and in the ZR only 3.92 thousand EUR, which is about three times less. Although the regions differ in the amount of FDI so its development trend is similar. There is a constant increase in the size of FDI per capita. There is a constant increase in the size of FDI per capita. The MSR recorded in 2006 significantly higher increase in FDI compared to the ZR, it was mainly caused by foreign investment by Korean car company Hyundai Motor Company in the MSR. This investment has attracted more investors to the region, who are the subcontractors for the automotive industry.

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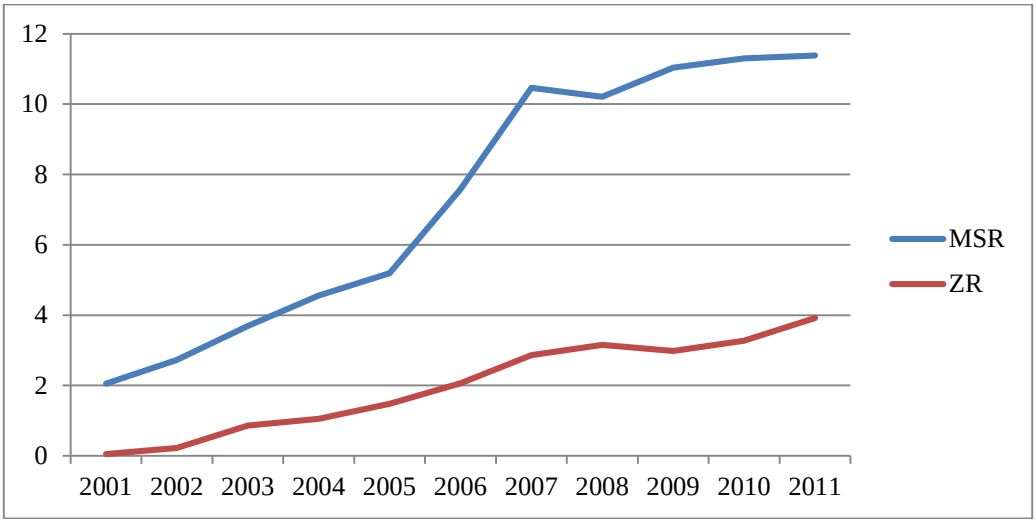

Figure 3. FDI (in thousand EUR per inhabitants). (Source: author's processing based on data by CNB and NBS)

3.4 Point method

For measuring regional disparities there was used point method. In the first step it was necessary to divide those indicators for which the optimal value is called value of the maximum and for which the optimal value is called the minimum value (Table 1). Furthermore, there was calculated the maximum (for GDP) and minimum (for unemployment) value in all regions and for the entire reporting period. Finally there was formed converted table, where in the case of the minimum values there was divided the criterial value by the actual value, and this proportion was multiplied by the 1000. In the case of the maximum values there was divided the actual value by the criterial value and the percentage multiplied by the 1000.

Table 1. Max GDP and min registered unemployment rate

GDP per inhabitants - max 12900											
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
MSR	426	496	496	566	674	744	829	977	860	930	1 000
ZR	279	302	341	395	457	519	659	806	775	837	853
Registered unemployment rate - min 5.55											
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
MSR	367	349	330	354	390	441	577	654	457	449	496
ZR	339	377	420	499	595	789	1 000	895	510	511	466

Source: authors' calculations.

Table 2 shows the average values, which can be described as an index of regional disparities. These values were calculated by averaging the values mentioned in Table 1.

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Table 2. The average value of regional disparities

Average value - index of regional disparities											
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
MSR	397	423	413	460	532	593	703	815	659	690	748
ZR	309	339	380	447	526	654	829	851	642	674	659

Source: authors' calculations.

Index calculated according to Table 2 was used to determine the percentage of regional disparities in the years in different regions. The Table 3 shows that the MSR has had better condition (in GDP and unemployment rate) for inhabitants, exception of the period 2006-2008 than ZR.

Table 3. Percentage of regional disparities

Percentage (average R-3 = 100%)											
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
MSR	112.5	110.9	104.1	101.4	100.6	95.0	91.8	97.9	101.3	101.1	106.3
ZR	87.5	89.1	95.9	98.6	99.4	105.0	108.2	102.1	98.7	98.9	93.7

Source: authors' calculations.

Figure 4 shows the regional differences between the observed regions in each year. Disparities are measured as the difference between the percentage of the MSR and the percentages of the ZR. The chart shows that since 2001 there was a reduction of differences between the observed indicators. In the years 2006 - 2008 the situation changed, the ZR was better than the MSR. Since 2009, regional disparity again began to rise, but does not reach levels of 2001.

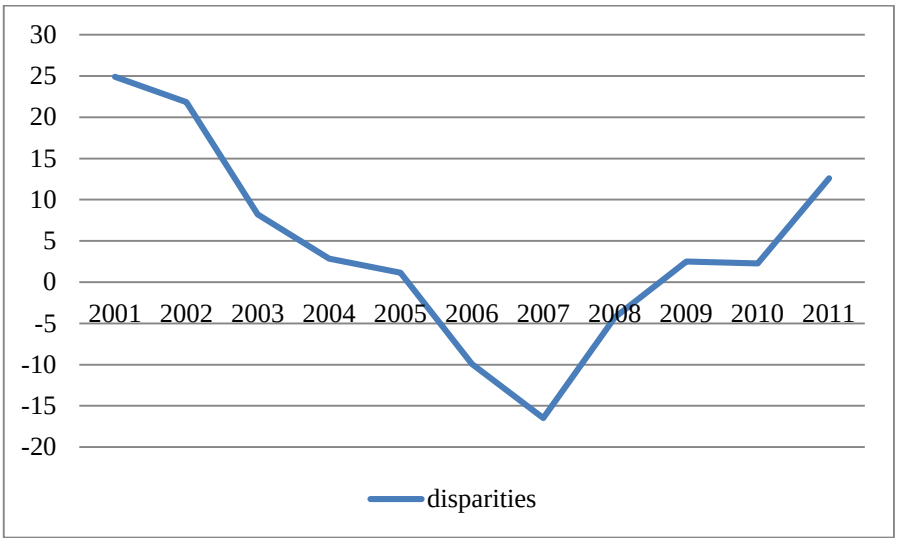

Figure 4. Regional disparities calculated by point method. (Source: authors' calculations)

3.5 Correlation analysis

For detecting depending the FDI to other indicators there were selected regional GDP per capita, registered unemployment rate and the index of regional disparities calculated on the basis of point method. For analyzing the dependence there was used the correlation analysis. The correlation coefficient indicates direct proportion between the studied values. The coefficient expresses the degree of dependence; the higher is absolute value of the coefficient, the greater dependence between variables (Hindls et al., 2007). The resulting correlation coefficients are reported in Table 4. Based

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on interpretation of the correlation analysis results by Vaus (2002) showed the following results. The results of the correlation analysis indicate that there is a direct correlation between FDI and regional GDP per capita. The direct correlation coefficient reached the value 0.97 by the MSR and 0.98 by the ZR. The correlation linkage between FDI and the average regional disparities was also confirmed. There is a strong direct correlation (MSR - 0.94 and ZR - 0.88). Last correlation coefficients were determined for the registered unemployment rate and FDI. This time, there was demonstrated an indirect correlation (MSR: -0.85 and ZR: -0.61). We can therefore confirm the dependency between FDI and the unemployment rate, when with the increase of FDI, the unemployment rate is decreasing and vice versa.

Table 4. Correlation coefficients

	FDI and GDP	FDI and reg. unemployment rate.	FDI and point method
MSR	0.97	-0.85	0.94
ZR	0.98	-0.61	0.88

Source: authors' calculations.

4 Conclusion

The EU under the objective Cohesion emphasizes the balanced development that reduces differences between the regions. This paper dealt with the differences between regional GDP per capita and the registered unemployment rate. The FDI was also included into this analysis because they contribute to regional development and to reduce these differences. The analysis was devoted to the Moravian-Silesian Region and Zilina Region in the years 2001 - 2011.

The indicators of registered unemployment rate had in the monitored regions similar values and also had a similar trend of development. The MSR belongs compared to the national average to the worst regions in the Czech Republic and there are significant differences. In contrast, the ZR throughout the period was below the average of the Slovak Republic and belonged to the regions with the lowest unemployment. In the case of the indicator of regional GDP per capita we have reached to similar conclusions as by the registered unemployment rate. Both regions showed the same trend of development, and the difference in GDP between the MSR and the ZR in the monitored period was constant. The MSR but showed a higher GDP per capita than the ZR throughout the period. In comparison with the national averages the MSR was again below the average of the Czech Republic and the ZR was above average of the Slovak Republic. Development of FDI differed from the above indicators. Although both regions have an increasing trend of development, so the differences between the amounts of FDI per capita are incessantly increasing. In 2001, the FDI in the MSR was by 2.01 thousand EUR higher than in the ZR and in 2011 this difference was already 7.47 thousand EUR. Using the point method there were calculated regional disparities between regions. These disparities were decreasing until 2005. Since 2006 disparities have begun to take negative values (the ZR has begun to do better than the MSR). In 2008, the disparities fell to a minimum and since this year they have grown again. Even so, their amount in 2011 reached half level of 2001.

The MSR had throughout the period higher FDI per capita than the ZR. If we focus our attention on indicators of regional GDP, so we can see that the MSR also has regional GDP per capita higher than the ZR. We tried to confirm this relationship also by correlation analysis, where the correlation coefficient showed a strong direct relationship between regional GDP per capita and FDI per capita in both regions (by the MSR 0.97 and by the ZR 0.98). Then we focus on the relationship between the FDI and the unemployment rate, so we can conclude that in both regions was almost same unemployment rate, although the FDI in the MSR exceeded the FDI in the ZR. In the case of the correlation analysis we obtained correlation coefficients for the two regions, which determined

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indirect relationship (by the MSR-0.85 and by the ZR -0.61). This indirect correlation linkage confirmed the dependence between FDI and unemployment rate, when with the increase of FDI, the unemployment rate is decreasing and vice versa. Last linkage was investigated for the resulting average value of regional disparities calculated on the basis of the point method. In this case, there were again confirmed by both regions a strong direct relationship (by the MSR 0.94 and by the ZR 0.88). Based on the correlation analysis, we can confirm that the FDI has impact on regional GDP and unemployment rate, with the increase of the FDI the regional GDP is increasing and the registered unemployment rate is decreasing.

5 Acknowledgement

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THE IMPLEMENTATION OF NEW COHESION POLICY IN POLAND FROM 2007 TO 2013: AN ATTEMPT OF EVALUATION. PROSPECTS FOR 2014-2020

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Abstract
Disparities in socio-economic development among the EU member states resulted in the creation of Common Regional Policy and - later - EU Policy of Economic, Social and Territorial Cohesion. Poland joined the European Union in 2004 as a poor member state and a collection of sixteen poor regions (voivodships). The possibility to participate in the EU Policy of Economic, Social and Territorial cohesion was perceived as one of crucial advantages of membership in the European Union. For the period 2007-2013 Poland was granted EUR 67 billion of assistance from structural funds and Cohesion Fund. The prospects for 2014-2020 are even better - Poland is to receive over EUR 82 billion. An attempt was made in the paper to examine the implementation of New Cohesion Policy in Poland from 2007 to 2013 with focus on OP Infrastructure & Environment, OP Human Capital and OP Innovative Economy. Selected projects were analysed. Additionally the assumptions for period 2014-2020 were presented.

Keywords
Economic Integration, Financial Aspects of Economic Integration, European Union, Poland, Cohesion Policy.

JEL Classification
F 15, F 36, O 52.

1 Introduction

The problem of disparities in economic development among the European countries is not a new one. The need for regionally balanced economic growth was underlined in the Rome Treaty (Moussis, 2007). At that time however no action was undertaken on community level. It was believed that free market competition would result in limiting the disparities (Pelkmans, 2006). The process of gradual enlargement of the European Communities / European Union, however, resulted in deepening inequalities. That was the reason for the introduction of Common Regional Policy in mid 1980s by the Single European Act (Nowak and Milczarek, 2006). The Maastricht Treaty added Cohesion Fund as a special financial instrument designed for the poor member states of the block. Since 2007 the New Cohesion Policy has been under (McCormick, 2010).

The objectives of the New Cohesion Policy 2007-2013 embraced: convergence, regional competitiveness and employment, as well as European territorial cooperation. The EU focused on the promotion of growth and development in regions and countries whose development was lagging behind (i.e. regions with per capita GDP below 75% of EU25 average and countries with per capita GNI below 90% of EU25 average). In addition to that, the EU offered financial support to regions, which faced the problem of unemployment or the need for structural changes (Dziembała, 2013). Three financial instruments, i.e. European Regional Development Fund, European Social Fund and Cohesion Fund, were used for the New Cohesion Policy 2007-2013. The EU Multiannual Financial Framework 2007-2013 guaranteed around EUR 308 billion for the New Cohesion Policy projects (Borowiec, 2011).

Poland joined the European Union in 2004 as a poor member state and a collection of sixteen poor regions (voivodships). The possibility to participate in the EU policy of social, economic and territorial cohesion seemed to be one of crucial advantages of membership in the EU (Pawlas, 2006). Poland was granted EUR 67 billion from structural funds and Cohesion Fund for the period 2007-2013. An attempt was made in the paper to examine the implementation of New Cohesion Policy in Poland from 2007 to 2013 with focus on OP Infrastructure & Environment, OP Human

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Capital and ROP Silesian Voivodship. Selected projects were analysed. Additionally the assumptions for period 2014-2020 were presented.

2 Legal basis for the implementation of New Cohesion Policy in Poland from 2007 to 2013

It was necessary for each EU Member State to build a legal basis for the implementation of New Cohesion Policy. In Poland the National Cohesion Strategy 2007-2013 and the National Strategic Reference Framework 2007-2013 were created. The National Strategic Reference Framework 2007-2013 consisted of the following operational programmes:

- OP Innovative Economy,
- OP Human Capital,
- OP Infrastructure and Environment,
- OP Development of Eastern Poland,
- OP Technical Support,
- OP European Territorial Cooperation,
- 16 Regional Operational Programmes (Ministerstwo Rozwoju Regionalnego, 2007).

The first six operational programmes were national level ones. The significance of OP Innovative Economy, the OP Human Capital as well as the OP Infrastructure and Environment should be underlined here. The activities undertaken under the OP Innovative Economy aimed at increasing enterprises' innovativeness, stimulating rise in the Polish science competitiveness, promoting the role of science in economic development, creating better jobs, developing innovative products that would be successfully sold in international markets. The financial assistance of the EU connected with the OP Innovative Economy amounted to EUR 8.2 billion. The OP Human Capital concentrated on fighting unemployment and promoting employment. Among the objectives of the OP Human Capital one could find stimulating employment of both the young and those 50+ years old, women and disabled people. EUR 9.7 billion of EU support was devoted to the OP Human Capital. The OP Infrastructure and Environment focused on the area of transport infrastructure, environmental protection infrastructure, energy sector infrastructure, culture infrastructure, health sector infrastructure and education sector infrastructure. The support of the EU related to the OP Infrastructure and Environment amounted to EUR 27.9 billion (Ministerstwo Rozwoju Regionalnego, 2007).

In addition to national (country) level operational programmes, sixteen Regional Operational Programmes (ROPs) were introduced. They constituted an important element of the National Cohesion Strategy / National Strategic Reference Framework in Poland for the years 2007-2013. They aimed at speeding up socio-economic development of every Polish voivodship. Characteristic features and specific situation of each and every voivodship were taken into consideration at the time of their creation. Altogether the EU offered as much as EUR 16.6 billion for the above mentioned sixteen ROPs, with the ROP Mazowieckie Voivodship and the ROP Silesian Voivodship being the biggest ones (Ministerstwo Rozwoju Regionalnego, 2007).

The vast majority of the operational programmes 2007-2013 were mono-fund ones. The OP Infrastructure and Environment was the only exception here. The OP Infrastructure and Environment used both Cohesion Fund and European Regional Development Fund. European Social Fund was connected with the OP Human Capital only. Other operational programmes were financed by European Regional Development Fund. The total amount of EU funds eligible to Poland for all Operational Programmes (including reserve) equalled almost EUR 68 billion. The share of European Regional Development Fund in the realisation of the NSRF equalled 52%. The share of Cohesion Fund and European Social Fund accounted for 33% and 15% respectively. Table 1. presents general information on every operational programme including total EU support, share

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of each operational programme in the National Strategic Framework 2007-2013 and significance of European Regional Development Fund, European Social Fund and Cohesion Fund.

Table 1. Operational Programmes under the National Strategic Reference Framework 2007-2013 Poland

Operational Programme	EU Funds (EUR)	Share (%)	Source of assistance (EUR)		
			ERDF	ESF	CF
OP Innovative Economy	8254885280	12.52	8254885280		
OP Human Capital	9707176000	14.72		9707176000	
OP Infrastructure and Environment	27913638774	42.32	5737330000		22176353774
OP Development of Eastern Poland	2273793750	3.45	2273793750		
OP Technical Support	516700000	25.10	516700000		
OP European Territorial Cooperation	731092675	0.78	731092675		
16 Regional Operational Programmes	16555614188	1.11	16555614188		
Total	65952945667	100.00	65952945667		
Performance reserve	1331304099				
National Strategic Reference Framework	67284249766		34069415893	9707176000	22176353774

Source: Ministerstwo Rozwoju Regionalnego, 2007.

3 The evaluation of Poland's participation in New Cohesion Policy 2007-2013

Poland was quite successful in New Cohesion Policy 2007-2013 implementation. Official data presented by National Information System SIMIK 07-13 were used for the analysis of the so far implementation of the National Cohesion Strategy/ National Strategic Reference Framework in Poland (from the very beginning till May 31st, 2014). They are presented in Table 2.

Table 2. Implementation of National Strategic Reference Framework 2007-2013 till May 31st, 2014

Operational Programme	Number of applications after formal evaluation	Financial agreements			Applications for refund	
		Number	From the EU (PLN thousand)	Utilisation level of 2007-2013 funds allocation (%)	From the EU (PLN thousand)	Utilisation level of 2007-2013 funds allocation (%)
OP Innovative Economy	47442	16344	36548269	101.1	22238108	61.3
OP Human Capital	182808	45807	43340218	103.7	32484185	77.7
OP Infrastructure and Environment	3591	2319	113527482	95.4	80027187	67.2
OP Development of Eastern Poland	458	269	9763454	97.7	6049408	60.6
OP Technical Support	408	394	2017575	94.1	1510522	70.5
OP European Territorial Cooperation	665	298	1460139	101.5	903271	62.8
Total National OP	235372	65431	206657136	98.2	143212680	68.0
16 Regional Operational Programmes	61468	33290	67645705	94.1	53184574	74.0
National Strategic Reference Framework	296840	98721	274302840	97.1	196397254	69.5

Source: Ministerstwo Infrastruktury i Rozwoju, 2014a.

According to NIS SIMIK 07-13 296,800 formally appropriate applications were submitted for the total amount of PLN 603.3 billion. At the same time 98,721 agreements were signed. The value

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of those agreements reached PLN 394.9 billion of qualified expenditure (in that PLN 274.3 billion from the EU which stands for 97% of total allocation for the period 2007-2013). The value of beneficiaries'expenditure considered as qualified expenditure amounted to PLN 277.6 billion (in that those financed by the EU – PLN 196.4 billion) (Ministerstwo Infrastruktury i Rozwoju, 2014a).

Support from EU funds under NSRF 2007-2013 focused on four fields: territorial accessibility (PLN 94,455 million), R&D, innovation and entrepreneurship (PLN 47,652 million), human capital (PLN 52,591 million) as well as environmental protection and sustainable development (PLN 34,274 million). Altogether they accounted for 84% of all the funds received from the EU for New Cohesion Policy 2007-2013 (territorial accessibility projects alone represented 35%). The remaining 16% of funds went to the following sectors: energy (3%), information society (5%), tourism, culture, revitalisation (5%) and technical support (3%).

Among the beneficiaries of EU funds one can find enterprises (PLN 87,260 million, i.e. 32% of EU support), government units (PLN 83,722 million, i.e. 31% of EU support), state administration bodies (PLN 63,337, i.e. 23% of EU support), higher education institutions and scientific units (PLN 22,206 , i.e. 8% of EU support), non-profit organisations (PLN 9,227 million, i.e. 3% of EU support) and other entities (PLN 7,090 million, less than 3% of EU support).

As far as OP Infrastructure and Environment is concerned one should point to the following effects of its implementation:

- 1,355 kilometres of new highways and express roads,
- 9,710 kilometres of modernised/built roads (other than highways and express roads),
- 1,656 kilometres of modernised/built railways,
- 2,440 units of city rolling stock,
- 23,134 kilometres of newly built/modernised sewer system,
- 6,399 kilometres of newly built/modernised waterworks system,
- 433 built/modernised waste-water treatment plants,
- 577 investment projects in the area of renewable energy sources,
- 975 investment projects related to energy effectiveness and cogeneration (Ministerstwo Infrastruktury i Rozwoju, 2014a).

OP Human Capital aimed at reducing unemployment and promoting employment. Special offer was designed for the young, for women, for disabled people and for those 50+ years old. More than 7.6 million people (i.e. around 20% of Poland's population) took advantage of OP Human Capital. OP Human Capital resulted in the creation of 207,330 new job places. Almost 190,000 people opened their own companies. 60% of unemployed persons that participated in courses co-financed by European Social Fund did find a job as a result of deepening and broadening knowledge and competencies (Europejski Fundusz Społeczny, 2014).

OP Innovative Economy aimed to create 70,000 new jobs, 28,000 of which for women. The Programme also aimed to create 60 projects in the field of R&D. Some 1200 enterprises benefitted from services provided by specialised research laboratories that received financial support. The number of persons employed in R&D activity increased from 123,431 to around 150,000 thanks to OP Innovative Economy (European Commission, 2013).

Among the projects co-financed by the EU funds and related to OP Innovative Economy one can find the project "Creating R&D Centre in the American Heart of Poland Co." The project was connected with Priority 4: Investments in innovative undertakings, Measure 4.5: Support for investments of great importance for the economy. American Heart of Poland Co. was its beneficiary. The total cost of the project was PLN 36.31 million. The EU grant amounted to PLN 18.16 million and the rest was financed from the beneficiary's own resources. As a result of the project American Heart of Poland Co. (the only centre of clinical and pre-clinical research in cardiology in Poland) opened heart surgery unit in Bielsko-Biała and experimental unit in Kostkowice (Centrum Badawczo-Rozwojowe AHP S.A., 2014).

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Another good example of the practice of OP Innovative Economy is Energy Technologies Centre Cooperative Network of Lower Silesia Cluster of Renewable Energy. The project was connected with Priority 5: Diffusion of innovation, Measure 5.1: Support for the development of cooperative connections. The Association „Free Entrepreneurship" was its beneficiary. The EU grant amounted to PLN 8.39 million. The Association „Free Entrepreneurship" invested PLN 1.58 million of its own resources. The total cost of the project equalled PLN 9.97 million. As a result of the project one of the most modern buildings in Poland, equipped with installations based on solar collectors, deep-well pumps and air heat pumps, modern air-conditioning system, intelligent system of acquiring, accumulating, transmitting and reclaiming heat, was built. The Energy Technologies Centre is viewed as R&D experiment. The Centre aims at testing and verifying new energy technologies as well as presenting the achieved results to potential investors (Centrum Technologii Energetycznych, 2014).

4 Prospects for the years 2014-2020

The new perspective of EU Policy of Economic, Social and Territorial Cohesion for the period 2014-2020 is connected with the Strategy Europe 2020. It focuses on: smart growth, sustainable growth and inclusive growth. Key priorities include: innovation and research, the digital agenda, support for small and medium-sized businesses, the shift to a low-carbon economy, Trans-European transport links, promoting training, education and life-long learning, social inclusion (European Commission, 2010). The total budget of the EU Policy of Economic, Social and Territorial Cohesion 2014-2020 amounts to EUR 336 billion (Widzyk, 2013). Thematic objectives of the EU Policy of Social, Economic and Territorial Cohesion 2014-2020 include: research and innovation promotion, information and communication technologies development, strengthening competitiveness of Small and Medium-sized Enterprises, shifting towards a low-carbon economy, climate change adaptation and risk prevention and management, environmental protection and resource efficiency, sustainable transport and removing bottlenecks in key network infrastructures, employment and supporting labour mobility, social inclusion and combating poverty, promoting education and lifelong learning, building institutional capacity and efficient public administrations (European Commission, 2012).

Prospects for the implementation of EU Policy of Economic, Social and Territorial Cohesion in Poland during this period of time are truly optimistic. Poland is to invest EUR 82.5 billion of assistance from the EU funds, of which EUR 76.86 billion distributed within operational programmes. In addition to that Poland is to receive EUR 4.1 billion for European transport, energy and information infrastructure projects related to Connecting Europe Facility, EUR 71.0 million for innovative activities connected with the development of urban areas and EUR 473.0 million from Fund for European Aid to the Most Deprived.

On May 23rd, 2014 the European Commission approved Partnership Agreement with Poland. According to the Partnership Agreement the EU funds must be invested in the fields that will significantly help develop the Polish economy. Among them one can find: increase in the Polish economy competitiveness, improvement of social and territorial cohesion of the country and higher effectiveness of the state. Negotiations and discussions concerning the operational programmes and the division of funds are still under way. Proposals of the Ministry of Infrastructure and Development regarding the ways of New Cohesion Policy 2014-2020 implementation in Poland are presented in Table 3.

One should note the fact that as much as EUR 27.4 billion is to be devoted to Operational Programme Infrastructure and Environment and about EUR 31.3 billion is to be managed on regional level (the level o voivodships). In the previous financial perspective there was just one multi-fund programme. For the years 2014-2020 both OP Infrastructure and Environment and Regional Operational Programmes will take the form of multi-fund programmes. European Regional Development Fund and Cohesion Fund will serve as financial instruments of OP

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Infrastructure and Environment. In case of Regional Operational Programmes both European Regional Development Fund and European Social Fund sources will be used.

Table 3. Operational Programmes 2014-2020 (EUR million) – proposal of the Polish government

Programme	EU assistance	Source of assistance
OP Infrastructure and Environment	27410	ERDF, CF
OP Intelligent Development	8610	ERDF
OP Knowledge, Education, Development	4690	ESF
OP Digital Poland	2170	ERDF
OP Technical assistance	700	ERDF
OP Eastern Poland	2000	ERDF
European Territorial Cooperation Programmes	700	ERDF
Regional Operational Programmes	31280	ERDF, ESF
Total	76860	

Source: Ministerstwo Infrastruktury i Rozwoju, 2014b.

5 Conclusion

The New Cohesion Policy of the European Union should be viewed as an attempt to stimulate socio-economic development of EU countries and regions. The amount of more than 67 billion EUR granted to Poland for the period 2007-2013 did result in promoting socio-economic development on both national and regional level in Poland. The National Cohesion Strategy 2007-2013 served as a legal basis for the implementation of New Cohesion Policy of the EU in Poland. It consisted of six operational programmes and sixteen Regional Operational Programmes. The Operational Programme Infrastructure and Environment, the Operational Programme Human Capital, the Operational Programme Innovative Economy and sixteen Regional Operational Programmes constituted a vital part of the National Cohesion Strategy / National Strategic Reference Framework in Poland for the years 2007-2013.

Enterprises, government units, state administration bodies, higher education institutions, scientific units, non-profit organisations and other entities became beneficiaries of the EU Policy of Economic, Social and Territorial Cohesion. Participation in the EU Policy of Economic, Social and Territorial Cohesion did change Poland. The results of the implementation of New Cohesion Policy 2007-2013 are easily visible in the area of transport infrastructure (particularly road infrastructure), environmental protection, research and development, innovation activity, higher education institutions.

One should, however, stress the importance of its continuation during the coming period 2014-2020, especially having in mind the fact that Poland remains the biggest beneficiary of structural funds and Cohesion Fund. EUR 82.5 billion of EU support granted to Poland is to be used for innovation development, entrepreneurship stimulation, research and development promotion, highways and express roads building, as well as in the areas of green energy, information society, social inclusion.

It's worth mentioning that due to instability in global economy and economic problems in some EU economies it becomes more and more difficult for the EU Member States to reach agreement concerning financial aspects of integration. The current multiannual financial framework of the EU may be the last one so advantageous for Poland. Thus, it is vital, to do one's best to take all the advantages of the EU funds designed for Poland for the period 2014-2020. The way Poland uses this opportunity will impact the future of the country. The years 2014-2020 may determine the position of the Polish economy in the European Union and in a globalised world economy (Pawlas, 2014).

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ASPECTS OF IMPORTS AND EXPORTS FROM ROMANIA AFTER THE ACCESSION TO THE EU

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Abstract
Import-export operations of a country unofficially represent a measurement indicator of its economic development level. We know that these are regulated by the commercial policy of the country as well as by the administrative norms in force, which aim the external sector of the economy. After the fall of the Romanian communist regime in 1989, the euphoria of democracy comprised the entire Romanian population. The wish to consume a series of new foreign goods and services, of which the people was entirely deprived until then, was a great one. Romania's accession to the European Union intensified the intra-Community and extra-Community exchange of products.This paper is meant to analyze the evolution of the imports and exports of goods from Romania, which are analyzed by different categories highlighting the period after the accession to the European Union.

Keywords
Import, Export, Intra-Community Trade, Extra-Community.

JEL Classification
E23, E64, F15, F36.

1 Introduction

After the fall of the Communist system, the euphoria of democracy seized the entire Romanian population. The desire to consume a series of new foreign goods and services, of which the people was entirely deprived until then, was a great one. On the other hand the production sector was extremely affected; Romanian products did not include modern technique and technology, which made them far less competitive on the external market. The only products that have relatively maintained their external demand were the raw materials and agricultural products. More precisely, in 1990 in Romania the value of the imports was of 9202.5 millions of dollars in contrast to that of the exports that was almost half, namely 5775.5 millions of dollars (Raphael, 1997).

There has been a lot of talking about the importance of external trade since ancient times. For example, Adam Smith, the father of economy stated: "*Foreign trade carries out that surplus part of the produce of their land and labour for which there is no demand among them, and brings back in return for it something else for which there is demand. By means of it, the narrowness of the home market does not hinder the division of labour in any particular branch of art or manufacture carried to the highest perfection*" (Smith, 1962). Not only the existence of an external trade is important but only the continuous widening of it, namely identifying and penetrating new market outlets meant to determine the increase of the national wealth about which Smith states: "*By opening a more extensive market for whatever part of the produce of their labour may exceed the home consumption, it encourages them to improve its productive power, and to augment its annual produce to the utmost, and thereby to increase the real revenue and wealth of the society*" (Smith, 1962).

The term export must be understood as a selling process of some goods and services by a foreign economic operator. This can be directly achieved, when the goods and services are sold to an entity from abroad, no matter if it is a public or private entity, or can be indirectly achieved, when the goods and services are sold to an economic operator acting as intermediary from the export country, which ensures the selling of these in a foreign country.

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As for the import, this represents the purchase of various goods and services from abroad and their introduction in the national economic circuit. Through imports new productive assets, which are more efficient and long lasting, can be purchased in order to increase labour productivity by means of which to make products that would be competitive both on the internal and external market. It must not be forgotten that one of the roles of the state is to protect domestic production from the foreign one, situation in which the latter can cause injuries to national interests.

The value of the imported goods and services is established based on some actual prices, FOB (Free on Board) for exports and CIF Cost, Insurance, Freight), for imports. FOB price is the price at which the product is registered at the border of the exporting company. The value of the merchandise, of the transportation cost and of the insurance up to the border of the exporting country is comprised in this price. As for the CIF price it represents the price at which the merchandise is registered at the border of the importing country. The CIF price includes both FOB price and the transportation costs and the insurance for the goods up to the border of the importing company.

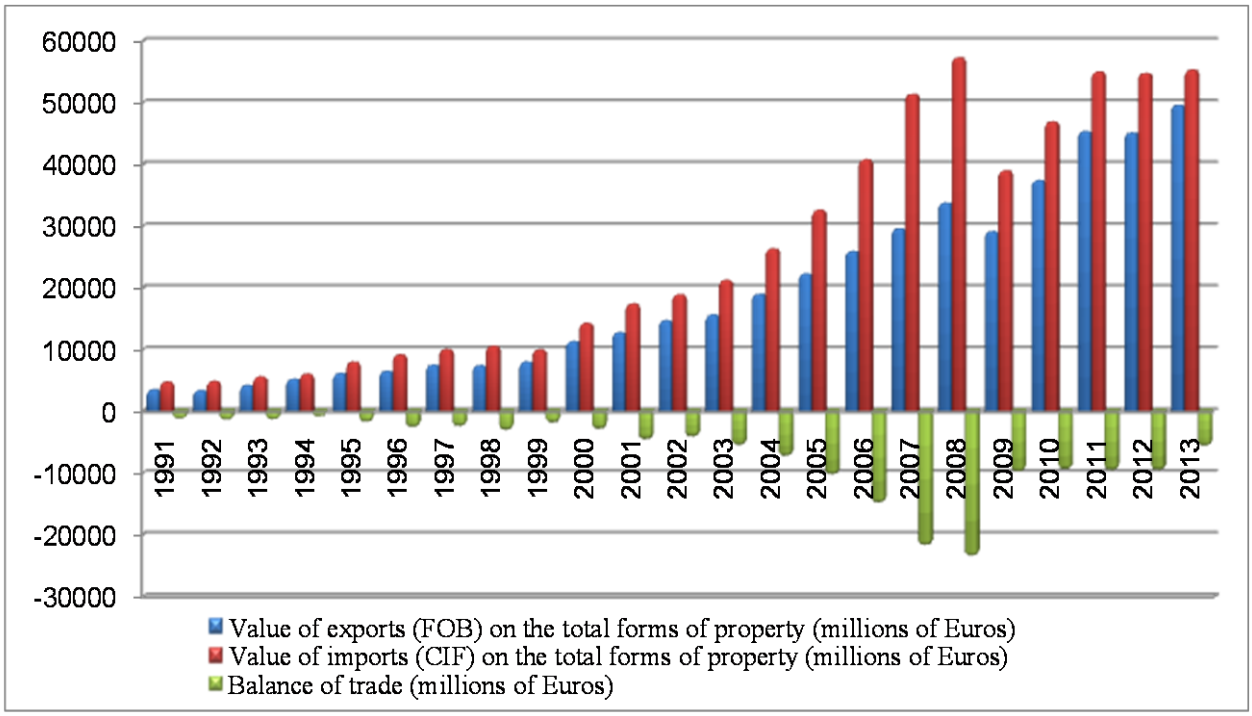

Figure 1. The evolution of exports, imports and the balance of trade of Romania (Source: National Institut of Statistic Romania)

Based on the above presented figure, we can observe that the period during 1991 and 1999, Romanian exports and imports have had a relatively ascending evolution registering only small variations. After 2000 Romania's external trade began to register massive increases, reaching in 2008 record values both for export and import (33 725 millions of Euros from the exports of goods and 57 240 millions of Euros from the import of goods). 2009 is marked by the fall of the economic activity with direct repercussion on the volume of external trade, fact which was most likely caused by the beginning of the crisis in Romania and so by the massive reduction of the economic activity, furthermore the situation was influenced by the unfavourable worldwide conjuncture. Thus, trading relations diminished extremely throughout 2009, by 13.8% for exports and 31.9% for imports. In 2010 in comparison to 2009 we notice a slight come back of the ascending trend and after this year, until 2013 exports registered oscillating values unlike imports, which have registered increases.

Throughout the analyzed period the trade balance has a negative balance, the lowest deficit was registered in 1994 and it had a value of 808 millions of Euros reaching the maximum point in 2008,

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when the deficit was of 23515 millions of Euros on the basis of the economic crisis. In 2009 the deficit dropped registering a value of 9869 millions of Euros.

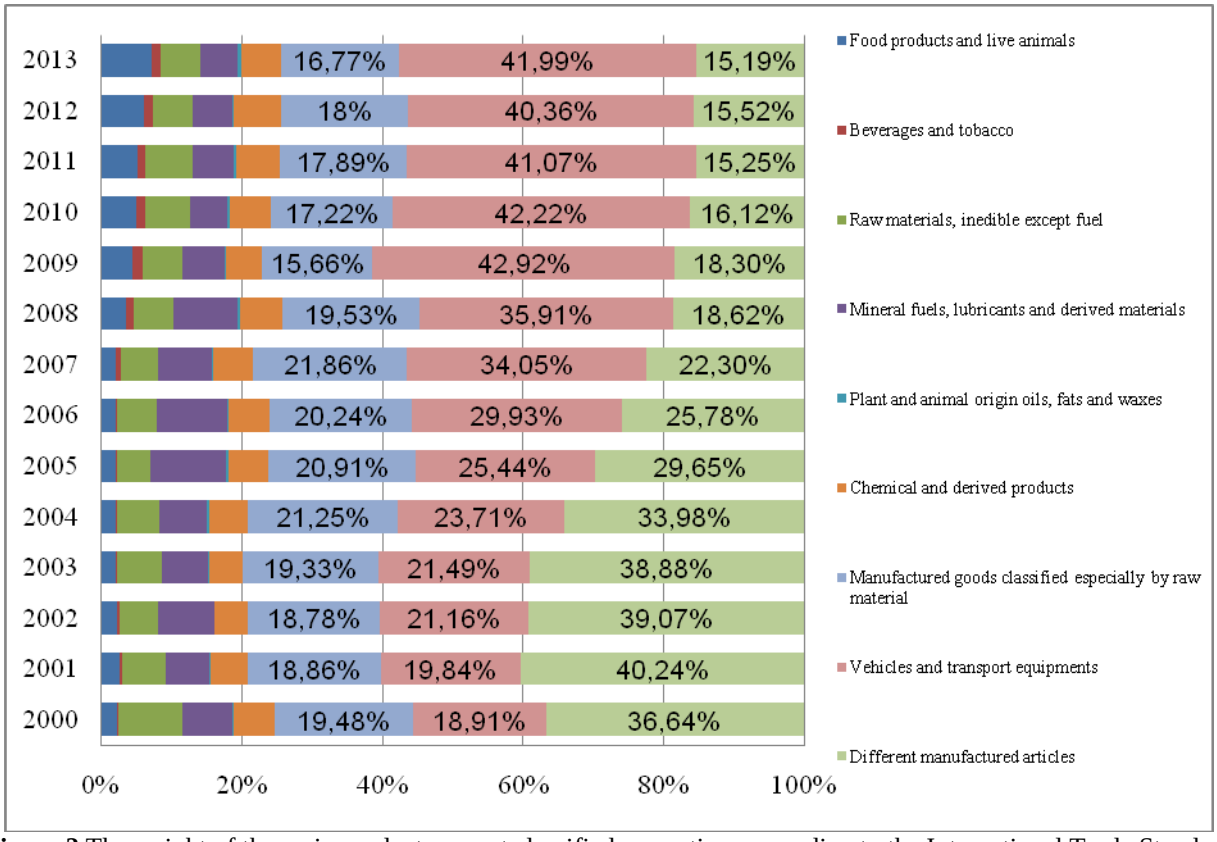

Figure 2. The weight of the main products export classified on sections according to the International Trade Standard Classification in the total of exports of Romania (%) (Source: National Institut of Statistic Romania)

Based on the figure we can observe the highest weight within the total of the export, which is represented by the following groups of goods: vehicles and transport equipments, manufactured articles and manufactured goods especially classified based on the raw materials. The lowest weight over the years is represented by the following groups of products: beverages and tobacco as well as plant and animal origin oils, fats and waxes.

The most concerning fact is the decrease of the quantity of manufactured products during 2000 - 2013 by over 20%.

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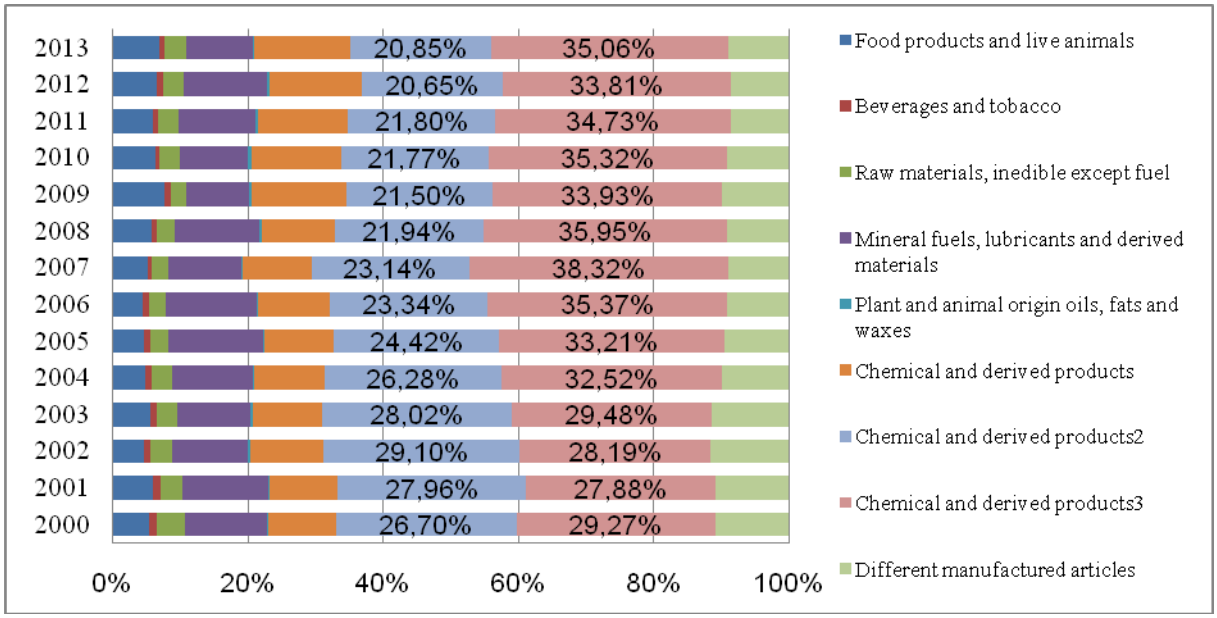

Figure 3. The weight of the main products import classified on sections according to the International Trade Standard Classification in the total of imports of Romania (%) (Source: National Institut of Statistic Romania)

According to the previously presented figure, the highest weight in the total of imports is represented by the following categories of goods: vehicles and transport equipments, manufactured goods especially classified based on the raw materials. Their weight over the years is approximately constant. The lowest weight is represented by the following categories of goods: beverages and tobacco, raw materials, inedible products except fuel.

Concurrent with Romania's accession to the E.U. in 2007, Directive 112/CE/2006 was adopted according to which external trading with E.U. Member States bear the name of purchases and intra-Community deliveries. The terms of import and export keep their initial meaning for external trading with any other country, which is not a Member State of the European Union.

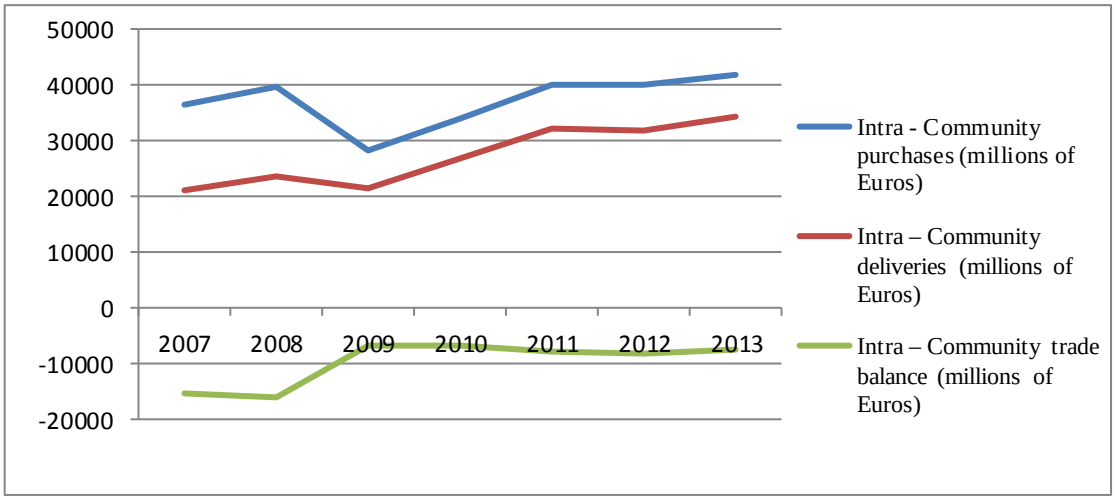

Figure 4. Intra-Community purchases and deliveries of Romania (Source: General Directorate of Public *Finance* of Bihor County)

Based on the presented figure, we can observe that after Romania's accession to the European Union, Intra - Community purchases and deliveries have had upward trends.

The accession of Romania to the European Union intensified the intra-Community exchanges. Despite the fact that 18 years have passed since the socialist regime had fallen, domestic products have not managed to be more attractive for export, fact which caused the country's trade balance to

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register chronic deficits. The main reason still remains, as it was in 1990 when, as mentioned before, the value of the imports was almost double to that of the exports, the lack of an adequate technology especially in the industry sector.

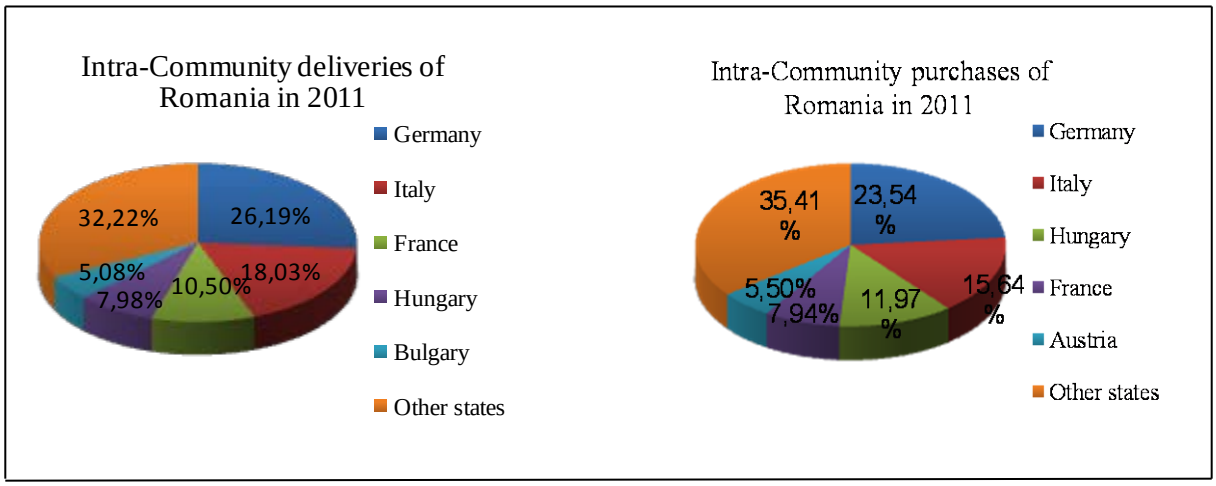

Figure 5. The weight of the main countries partners with Romania in the total of deliveries and purchases of Romania from 2011 (Source: National Institut of Statistic from Romania)

Analyzing the above mentioned data, we notice that after the accession of Romania to the European Union the main partner countries of it remained the same: Germany, Italy, France, Hungary, Bulgaria, Austria and Great Britain.

Subsequent to a more detailed analysis on the effects of Romania's accession to the E.U. reflected mainly on the import and export, we can conclude the fact that (European Institute from Romania, 2010):

- The level of the import is higher than the one of the export.
- In the analyzed period 1990-2012, we can notice that Romanian external trade significantly reacts to a variation of 1% of the GDP, except for the years of 1997, 1999, 2009.
- The import level strongly increases and it is not affected by the evolution of the G.D.P.

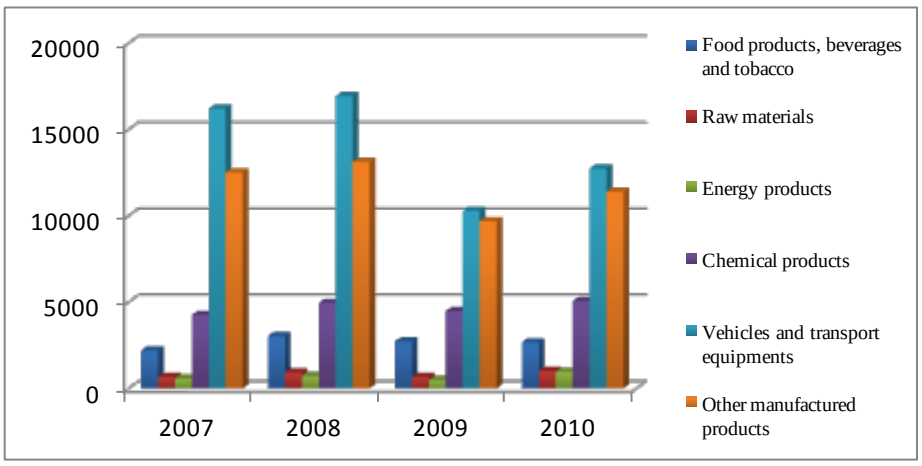

Figure 6. The evolution of the intra - Community purchases of Romania on traded goods (millions of Euros) (Source: EUROSTAT)

As for the intra - Community purchases of Romania, we can notice the fact that the country imports a significant quantity of food products, beverages and tobacco, but also raw materials and

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energy and chemical products. As follows we will try to find an explanation for which Romania has to recourse to these imports.

A first explanation for which Romania imports a significant amount of food products and raw materials can be caused by the fertility state of Romanian soils, which is damaged on wide surfaces by some restrictive natural factors that lately are increasingly harmful due to global climatic changes. Among these factors we mention frequent excessive drought that affects approximately 7.100 mil. ha, and the occasional humidity excess on over 3.700 mil., which generate inestimable deteriorations of the quality of the soil and substantial losses or calamities on crops. An important restrictive factor, with multiple natural and anthropic causes, is the erosion phenomenon of the soil, which strongly influences 6.300 mil. ha. The only research institution in our country, with extremely valuable concerns for developing prevention and fight solutions against this phenomenon, which is highly dangerous for the fate of the Romanian rural areas, is the Research and Development Station for Soil Erosion from Perieni. Art works have been made within the Perieni Station perimeter, which are an evidence of the valuable contributions brought to the country's agriculture, proving that the soils, which are not submitted to erosion, can have large and stable productions - for example 6000 kg wheat/ha successively obtained in the last 6 years. Severe degradation processes of the soils state are also caused by irrational anthropic interventions, in a direct manner, as in the case of chemical pollution from industrial activity, covering the soil by depositing wastes and solid residues (tailings) or, on a wider range of time, through unfit agricultural works, which lead to compactions, structure destructions and soil fertility (Hera Cristian, 2009).

The humic state of the arable soils is the less favourable considering the last 30-35 years. The uncompensated annual losses of humus from agricultural lands subsequent to its mineralization exceed the level of 700 kg/ha, and the total deficit, considering the losses caused by erosion, equals 1100 kg/ha. The main factors, which have conditioned the setting of a negative balance of the soil's organic matter, are the lack of crop rotation meant to preserve soil fertility, the erosion subsequent to the action of water and the use of a smaller quantity of local organic fertilizers for the fertilization of agricultural crops (maia.gov).

The current state of the soils effective fertility is unsatisfactory, and on about 10% of the agricultural lands it is critical. At present the nitric regime prevents obtaining the intended crops. The content of mobile phosphorus is close to the natural low one. Due to the lack of fertilizers, the phosphorus regime gradually deteriorates and in approximately 5 to 6 years it will also become a restraining factor.

As for energy, it is one of the most important physical concepts discovered by man. The correct understanding of the energy concept represents a necessary condition for the completion of this paper, as well as for the analysis and interpretation of the economic effects deriving from its making, both for ensuring electricity and thermal comfort of the people. The economist Leveque launches a theory, in our opinion a complete one, according to which "*energy security is an extremely important aspect for the European Union and for the Member State in the nowadays technical, economic and political context"* (Leveque Francois; 2010). In the situation in which the competition is the element that rules the present economic and politic context and sustainability is the main target of European policies, we consider that Leveque was not wrong in his theory, especially if we take into account the calculation and the definition of the energy, which states that it means "power" (dexonline.ro).

2 Conclusion

Given the globalization context, Romania's Energy Strategy (/www.enero.ro) presents the achieved predictions in respect to the evolution of the energy and fossil fuels consumption. According to this strategy, in 2030 the total demand of energy will increase by 50% compared to the level registered in 2003, which will lead to the depletion of oil reserves in 2040, of the natural gases in 2070 and

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around 2200 of the pit coal. Furthermore, regarding the evolution of energy consumption at global level the International Energy Agency predicts an accelerated increase of the energy quantity both of the total one and of the one obtained from renewable sources. Moreover, the World Energy Council states that under these conditions coal consumption will also increase by approximately 50% until 2013 in comparison to the level of consumption registered in 1980.

After the fall of communism, Romanian chemical industry suffered a great decline. In reality, this was considered a real "time bomb" because the persons who used to work in this field lacked safety measures. Together with Romania's accession to the E.U., European standards in this field have also emerged, standards that obviously were not met. Thus, due to the lack of required financial resources most chemical industries were closed, fact that evidently stimulated the import of chemical products in order to satisfy the demand in this field, this also being one of the causes that have lead to the significant increase of unemployment of that period.

In conclusion, we can say that Romania has to catch up for a series of economic gaps, which can be best noticed in the deficient trade balance of the country.

3 Acknowledgment

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ECONOMETRIC TESTING OF THE RELATIONSHIP BETWEEN THE CO2 LEVEL AND LIFE EXPECTANCY IN ROMANIA

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Abstract
Noxious influences of environmental pollution in the last decades are reflected both on the biodiversity and on the human individual; harmful influences on the human individual consist in biological disorders (diseases with a speeding evolution and death), the disruption of the psychosocial framework and not least all the major economic implications due to the very high costs needed to cover health expenses, the costs of maintaining a balanced social structure and of an individual psycho-affectivity nearest to mental health. Even though life expectancy is on an upward trend both in Romania and worldwide, the increasing degree of pollution determines not only the slowing down of growth but also the reduction of life quality analyzed in terms of environment. This paper aims to demonstrate that in the situation in which the level of pollution won't lower, life expectancy will be on a downward trend.

Keywords
Life Expectancy, Pollution, Carbon Dioxide.

JEL Classification
I15, I12, C20.

1 Introduction

The harmful effects of human activity began with the industrialization period, characterized by several items among which: the discovery and widespread use of fossil fuels (coal, petroleum, natural gas) in order to produce electricity and heat, obtained by burning these with the elimination of the resulted gases in the atmosphere and soil, implicitly in rivers and groundwater, resulting dross; the intensive processing of metals and removal of the barren as well as the resulted gases outdoors (see furnaces of steel mills, aluminum production, etc.); results arising from industrial applications of discoveries made in chemistry (taking into account the petrochemical industry, chemical fertilizer production mills, mills producing the necessary hygiene items); the development of zootechny and related industries, etc. All these, although initially designed to create a favorable climate for the human individual, unfortunately led to a much improper loading of the abiotic environment (air, water, soil), with catastrophic effects or possibly catastrophic if no actions are taken, for the existence of the human species and even for life on Earth. Life expectancy registered continued increases in recent decades. This increase of longevity mainly is due to a series of factors such as: the increase of the standard of living, the increase of the educational level, new discoveries in medicine, the increasing attention given to a balanced nutrition, etc (Kim, 2005).

At a first impression we would be tempted to say that: "all that matters is that we live longer". Before saying that we should take into account the fact that the most vulnerable period of our health begins after the age of 50. Cardiovascular diseases that start showing up at this age are the main causes of death in most OECD countries except France and Japan, where cancer makes real damages. In order to be more precise, mortality rate caused by cardiovascular diseases in Eastern – Europe countries and Central Europe respectively the countries that register a high level of the macroeconomic indicators is approximately 50% higher than the one registered in countries such as: Slovakia, Czech Republic, Hungary, Poland, and etc. (Kim, 2005). Another aspect, which cannot be neglected, is the increase of global temperature which for senior persons can be fatal. More exactly, with increasing age, the body loses some abilities, for example the ability to easily adapt (National Institute of Health, National Institute of Aging).

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In order to reduce the incidence of mortality from these causes, a number of governments (France, England, Spain, etc.) have implemented a wide range of measures to ensure not only the heating and cooling of their homes but placing on the same place heating the homes with that of their cooling (U.S. Department of Health & Human Services, Office of Community Services).

The reduction of equality and poverty are two social objectives aimed at reducing the vulnerability of individuals and to ensure the basic needs of the population. Munasinghe is among the first authors that highlighted the strong relationship that exists between biodiversity, culture and human capital. Ecosystems are those that are at the basis of life and hence every human activity. Nature offers an entire series of goods and services vital to maintaining welfare and for economic and social development. Benefits of this category are: water, air, wood, soil, etc.

2 Estimating the econometric model

In analysing the simple regression primarily are considered aspects connected to the identification of the explanatory variables. We use data regarding the value of the carbon dioxide ($CO2_t$), and life expectancy, for the 1970 to 2010 period.

Specifying an econometric model involves choosing a mathematical function ($f(x)$) which can be described by the relationship between the two variables. In the case of a single factor model, the most commonly used method is the graphical representation of the two rows of values using the cloud of data points. Because the form of the chart suggests a possible inverse linear relation between the two variables, we proposed a simple linear regression to study the relationship between this two variables. So the simple linear regression model proposed in the study of life expectancy (SPV_t) depending on the carbon dioxide has the form of:

$$Y_t = c(1) * CO2_t + c(2) + \varepsilon_t \tag{1}$$

In a simple linear regression model, parameters can be estimated through several methods. In order to determine the parameters of the model we use generalized least squares method. In order to test the validity of the hypothesis underlying the classical model will use various statistical tests. Solving the model was performed using the EViews program, so the following results were obtained at sample level:

Table 1. Estimating the parameters of the simple linear regression model

Dependent Variable: SPV_t (life expectancy)				
Method: Least Squares				
Sample: 1970 2010				
Included observations: 41				
SPV=C(1)*CO2+C(2)				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-1.80E-05	4.03E-06	-4.454007	0.0001
C(2)	72.71989	0.603466	120.5038	0.0000
R-squared	0.337165	Mean dependent var		70.14634
Adjusted R-squared	0.320169	S.D. dependent var		1.352054
S.E. of regression	1.114793	Akaike info criterion		3.102765
Sum squared resid	48.46778	Schwarz criterion		3.186354
Log likelihood	-61.60669	Durbin-Watson stat		0.273413

Source: Wordbank 1970-2010, processed in EViews.

The values of the estimated coefficients at the sample level are:

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c(1) = -1.80E-05 shows how life expectancy would decrease if the carbon dioxide would increase by one unit in the analysed period. Also the negative sign of the coefficient indicates that between the two variables there is an inversely sense of connection.

c(2) = 72.71989 shows what would life expectancy be given that the carbon dioxide should be equal to zero.

It can be seen that at sample level the function by which we define the linear model is decreasing. This thing shows us that the sign of the estimated coefficient c(1) is negative. In order to find the influence of the independent variable on the dependent variable in relation to the total population with the help of this linear model, we will generalize the results of the two estimated coefficients by applying the Student test. In choosing the correct hypothesis using the Student test, we compare t_{calc} with t_{tab} = 1,96 (significance level α = 0,05).

Based on the data from the above table it is noted that the parameter c(1) is significantly different from zero, with a significance level α = 0,05, as t_{calc} = 4.45 > t_{tab} = 1,96, which means that the null hypothesis is rejected, H_0. This can be seen by the associated probability parameter c(1) which is equal to 0,0001, which confirms that the parameter is significant. Also, in the case of the c(2) parameter, we can observe that t_{calc} = 120,50 > t_{tab} = 1,96, and the probability associated to the c(2) parameter is zero, which confirms that the second parameter is significant. Thus, even in this case the null hypothesis cannot be rejected.

Following the calculations made by using the EViews program it can be seen that both parameters are significantly different from zero, it results that the model was correctly specified, identified and estimated and the econometric discussion is continued.

Based on the above calculations we can say that between life expectancy and carbon dioxide there is a relationship and is related to the total population not only at sample level.

In order to measure the intensity of the endogenous variable dependence by the regression factors it determines the coefficient of determination. Based on the obtained results at the variable sample level between the endogenous and exogenous variables there is a very strong connection.

$$\overline{R^2} = 1 - \frac{t-1}{t-p} \cdot (1 - R^2) = 0.320169 \tag{2}$$

This is named as the adjusted correlation relationship. We can say that between the variables there is a medium intensity relationship.

In order to study the size of $\overline{R^2}$ in the total population, the Fisher test is used.

H_0: $\overline{R^2} = 0$

H_1: $\overline{R^2} \neq 0$

In order to choose the correct hypothesis we compare F_{calc} with F_{tab} from the Fisher annex.

$$F_{calc} = \frac{\overline{R^2}}{1 - \overline{R^2}} \cdot \frac{T - p - 1}{p} = \frac{0.320169}{1 - 0.320168} \cdot \frac{41 - 1 - 1}{1} = 18.36 \tag{3}$$

As F_{calc} = 18,36 > F_{tab} = 3,10 means that the null hypothesis is rejected, then the influence of the exogenous variables on the endogenous variable is significant. As the difference between F_{calc} and F_{tab} is higher, the relationship between the variables in relation to the population is stronger.

2.1 Testing the fundamental hypothesis regarding the the random variable ε

The independence hypothesis of the residual variable values ε_i**.** This hypothesis involves the verification of the relationship:

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$$\text{cov}(\varepsilon_i, \varepsilon_k) = E(\varepsilon_i, \varepsilon_k) = 0 \ (\forall) \ \text{i,k=}\overline{1,T}, i < k \tag{4}$$

To detect the residual autocorrelation variables are used several statistical methods. The easiest way to detect the autocorrelation is by using the graphic representation of the series of residual values.

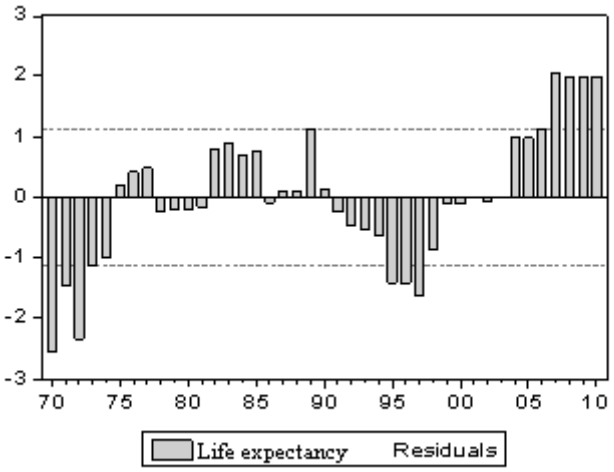

Figure 1. Graphic analysis of the residue model (Source: Made by the author using data from Wordbank 1970-2010, processed in EViews)

Looking at the figure we can draw a conclusion regarding the independence of errors. On the most part of the figure we can see that the errors are positive or negative - here the errors are correlated, but there are small portions of the figure in which errors are one side of the axis Ox, without any rule – this is the part where the errors are independent. Because the majority of errors are clustered positive and negative, we can say that errors are not independent.

Taking a decision only by following a figure is not the best option. Therefore, for a deeper analysis we used a series of statistical tests. For this study we use the Durbin-Watson test.

This is the most commonly used test in the analysis of the residual variable autocorrelation. This test detects first order autocorrelation of the residue estimated by the method of the least squares.

In this case it is considered the multifactorial regression model:

$$Y = c(1) \cdot X + \varepsilon \tag{5}$$

$$\hat{\varepsilon}_i = \rho \hat{\varepsilon}_{i-1} + u_i \tag{6}$$

The hypotheses are defined:

H_0: $\rho = 0$ there is no correlation at the level of the residue series (the errors are independent);

H_0: $\rho \neq 0$ the residue series presents a first order autocorrelation (the errors are dependent).

this ρ is the autocorrelation coefficient of the errors. In order to choose the correct hypothesis it is determined the statistics of the Durbin-Watson test:

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$$DW_{calc} = \frac{\sum_{i=2}^{T} (\hat{\varepsilon}_i - \hat{\varepsilon}_{i-1})^2}{\sum_{i=1}^{T} \hat{\varepsilon}_i^2} \tag{7}$$

The empirical value, of DW_{calc} are compared with two theoretical values, d_1 and d_2, read from the distribution table Durbin - Watson based on a significance level α, conveniently chosen (α = 0,05 or α = 0,01), by the number of exogenous variables, k and observed values (T, T ≥ 15).

Working with a significance level α = 0,05, the number of the exogenous variables being *k* = 1 and the number of observations T = 41, in the Durbin-Watson distribution table the values are read d_1 = 1,44 and d_2 = 1,54.

Since 0 <DW_{calc} = 0.273413 <d_1 = 1,44 H_0 hypothesis cannot be accepted, so it can be seen that we have reached the same conclusion as in the graphical method, namely, the hypothesis of error independence cannot be accepted.

2.2 Eliminating the autocorrelation phenomenon

In order to eliminate the autocorrelation phenomenon we will estimate ρ parameter with the help of Cochrane – Orcutt method (Andrei and Bourbonnais, 2008). After the calculations we obtained the value of the parameter

$$\rho = 1 - \frac{DW_{calc}}{2} = 0.865 \tag{8}$$

Thus these series of residues can be written

$$\hat{\varepsilon}_t = 0.865\,\hat{\varepsilon}_{t-1} + u_t \tag{9}$$

From the model of simple linear regression

$$SPV_t = c(1) \cdot CO2_t + c(2) + \varepsilon_t \tag{10}$$

and

$$SPV_{t-1} = c(1) \cdot CO2_{t-1} + c(2) + \varepsilon_{t-1} \tag{11}$$

Replacing the (14) relationship we obtain:

$$SPV_t - (0.865 \cdot SPV_{t-1}) = c(1) \cdot (CO2_t - 0.865 \cdot CO2_{t-1}) + c(2)(1 - 0.865) + u_t \tag{12}$$

2.3 Estimating the new regression model

We check the quality of the new model by repeating the same steps as for the previous in the previous one. In order to estimate the parameters of the new simple linear regression model we used the least squares method, with which we obtained the following results:

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Table 2. Estimating the parameters of the simple linear regression model

Dependent Variable: SPV-(0.865*SPV(-1))				
Method: Least Squares				
Sample(adjusted): 1971 2010				
Included observations: 40 after adjusting endpoints				
SPV-(0.865*SPV(-1))=C(1)*(CO2-0.865*CO2(-1))+C(2)*(1-0.875)				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-1.29E-05	6.79E-06	-1.982089	0.0448
C(2)	78.63027	1.235297	63.65294	0.0000
R-squared	0.086932	Mean dependent var		9.585125
Adjusted R-squared	0.062904	S.D. dependent var		0.563284
S.E. of regression	0.545280	Akaike info criterion		1.673672
Sum squared resid	11.29855	Schwarz criterion		1.758116
Log likelihood	-31.47344	Durbin-Watson stat		2.126816

Source: Wordbank 1970-2010, processed in EViews.

The results related to the two parameters of the new model shows that the values for the Student statistics calculated for the two parameters are higher in absolute value than that in the table value equal to 1,96 for a significance level of 5%. Thus we conclude that the null hypothesis H_0 is rejected for all parameters of the regression equation, they are significantly different from zero, the exogenous variable being significant and at the level of the total population.

To measure the intensity of the dependence of the endogenous variable to the exogenous variable it is determined the coefficient of determination. At sample level between the endogenous variable and the exogenous variable there is a low intensity relationship, because $\hat{R^2}$ =0.080953. In order to determine whether this intensity is maintained at the level of the total population, we will use the Fisher test. Because F_{calc} = 3,34 > F_{tab} = 3,10 which means that the null hypothesis is rejected, according to which between the variables there isn't a relationship, so the influence of the exogenous variables on the endogenous variable is significant.

2.4 Testing the fundamental hypotheses regarding the random variable u_t

The independence hypothesis of the u_t residual variable values

To detect the autocorrelation of the residual variables we use the Durbin-Watson test. This time we start from the relationship:

$$u_t = \rho u_{t-1} + \varpi_t \tag{13}$$

The hypotheses are defined:

H_0: $\rho = 0$, with the alternative

H_0: $\rho \neq 0$

In this case the Durbin Watson statistic is equal to 2.12, so d_2 = 1,54 <DW_{calc} = 2.12 <4-d_2 = 2,46, so we can conclude that the errors are independent, the hypothesis of independence of the errors is verified.

The homoscedasticity of the u_t residual variable

By homoscedasticity of error one can understand:

$E(\varepsilon_i) = 0$, ($\forall$) i=1,40

$V(\varepsilon_i) = \sigma^2_\varepsilon$ finite, ($\forall$) i =1,40.

In order to verify the homoscedasticity hypothesis we use the White test. Starting from the relationship:

$$u_t = \alpha_0 + \alpha_1 CO2_t + \alpha_2 CO2^2_t + \alpha_3 CO2_{t-1} + \alpha_4 CO2^2_{t-1} + +\varpi_t \tag{14}$$

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It is wanted to study whether there is or not between the relation of the variables a relationship.

To determine whether the homoscedasticity hypothesis is valid we issue two hypotheses:

H_0: $R^2 = 0$ - homoscedastic model

H_1: $R^2 \neq 0$ - heteroscedastic model

We determine this time as well the calculated values of the Fisher test.

Table 3. White Heteroscedasticity Test

F-statistic	0.537648	Probability		0.708997
Obs*R-squared	2.315541	Probability		0.677941
Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Date: 05/11/12 Time: 16:33				
Sample: 1971 2010				
Included observations: 40				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.832527	1.105838	-0.752847	0.4566
CO2	3.63E-05	3.12E-05	1.163004	0.2527
CO2^2	-1.03E-10	9.24E-11	-1.110774	0.2742
CO2(-1)	-2.00E-05	3.19E-05	-0.627342	0.5345
CO2(-1)^2	4.86E-11	9.39E-11	0.517040	0.6084
R-squared	0.057889	Mean dependent var		0.282464
Adjusted R-squared	-0.049781	S.D. dependent var		0.388310
S.E. of regression	0.397858	Akaike info criterion		1.111026
Sum squared resid	5.540189	Schwarz criterion		1.322136
Log likelihood	-17.22053	F-statistic		0.537648
Durbin-Watson stat	2.399808	Prob(F-statistic)		0.708997

Source: Wordbank 1970-2010, processed in EViews.

As F_{calc} = 0,53 and $F_{5.41,0.05}$=2.61 the H_0 hypothesis is accepted, that is the model is homoscedastic. H_0 hypothesis cannot be rejected; this shall be guaranteed with a probability of 98%.

Testing the normality of the distribution of the random variable u_t

Due to the importance of the normal distribution in modelling various statistics, various special concordance tests were constructed in order to check the normality of various distributions.

A way to check the hypothesis of normality of errors is by using the **Jarque – Berra test**, that is an asymptotically test, valid for a large sample of which follows a chi-square distribution with 2 degrees of freedom the following form (Meşter, 2010):

$$JB_{calc} = T\left[\frac{\alpha^2}{6} + \frac{(\beta - 3)^2}{24}\right] \quad (14)$$

where:

T – the number of observations

α – asymmetry coefficient (skewness),that measures the simetry of the distribution of erroes around their average (average that is null)

β – Pearson vaulting coefficient (kurtosis), that measures the vaulting of the distribution in relation to the normal distribution.

Jarque – Berra test is based on the hypothesis that the normal distribution has an assymmetry coefficient equal to zero, α= 0 and a flattening coefficient equal to three, β = 3.

Based on the calculation made with the help of the EViews program, we obtained:

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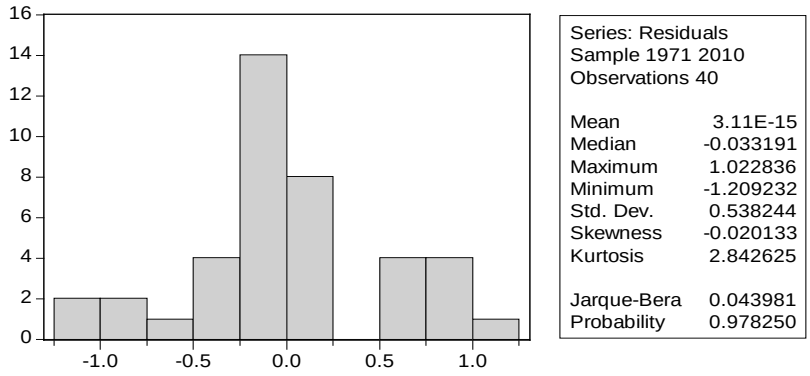

Figure 2. Histogram and characterisitcs of the estimeed residue (Source: Wordbank 1970-2010, processed in EViews)

For testing the normality of errors, we compare JB_{calc} with the table value $\chi^2_{tab(\alpha;2)}$. The table values for 2 degrees of freedom and a 95% probability is $\chi^2_{tab(\alpha;2)} = 5.99$.

If $JB_{calc} < \chi^2_{tab(\alpha;2)}$, then H_0 cannot be rejected, so the errors are normally distributed.

If $JB_{calc} > \chi^2_{tab(\alpha;2)}$, H_1 is accepted, so the normality hypothesis of errors is rejected.

Following the calculations made with the help of the EViews program, JB_{calc} = 0,043981; and $\chi^2_{tab(\alpha;2)} = 5.99$; from this results that the normality hypothesis of erros cannot be rejected at the level of the total population, the errors being normaly distributed.

Because all three hypothesis regarding the random variable have checked results that the model is valid and can be used for making predictions.

Using the *punctual estimation*, from the calculations performed using the EViews program, we have concluded that if life expectancy would be influenced only by CO2, life expectancy would be equal to 71,56 years. Another way to estimate the dependent variable is by estimating through confidence interval. A graphical representation of this forecast by confidence intervals can be seen in the figure below.

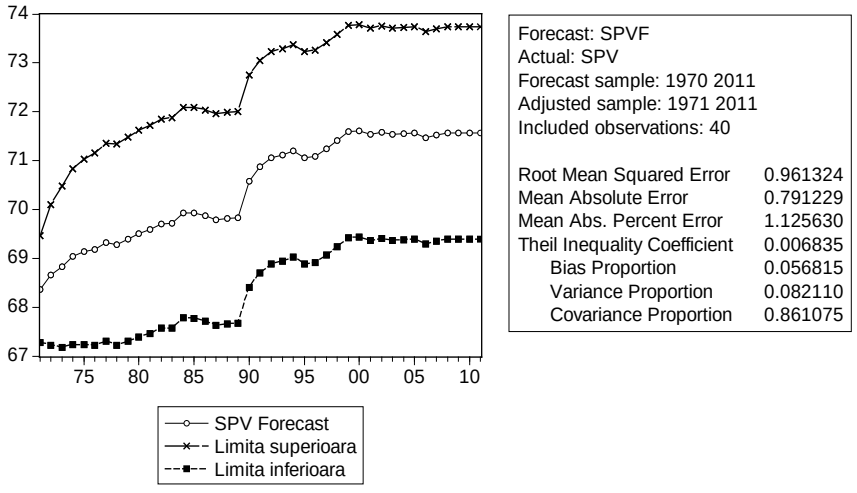

Figure 3. Forecast of the dependent variable – Life expectancy (Source: Wordbank 1970-2010, processed in EViews)

In conclusion with the help of the realized econometric model we have demonstrated that between the analysed level of pollution through carbon dioxide emissions and life expectancy there is a strong connection. Therefore we can say that, under the present circumstances life expectancy both in Romania and all around the world could record values lower and lower due to the level of pollution is on a steep upward trend. With the EViews program we have shown that, while the life

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expectancy in Romania would be influenced only by carbon dioxide emissions, it would record an amount equal to 71, 56 years, which is lower than present one.

3 Conclusion

In addition, as the climate warms up, the amount of water vapours present in the atmosphere increases, fact that causes flooding, typhoons, hurricanes in some parts of the world and droughts, strong heat waves in other areas, depending on wind direction. Temperature increase affects human and animals' health, their comfort, lowers agricultural production which in turn causes economic imbalances, stimulates the migration to areas situated at lower altitudes and thus less affected.

According to scientific researchers presented by IPCC in 1990, considering that CO2 emissions will double compared to that registered in 1990, the risk of floods, cyclones and typhoons will increase by 40%. There is no need to analyse the results using mathematical models to realize that they are quite correct, it is sufficient to analyse natural disasters that have occurred recently, such as hurricanes, typhoons that have caused significant losses. Regarding drought, it makes its presence felt with more and more strength (Tegart et al., 2010).

Besides those mentioned we must take into account that the world population is growing and the agricultural area is decreasing continuously on one hand due to increased desertification and on the other due to the rise of oceans and seas levels which annually reduces the dry surface. According to the data published by the IPCC in 1990 it is expected an increase of the level of the oceans and seas ranging from 9 to 29 centimetres by 2030 and between 28 and 98 centimetres by the year 2090 (Tegart et al., 2010).

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SITUATION OF YOUNG PEOPLE IN THE SLOVAK LABOR MARKET AND POSSIBILITIES OF THEIR PLACEMENT IN THE AREA OF SOCIAL ECONOMY

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Abstract
The paper deals with the problem of youth unemployment in the Slovak labor market in comparison with the EU countries. The aim of this paper is to point out the situation of young people in the labor market, the risks associated with unemployment and make recommendations for increasing employment and employability of those persons. Special focus will be given to the social economy, which creates the possibility for placementof this risk group on the Slovak labor market. It's an innovative area of business which prefers social objectives before making a profit and thus helps solve social problems in society.

Keywords
Social Economy, Employment, Young People in the Labour Market, Social Entrepreneurship, Unemployment.

JEL Classification
A13, E24, J01, L31.

1 Introduction

Young people are one of the at-risk groups in the labor market. Their situation – determined by the lack of practical experience and skills, as well as the segmentation of the labor market which means that they mostly find employment in the secondary labor market – results in their decreased employability and a great risk of unemployment.

The present paper discusses the situation of young people in the Slovak labor market, as well as the risks and challenges associated with their status, and formulates policy recommendations that would result in an increase of their employability and of the general level of employment, especially in the area of the social economy.

The paper makes use of several scientific and logical methods, such as secondary data analysis and the comparative method. As regards logical methods, it uses induction and deduction, as well as analysis and synthesis.

2 The situation of young people in the Slovak labor market and in other EU countries: A comparison

The present situation of young people in the labor markets of several EU countries is complicated and not very favorable. In the following chapters, we analyze the particular labor market indicators associated with this at-risk group in the labor market.

Among these indicators, we class the rate of economic activity, the rates of employment and unemployment, and the NEET (neither in employment nor in education) indicator. Annual and quarterly data for secondary analysis was acquired from the Eurostat labor force sample survey, as it enables a relevant comparison to be drawn between different EU countries.

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2.1 The rate of economic activity

This indicator is measured as the ratio of the economically active population of ages 15 to 24 and the total population in this age group. The economically active population encompasses the employed, the unemployed, members of the armed forces, women on maternal leave (until 34 weeks of duration) and working pensioners.

Figure 1 plots the development of economic activity in Slovakia, which has been decreasing since 2000. The downturn is primarily due to technological progress and the resulting need to improve the education levels of mostly the young labor force entering the labor market.

Interestingly, the rate of economic activity of the university-educated part of the population aged 15 to 24 is decreasing, while young people who attained upper secondary education are keeping to an approximately constant rate of economic activity.

In 2009, the lowest rate of economic activity was recorded for people with primary education (5.5%), followed by people with high-school (secondary) education (52.1%), while the highest rate was recorded for people with university, i.e., tertiary education (55.5%). In contrast, 2012 shows a marked difference due to the growth of the number of university students, with the rate of economic activity reaching only 32.7%. The quantity of university students at the particular colleges surpasses the quality of education; hence, whether the higher level of education will actually result in an increase in employment of this part of population is questionable. However, it needs to be emphasized that the Slovak population is aging, and 2013 has shown a steady decrease in the number of university students.

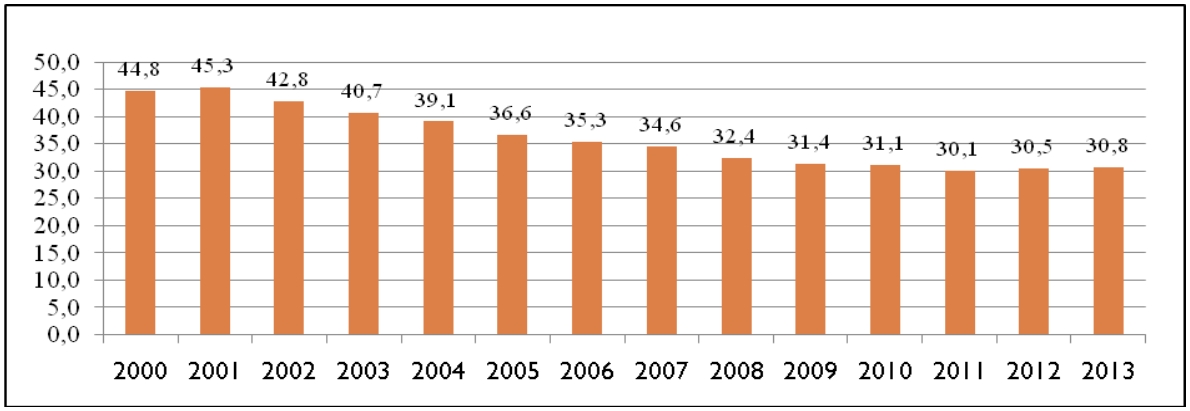

Figure 1. Rate of economic activity of young people (ages 15 to 24), Slovakia, 2000–2013 (Source: own calculations based on EUROSTAT data)

In comparison with other EU member states, Slovakia belongs among the countries with a relatively lower rate of economic activity in the 15 to 24 age group, plotted in yellow in figure 2 (30.8%). The Czech Republic displays a similar rate (31.5%).

Among the countries with the highest rate are Denmark (61.7%), the Netherlands (70.0%), Austria (59.3%) and the United Kingdom (58.7%). On the contrary, the lowest rate of economic activity in young people was recorded by Greece (28.4%), Croatia (28.9%), Italy (27.2%), Luxemburg (25.9%) and Hungary (27.2%), plotted in red.

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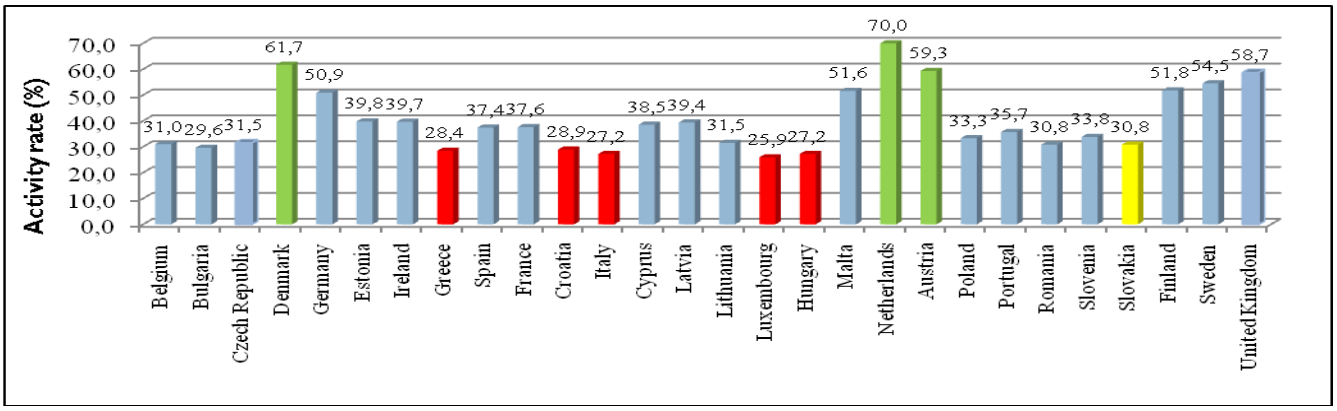

Figure 2. Rates of economic activity of young people (ages 15 to 24) in EU28 countries in 2013 (Source: own calculations based on EUROSTAT data)

2.2 The rate of employment

The global economic and financial crisis has also had an impact on the rate of employment of young people. The EU crisis had erupted in the third quarter of 2008, but its ramifications only became more seriously felt in the first quarter of 2009. (Kolláriková, 2013) Figure 3 shows the development of the Slovak rate of employment, comparing the 4th quarters of years 2008 to 2013. The highest rate of employment among young people was reached in the last quarter of 2008 at 25.8%. A significant downturn of 3.6 pp is apparent in 2009. This was followed by a more moderate decline, with the total decrease in the rate of employment among young people netting 6 pp.

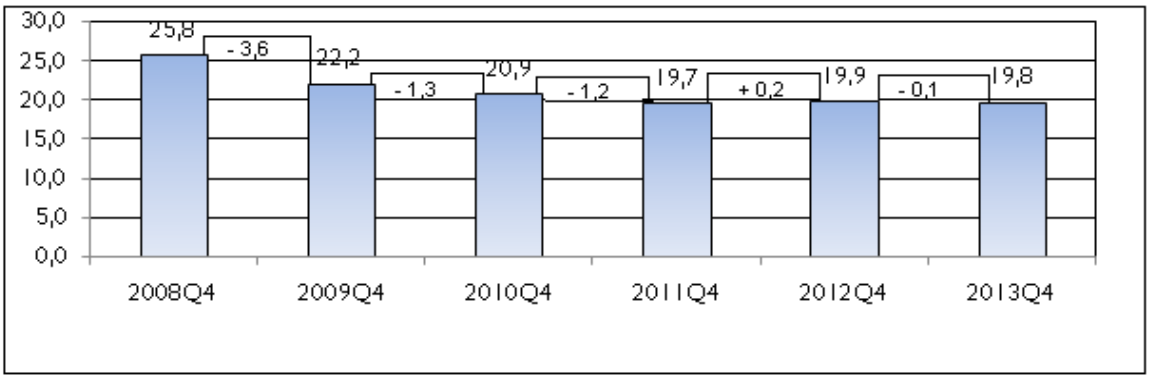

Figure 3. The rate of employment among young people (ages 15 to 24) in Slovakia in the 4th quarter of 2008–2013 (in %) (Source: own calculations based on EUROSTAT data)

Compared with other EU28 member states, Slovakia belongs among the countries with a low rate of employment of young people aged 15 to 24. In 2013, this indicator reached 20.4%. Approximately equal rates of employment were recorded by Belgium (23.6%), Bulgaria (21.2%), the Czech Republic (25.6%), Hungary (19.8%), Poland (24.2%), Portugal (22.3%), as well as several other countries with rates below 26%.

Greece (11.9%), Spain (16.6%), Croatia (14.5%) and Italy (16.3%) display the lowest values, below 17%, plotted in red. In contrast, the rate of employment among young people is the highest in Denmark (53.7%), the Netherlands (62.3%) and Austria (53.8%).

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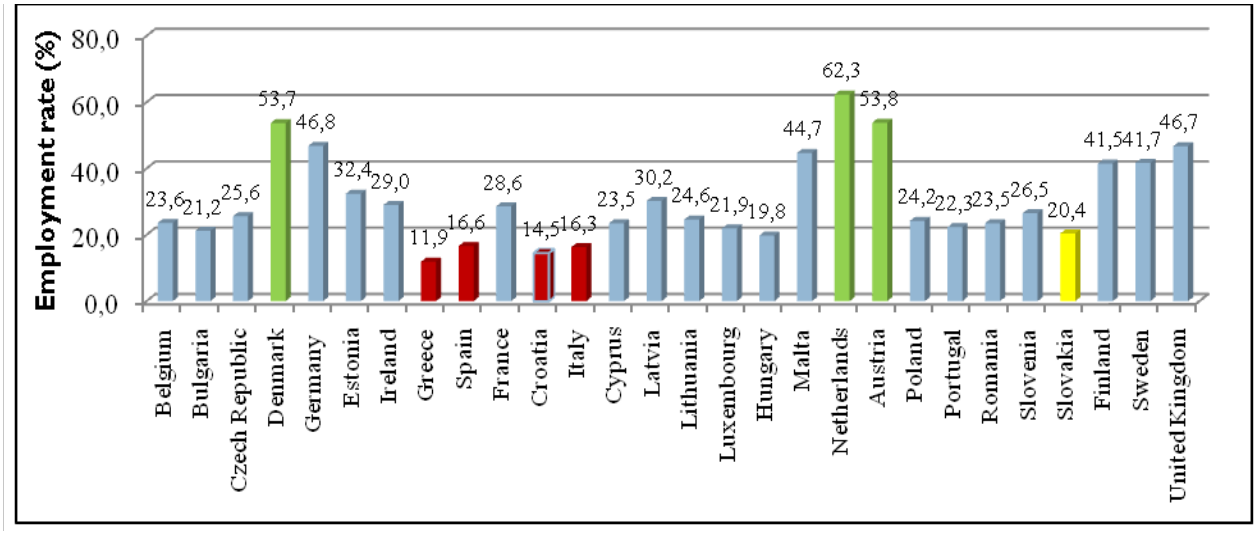
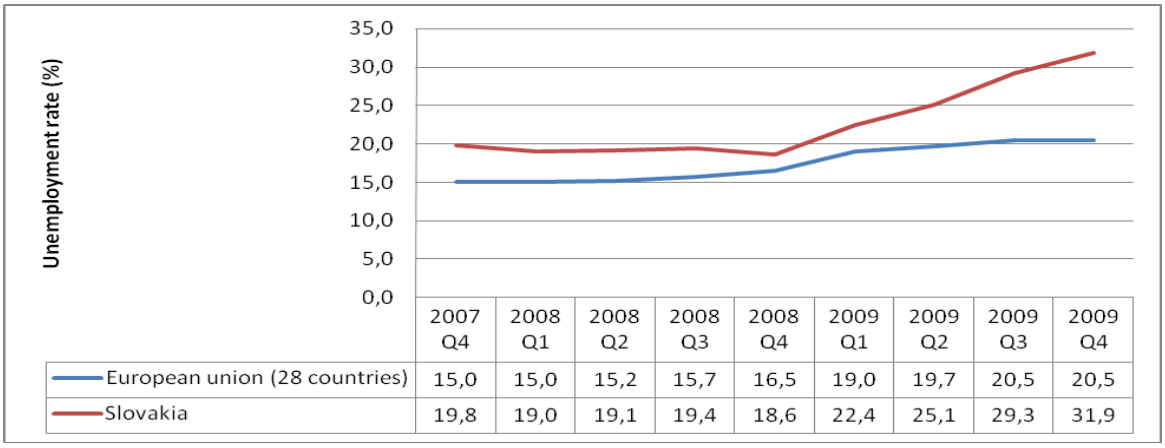


Figure 4. Rates of employment among young people (ages 15 to 24) in EU28 countries, 2013 (Source: own calculations based on EUROSTAT data)

2.3 Rate of unemployment

As was mentioned above, the negative impacts of the economic and financial crisis in the Slovak labor market became clear in the first quarter 2009. This was also the case for the at-risk group of the unemployed young people. In figure 5, we compare the average EU28 rate of unemployment for young people of ages with the corresponding Slovak rate during the outbreak and early stages of the crisis.

In the third quarter 2008, i.e., the period in which the global economic crisis broke out, the rate of unemployment among young people was 18.8%. The lowest rate in Slovakia was reached in the 4th quarter of 2008, amounting to 18.6%. The worsening of the situation only became evident in the first quarter of 2009, as a consequence of the crisis. Unemployment has been growing since. From 2007/q4 to 2009/q4, the rate of unemployment among young people in Slovakia rose by 12.1 pp. On average, the situation in the EU had already worsened in the last quarter of 2008; this amounted to an increase of unemployment among young people to 16.5% from the previous 15.7% in the third quarter of 2008.



	2007 Q4	2008 Q1	2008 Q2	2008 Q3	2008 Q4	2009 Q1	2009 Q2	2009 Q3	2009 Q4
European union (28 countries)	15,0	15,0	15,2	15,7	16,5	19,0	19,7	20,5	20,5
Slovakia	19,8	19,0	19,1	19,4	18,6	22,4	25,1	29,3	31,9

Figure 5. Rate of unemployment among young people (ages 15 to 24) during the outbreak of the economic and financial crisis (Source: own calculations based on EUROSTAT data)

From 2008 to 2013, the rate of unemployment among young people grew to 35.3% (2013/q2), which is an increase by 15.2 pp relative to 2008/q2.

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In a cross-country comparison, Slovakia belongs among states with a higher rate of unemployment among young people, i.e., 33.7% in 2013. The highest rates of unemployment among young people were reached in Greece (58.3%), Spain (55.7%) and Croatia (49.7%). In contrast, the rate of unemployment among young people is the lowest inthe Scandinavian countries – Denmark, the Netherlands, as well as in Malta, Luxemburg, Austria and Germany.

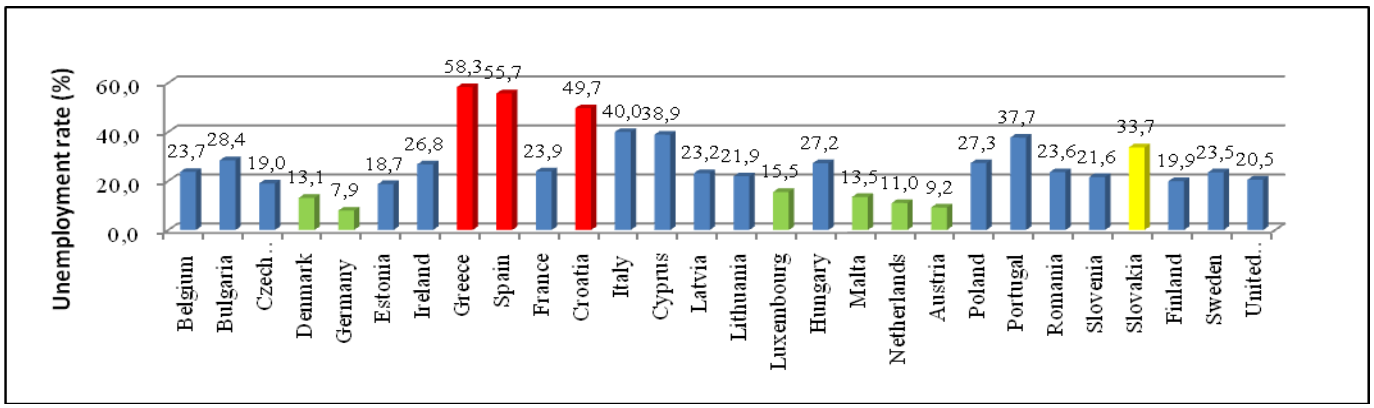

Figure 6. Rates of unemployment among young people (ages 15 to 24) in EU28 countries, 2013
(Source: own calculations based on EUROSTAT data)

2.4 The NEET indicator

The NEET indicator measures the share of people of a particular age group who are neither employed nor preparing for professional employment, in the total part of population belonging to the respective age group.

The numerator of the indicator refers to persons who satisfy the following two conditions:

- they are not employed – i.e., are unemployed or economically inactive according to the International Labor Organization,
- they have not been in training in the four weeks preceding the survey.

According to the education level attained, the value of the indicator is given in percentage points as the share in the total NEET rate for the entire age group.

Figure 7 implies that in almost all of the countries in question, the indicator decreased in 2008. In Slovakia, there had been a significant year-to-year downturn in the indicator from 2002 to 2003. Subsequently, the indicator had a positively falling tendency, reaching the lowest level in 2008 at 11.1%. This was followed by an increase and, in the recent years, by near constancy.

In 2013, the countries with the highest NEET indicator were Bulgaria (21.6%), Spain (18.6%), Italy (22.2%) and Greece (20.6%). The countries with the lowest values of this indicator were the Netherlands (5.1%), Luxemburg (5%), Germany (6.3%) and Austria (7.1%). Slovakia attained better results with this indicator than with the standard rate of unemployment. In 2013, the value of the indicator was 13.7%.

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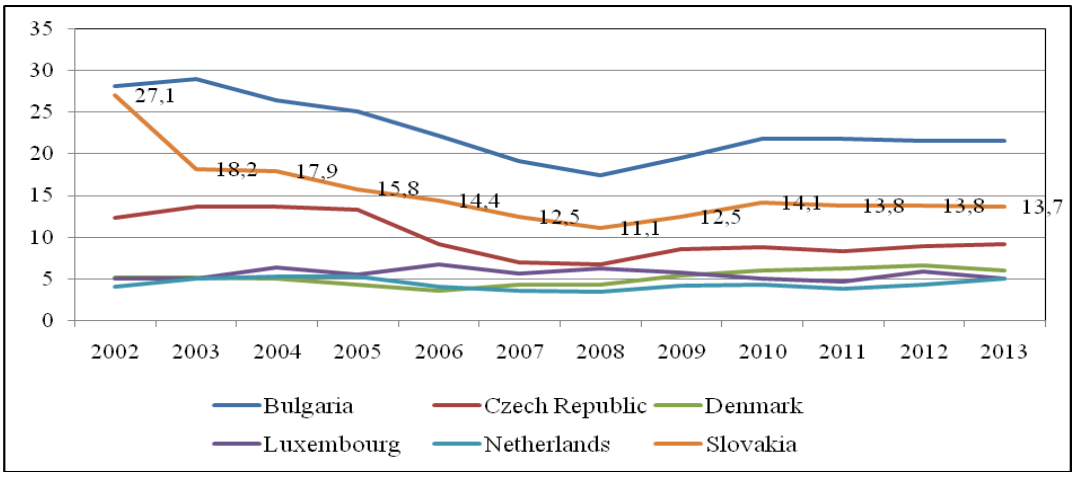

Figure 7. The NEET indicator in selected EU countries, 2012–2013 (Source: own calculations based on EUROSTAT data)

3 Risks and contemporary challenges related to the situation of young people in the Slovak labor market

As part of the present EU priorities, particular attention is paid to finding solutions to unemployment among young people and to increasing their employment and employability. As the analysis in the previous chapter has shown, young people in the Slovak labor market are significantly disadvantaged due to their enduring high rate of unemployment and low rates of employment and economic activity. Among the main risks and negative phenomena in the Slovak labor market which reflect the situation of young people, we class the following:

- unused human capital and a lower level of productivity in the economy,
- highly qualified labor force drain,
- enduring discrepancy between the demands of employers and the competences and skills of young people (Rievajová, 2012),
- issues of education system dropouts,
- increasing duration of the period of transitioning from the school system to the labor market, associated with the absence of income and benefits,
- structural horizontal discrepancy apparent in the lack of particular expert skills,
- lack of transversal skills, ie. general hard skills and soft skills, which are characterized by a high level of transferability (see Balcar, Homolová, Karásek et al., 2011 for a list and definitions of those skills),
- risk of social isolation, marginalization and poverty in young people with low education.

Development of transversal skills, acquisition of elementary knowledge and skills, special attention paid to language learning – all of these are currently emphasized by the European Union in its strategic documents and programs as the main areas and challenges for securing investments in skills.

The adoption of steps toward supporting high-quality traineeships and apprenticeships, as well as a system of guarantees, are some of the EU measures listed in the communication from the

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European Commission of December 2012 named "Moving Youth into Employment" (European Commission, 2012a).

It is becoming increasingly apparent that apprenticeships enable the necessary acquisition of professional practical experience, and they are viewed by young people as part and parcel of their career. They present a host of benefits to both students and graduates, as well as to the companies themselves.

A fitting example of the combination of studies with on-the-job training is the so-called dual system of education, mostly used in apprenticeships. Its successful implementation requires the existence of connections between companies and schools in the country, close participation from the social partners, high-quality knowledge, recognition of qualifications abroad, the creation of a regulatory framework for inclusion of this educational regime into the national and regional education systems.

As implied by the European Commission's document "Rethinking education: investing in skills for better socio-economic outcomes", it is necessary to focus on the building and improvement of entrepreneurial skills in young people, and to put in place a concrete strategy in this area, as well as particular methods of education in schools. With regard to university-level education, the focus should be on the possibility of establishing enterprises (European Commission, 2012b)

4 The area of social economy and social entrepreneurship as opportunities for young people

Drawing on the above, we would like to emphasize the need for developing entrepreneurial skills at the university level. A suitable area which interconnects the social aspect of society with its economic aspect is that of the social economy.

The social economy of Europe is a formidable economic force employing more than 11 million people, which amounts to roughly 6% of all employees in the EU. It has become an inseparable part of the member states' economies, providing various opportunities to young people.

Social economics is a scientific discipline focusing on the "emergence, development, significance and role of the subjects of the social economy, on their relations to other subjects of the economy". It is a new economic discipline and a multi-disciplinary field which seeks relations and dependencies with other economic, anthropological, politico-scientific, psychological, as well as sociological theories (Dohnalová, M. 2006). It presents a framework for the possible functioning of the social economy, while its dimension in a particular country is determined by the respective cultural-historical and economic-political traditions.

We define social economics as a scientific discipline which investigates the social subjects' motives and ways of decision-making about using scarce resources in the production of goods and provision of services, and about their distribution among individuals and social groups while adhering to the principles of social solidarity and justice associated with the equality of opportunities (Pongráczová, E., 2011).

The social economy can be viewed as a part of the economy governed by solidarity. Its primary role is the attainment of social goals; in many cases, it focuses on societal goals. The social economy is a real phenomenon which as of yet lacks precise definition and a legal framework. The ILO defines the social economy as a concept designating enterprises and organizations which produce goods and provide services while pursuing both economic and social aims and fostering solidarity.

The social economy consists of a group of private, formally organized enterprises with autonomous decision-making and free membership that satisfy the needs of their members by producing goods, providing services, insurance or finance. Decision-making and the redistribution of profit or surplus are not determined by ownership of capital or membership dues. Each member has a single vote; democratic and participatory decision-making processes are observed (European Economic and Social Committee, 2012).

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In an area with social issues, social entrepreneurship presents itself as a legitimate new sphere of entrepreneurial activity. According to Jacques Defourny, the chair of the EMES European Research Network, social entrepreneurship is an activity with primarily social goals, where economic surpluses are principally reinvested in activities with the same purpose or in developing the local community, rather than being driven by the need to maximize profit for shareholders or owners (Defourny, J. 2008). The main agent of social entrepreneurship is the social enterprise which takes on different organizational forms.

The European Commission considers as social enterprises those enterprises for which the social or societal objective of the common good is the reason for the commercial activity, where profits are mainly reinvested with a view to achieving this social objective, and where the method of organization uses democratic or participatory principles and focuses on social justice (European Commission, 2011).

The definition of social entrepreneurship is recognized in several member states, but its unified interpretation at the EU-level is not quite possible. It would be suitable to focus on the delineation of the key criteria, especially in the areas of business purpose, profit attainment, commerce and ownership (British Council).

Michel Barnier, Commissioner for Internal Market and Services of the EU characterized social enterprises as "the true embodiment of a smart, inclusive and sustainable growth and innovation, so important today for the European economy. Our new measures will help build such enterprises all over Europe as they secure the financial support especially necessary for their growth in this period of crisis."

With the intent of supporting social entrepreneurship in EU countries, a document named "Social Business Initiative – Creating a favorable climate for social enterprises, key stakeholders in the social economy and innovation" was passed in 2011. It encompasses eleven key measures in three areas designed for improving access to funding, making social entrepreneurship more visible, and improving the legal environment.

The system of funding initiatives within the social economy remains underdeveloped. Hence, the first goal is to improve the access to funding and expanding credit access. Regulation No. 346/2013 of the European Parliament and of the Council created the first legal framework in the area of social enterprise funding, as well as the particular rules applicable to European funds for social entrepreneurship. This regulation is part of the Social Business Initiative „Creating a favourable climate for social enterprises, key stakeholders in the social economy and innovation". It serves to support the development of social investments market and social enterprises which stimulate social change and provide innovative solutions to social issues.

The social economy and its instrument in the form of social entrepreneurship evolve dynamically and offer innovative solutions to contemporary social issues. This sphere of a hybrid form of entrepreneurship which favors social goals rather than profit provides placement opportunities for young people, too: as managers or employees, but also as volunteers participating in the activities of the social enterprise.

To further the development of this sector, it is necessary to emphasize the transfer of information and the exchange of best practices, and to support further education of young people, so that they can utilize their potential and fully participate in the functioning of society. "In European education systems, social entrepreneurship is still under-promoted, although its integration into initial and ongoing training is a prerequisite for reinforcing its credibility" (European Commission, 2011).

Social enterprises emerge in reaction to the new forms of social needs which neither the market nor the state can or, for some reason, are willing to satisfy. They introduce certain particularities into the classical business model for which the future managers and employees in such an initiative need to be prepared.

Volunteers constitute a significant economic force, also participating in the activities of the enterprises in the social economy, where cooperation between paid employees and volunteers may

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take place. As these enterprises often employ disabled people with the goal of social integration, the resulting lower level of productivity can be compensated for by participation from volunteers. In Slovakia, ever more citizens are taking part in voluntary activities, even though the social recognition they receive is still far from the one they deserve. One of the issues in this area is the absence of precise statistical data and of a more complex legislative environment. Slovak volunteers are mostly involved in NGOs, some of which may attain the status of a social enterprise as defined by the Act on Employment Services.

5 Conclusion

Slovakia is among the EU countries with a relatively higher level of unemployment in young people, and a low level of economic activity and employment in people aged 24 and below. With regard to all of the indicators, the situation was the most favorable in 2008, when the first impacts of the economic and financial crisis had not become apparent. The worsening of the situation of young people became clear in the two quarters of 2009 and continued until the stabilization in 2013. However, the rate of unemployment remains one of the highest in the EU.

All of the main risks and negative phenomena associated with these issues in the Slovak labor market have to be dealt with in concert, with the participation of the education system, the employers, the government and the young people themselves.

The area of the social economy creates possibilities for innovative entrepreneurial activities directed at finding solutions to the social issues of our society. This also presents a challenge and an opportunity for young people, which requires coordinated activities in the education system with the purpose of facilitating qualified training with practical uses.

6 Acknowledgement

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DEVELOPMENT OF MATERIAL SUPPORT TO FAMILIES BY NON-INSURANCE SOCIAL BENEFITS AFTER THE YEAR 2000

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Abstract
The aim of this paper is to analyse the development of material support to families by means of non-insurance social benefits after the year 2000. These benefits count among important instruments of social policy especially for their specific roles they play and the social situations they solve. Special attention will be paid to analysing the effects of reforms after 2006, when the nature of these benefits changed significantly. Based on the comparison of the level of social expenditures on family and child in relation to the GDP in the EU, using the ESSPROS methodology, some ideas are then outlined that were motivations for supporting the family in dealing with standard situations.

Keywords
Family, Family Policy, Non-insurance Social Benefits, States Social Support, Social Assistance in Material Need, Social Reforms.

JEL Classification
E61, E63, I38, J18.

1 Introduction

To accomplish the objectives of their social policies, governments and parliaments of particular countries can use a range of social-policy instruments (Krebs, 2011). Social benefits are one of the most significant instruments. While the amount of benefits based on the social insurance principle should reflect past merit of individuals, the amount of the so-called non-insurance social benefits usually reflects a social-policy focus of a particular government and parliament. In the early 1990s, in the context of social and political changes, the Czech Republic started a wide-ranging transformation of its social system. The first key regulations were adopted as early as in 1991 (law on living minimum, law on social need) and comprehensive regulations of new social systems were adopted at the end of the first half of the 1990s (law on supplementary pension insurance, law on state social support, law on pension insurance); concepts of other systems had been discussed for a long time and laws regulating these systems were adopted not earlier than in 2006 (law on sickness insurance, law on social services, law on assistance in material need).

The aim of this paper is to analyse the development of non-insurance social benefits after the year 2000 with a special focus on their development after 2006, when their nature changed significantly, and based on that to outline potential measures that can help addressing topical problems of families that are beneficiaries of this type of social benefits.

2 Development of social security expenditures in 2000–2013

When characterising the problems of particular social systems in our country it is necessary to start from the analysis of the factors affecting nature of each social transfer. In this respect, especially the following aspects should be taken into consideration:

- Influence of demographic development,
- Impact of economic and social factors,
- Influence of socio-political determinants, including the international influence (Průša, 2001).

Throughout the years since 1990, social security expenditures have been significantly growing, when most markedly this fact has been caused by changes in compensations adopted in connection with a growth in costs of living.

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Table 1. Development of social security costs in the Czech Republic, development in expenditures on non-insurance social benefits and development of their share in the GDP in 2000 –2013

	Social security expenditures (CZK million)	Social security expenditures as a percentage of the GDP (%)	Total expenditures on non-insurance social benefits (CZK million)	Expenditures on non-insurance social benefits as a percentage of the GDP (%)
2000	279,017	12.29	43,531	1.92
2001	300,540	12.27	44,381	1.81
2002	320,731	12.49	46,656	1.82
2003	334,083	12.43	46,439	1.73
2004	335,904	11.47	53,664	1.83
2005	355,715	11.42	47,121	1.51
2006	387,221	11.55	48,812	1.46
2007	422,911	11.55	69,260	1.89
2008	438,372	11.39	65,425	1.70
2009	468,462	12.53	65,337	1.75
2010	472,490	12.52	66,083	1.75
2011	481,817	12.65	60,979	1.60
2012	490,275	12.86	63,012	1.65
2013	498,817	12.91	69,241	1.78

Source: Development of main economic and social indicators of the Czech Republic in 1990–2013 (Bulletin No. 29), Prague, RILSA, 2014. ISBN 978-80-7416-147-6

The above-mentioned table shows that the share of social security expenditures in the GDP has been decreasing in the long run, when the growth in this share after 2008 has been caused not by an increase in expenditures on social security, but by a decrease in the GDP due to the economic crisis.

Of the total volume of social security expenditures, the non-insurance social benefits currently account for circa 9%, when this share dropped by about one quarter since 2000. The decrease in the share of expenditures on non-insurance social benefits in total expenditures on social security was basically continuous throughout the years, except for 2004 a 2007, when this share grew slightly as a consequence of payment of a one-time contribution to dependent children and pensioners (in 2004), a marked increase in the parental allowance level and introduction of a new social benefit – care allowance (in 2007).

Development in the structure of expenditures on non-insurance social benefits is shown in Table 2.

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Table 2. Development in the structure of expenditures on non-insurance social benefits in 1990–2012

	Total expenditures on non-insurance social benefits	State social support and other state support	of which: Expenditures on social need/assistance in material need (million CZK)	Pecuniary benefits depending on status of health	Care allowance
2000	43,531	31,855	9,807	1,869	.
2001	44,381	32,178	10,152	2,051	.
2002	46,656	33,701	10,798	2,157	.
2003	46,439	32,178	11,882	2,379	.
2004	53,664	39,206	11,987	2,471	.
2005	47,121	32,954	11,623	2,544	.
2006	48,812	34,050	11,995	2,767	.
2007	69,260	48,532	3,287	2,833	14,608
2008	65,425	41,883	2,794	2,496	18,252
2009	65,337	41,082	3,089	2,469	18,697
2010	66,083	40,791	3,882	1,811	19,599
2011	60,979	36,014	4,982	1,899	18,084
2012	63,012	35,486	7,751	1,384	18,391
2013	69,241	37,282	10,510	1,904	19,545

Source: Development of main economic and social indicators of the Czech Republic in 1990–2013 (Bulletin No. 29), Prague, RILSA, 2014 ISBN 978-80-7416-147-6

Several interesting tendencies can be concluded from these data:

- After introduction of the state social support system (in 1995), the volume of expenditures on these benefits grew regularly (particularly as a consequence of their automatic adjustments in connection with an increase of the living minimum level); however, since 2008 the volume of expenditures has been decreasing especially as a result of significant tightening of eligibility criteria for certain social benefits (particularly, the volume of expenditures on child allowance, social allowance and maternity grant), the growth of expenditures in 2013 was caused primarily by increased expenditures on housing benefit;
- The volume of social care expenditures for people with disability has been growing throughout the given years, increased by ca. 50% until 2007; whereas subsequently the volume of these benefits dropped to about one half of the 2007 level in connection with the new system of social service financing (introduction of care allowance), the increase in expenditures in 2013 is likely caused by improved adaptability for people with disabilities to "meet" the criteria of the new legal regulation;
- Throughout the period under review (until 2005), the volume of expenditures on social need benefits has been increasing;
- After adoption of the law on assistance in material need, the volume of comparable expenditures decreased ca. four times; subsequently, however, their volume has been growing, when the most marked growth can be seen in 2012 and 2013, when expenditures on both living allowance and housing supplement increased significantly;
- Ca. 30% of expenditures on non-insurance social benefits are represented by expenditures on care allowance;
- Despite the long-term increase in the volume of expenditures on non-insurance social benefits, their share in the GDP has been decreasing in the long run, when an exception to this trend can be seen particularly in 2007, when as a result of the change in eligibility criteria for parental allowance, its radical increase and introduction of care allowance, the percentage of expenditures on non-insurance social benefits grew by 0.43 p.p. in comparison with 2006;
- The increase in the percentage of expenditures on these benefits in 2012 and 2013 was caused by effects of cost-saving measures of the governments after 2006, when adoption of the law on

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assistance in material need and cancellation of social supplement resulted in a rapid growth of the unemployment rate in 2009–2010, while subsequently its level stabilised, and deregulation of rent resulted in an increase in housing costs and mandatory spending grew to the 2010 level (Analysis, 2013).

3 Comparison of social expenditures on family and child in relation to the GDP in EU countries, using the ESSPROS methodology

The level of social protection in the EU countries is compared by means of the European System of Integrated Social Protection Statistics (ESSPROS) which was developed in the 1970s by Eurostat jointly with representatives of the Member States of the European Union. This system monitors 8 social events that are addressed in particular social protection systems:

- Sickness/health care,
- Disability,
- Old age,
- The bereaved,
- Family and children,
- Unemployment,
- Housing,
- Social exclusion that is not classified elsewhere (Information, 2011).

In 2010, the EU average share of social expenditures in the GDP was 29.4%, when the Czech Republic ranked twentieth among the countries. The share of social expenditures in the GDP reached the level of 20.15% in our country. The highest share of social expenditures was in France (33.8%), whereas the lowest one in Rumania (17.6%). Detailed data are in Table 3.

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Table 3. Share of social expenditures in the GDP in EU countries in 2010

	Social expenditures as a percentage of the GDP					
	Total		Family and child expenditures		Housing expenditures	
Year	2001	2010	2001	2010	2001	2010
EU	26.68	29.37	2.08	2.26	0.54	0.57
France	29.62	33.77	2.49	2.66	0.86	0.82
Denmark	29.23	33.26	3.76	4.03	0.66	0.75
Netherlands	26.49	32.06	1.09	1.24	0.35	0.38
Germany	29.74	30.68	3.15	3.20	0.31	0.63
Finland	25.01	30.56	2.95	3.30	0.29	0.52
Sweden	30.43	30.44	2.76	3.11	0.61	0.46
Austria	28.60	30.35	2.92	3.07	0.11	0.12
Belgium	26.31	29.90	2.10	2.19	0.04	0.22
Italy	24.81	29.88	0.97	1.31	0.01	0.02
Ireland	14.79	29.59	2.05	3.66	0.33	0.33
Greece	24.30	29.11	1.58	1.80	0.66	0.38
UK	26.88	27.98	1.75	1.87	1.43	1.51
Portugal	21.87	26.98	1.08	1.46	0.00	0.00
Spain	19.71	25.73	0.92	1.51	0.17	0.22
Slovenia	24.38	24.80	2.12	2.16	0.00	0.01
Hungary	19.47	23.07	2.47	2.92	0.48	0.53
Luxembourg	20.88	22.70	3.26	3.97	0.21	0.30
Cyprus	14.92	21.65	1.22	2.12	0.54	1.12
Croatia	.	20.82	.	1.65	.	0.02
Czech Rep.	18.68	20.15	1.49	1.33	0.11	0.11
Malta	17.47	19.80	1.36	1.22	0.13	0.16
Lithuania	14.70	19.09	1.18	2.18	0.00	0.00
Poland	20.97	18.95	0.98	0.79	0.19	0.06
Slovakia	18.94	18.58	1.51	1.76	0.07	0.00
Estonia	13.00	18.08	1.47	2.28	0.08	0.05
Bulgaria	.	18.06	.	2.00	.	0.01
Latvia	14.75	17.84	1.46	1.49	0.09	0.14
Rumania	12.78	17.58	1.50	1.68	0.00	0.02

Source: http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tps00098 &plugin=1; http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do

The detailed data on development in the share of social expenditures in the GDP in the EU countries in 2001–2010 show that:

- Until 2004, the highest share of social expenditures had been in Sweden that was subsequently replaced by France. Until 2007, the indicator amounted to ca. 30–31%, when in 2009 the economic crisis made this share grow by ca. 2 percentage points;
- In the respective period of time, this indicator was at the lowest level in Estonia, Rumania and Latvia and as a consequence of the economic crisis, the share of social expenditures in the GDP in these countries grew by ca. 4–5 percentage points;
- Throughout the years under review, the share of social expenditures in the GDP in the Czech Republic was lower than the EU average, when this indicator level was lower even when

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compared with the countries which, compared with the other EU countries, are currently undergoing the deepest crisis (Greece, Italy, Spain, Portugal);

- A simple comparison of this indicator level implies that the highest impact of the economic crisis was in Ireland, where in 2001–2010 the share of social expenditures in the GDP doubled (from 14.8% in 2001 to 29.6% in 2010).

In terms of the range of social situations that are being addressed by non-insurance social benefits in the Czech social system, it is pertinent to compare developments in expenditures earmarked for families and children and for housing within the EU.

In 2010, the EU average share of social expenditures on family and child in the GDP was 2.26%, while the Czech Republic is the last but five in the EU country ranking, when the share of social expenditures of this type in the GDP in our country reached the 1.33% mark. The highest share of social expenditures of this type was reached in Denmark (4.03%), whereas the lowest one in Poland (0.79%).

The detailed data on development in the share of social expenditures on family and child in the GDP in the EU countries in 2001–2010 show that:

- Throughout the period under review, except for the years 2008–2009, the highest level of this indicator was reached in Denmark, being basically constant until 2008, growing by ca. 0.4 point in 2009, while in 2008 and 2009 this indicator was at the highest level in Luxembourg;
- Early in the years under review, until 2002, the lowest level of this indicator was in Spain (ca. 0.9%), however, since 2003 the lowest has been in Poland, where, on top of it all, it has been ever decreasing except for the two recent years;
- Throughout the period of time, the Czech Republic was decreasing in this notional ranking except for 2007, when thanks to new measures, especially related to parental allowance, it reached the end of the second third of the countries under review; nevertheless, subsequent reform measures caused that in 2010 the share of social expenditures on the family and child in the GDP was only 1.33%, being the last but five among all the EU countries;
- Throughout the years under review, the share of social expenditures earmarked for the family and child in the GDP was lower than in the EU, usually hovering around the level of most of the EU countries that are in the deepest economic crisis (except for Ireland).

In 2010, the EU average of social expenditures earmarked for housing in the GDP accounted for 0.57%, while the level of this indicator in the Czech Republic accounted for 0.11%. The highest share of social expenditures of this type was reached in the United Kingdom (1.51%), whereas the lowest one was in Portugal and Lithuania, where the value of this indicator after rounding was 0.00%.

The detailed data on development in the share of social expenditures on housing in the GDP in the EU countries in 2001–2010 show that:

- Throughout the period under review, the highest level of this indicator was reached in the United Kingdom (ca.1.5%), in Denmark and in France (ca. 0.7–0.8%);
- A significant increase in this indicator level in recent years was achieved in Cyprus (from 0.5% in 2006 to 1.1% in 2010);
- In the Central and Eastern Europe, the highest levels of this indicator are achieved in Hungary (in 2010 it was 0.5%);
- In the long term, the share of social expenditures on housing ranks among the lowest ones of all the EU countries (in 2010 it reached the 0.1 per cent mark).

4 How to support families in dealing with standard situations?

In the opinion of some authors (Beran, 2013), the present tax and social system in our country is set in its interactions in a way that it demotivates low-income households from working and high-income ones from having children. All the new measures that can be implemented in the following years should not 'narrowly' focus 'only' on the family policy, but it should be targeted with a view to the

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fact that family policy is an integral part of the entire social system. Therefore, it should not focus only on protection of low-income households, but it should be targeted at support of families with medium and high incomes when dealing with standard situations (Analysis, 2006).

Family policy needs to be understood and designed not as a residual area, as it was the case up to now, but as a growth-promoting programme of long-term investments in human capital. Family policy and social policy are not identical. While social policy "deals with a problem", family-oriented policy is an investment in human capital of the country (Analysis, 2013). These are the long-term investments in which the Czech Republic is lagging behind comparable EU countries.

In this respect, it is necessary to bear in mind that "the best pension reform is a good population policy" (Krebs, 2013). Social policy should probably become more detached from addressing the problem of poverty, which can be addressed by spending relatively low costs in relation to the GDP and relates to a relatively small number of citizens, but it should focus on the families that use already a very limited (or no) state support and their taxation is higher than this state support. These families pay all their needs by their own efforts and it pushes them down to those who are supported by the state in the same expenditures. This is obviously unfair and degrades the outcomes of their efforts.

Generally, however, it must be noted that medium-income families cannot be supported first and foremost via pecuniary benefits. The reason is that it is a numerous group the efficient support of which would be very expensive.

It can be concluded that the problem of medium-income families is not a lack of income, but expensiveness of quality care for children. These families pay all the costs fully at a minimum or no support and their disposable income in the end is near the income of those who are supported by social systems because of their low income. Concurrence of work generating medium income and family duties results in a number of stressful situations. Therefore, support of this group should be targeted so that quality care for children is appreciated and given an economic advantage. This can be achieved first by special steps that will affect this very income group and second, such blanket social measures will be adopted that will also relate to this group.

In terms of support of medium-income families, the support should also focus on dealing with the situation of the family when one of its members loses employment. The existing level of support in unemployment means practically an immediate fall of the family into the situation of material need and such family becomes dependent on benefits granted from this system as well. Long-term deficit of income restricts the family's potential to pay non-essential costs, but gradually also the costs of education, culture, sport, social life and creates a dangerous situation often even resulting in social exclusion. Nevertheless, they are decent families who have work as a source of income and as a social standard. Such a family usually does not talk about its financial situation and thereto related problems publicly, therefore consequences of such situation could be more dangerous. The situation of these families can be substantially different from the situation of a family that due to low success in the labour market has a lower standard of living permanently. This way of slump cannot be compensated by benefits from the system of assistance in material need. It can thus be concluded that it would be good to consider designing such a benefit that would combine an unemployment benefit and a family support the level of which would take into account not only the previous income, but also real needs of the family. In this sense, therefore, some differentiation should be made of the support to those who lost their job and those who did not work and are beneficiaries of the system of assistance in material need (Analysis, 2006).

Several suggestions can be made that would follow these principles and that could be implemented with a contribution of non-insurance social benefits:

- To unify the level of tax abatement per taxpayer and tax abatement per child so that the final impact is budget-neutral;
- To introduce the cost principle (common for entrepreneurs) in the family taxation system so that for taxation purposes parents could deduct significant amounts from their income that they

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invested in care for children, their education or hobbies (e.g. purchase of computer, internet connection, foreign language training, school fees);

- To ease parents' payments for expensive materials and equipment related to school attendance, education and vocational training by introducing grants for a purchase of textbooks, educational aids, materials and equipment and provide them via schools, using quantity discounts and public tender;
- To create a programme of non-cash vouchers for families with children which can be used for paying for visits of educational, cultural and free-time activities (vouchers accounts would be settled with the state based on provably provided service) in order to avoid cutting 'non-essential' costs restricting development of children's talents;
- To promote pro-family social policy of employers (e.g. company kindergartens, care for employees' children in their free time, company shops),
- To extend the basic length of leave for parents with children (to take care for children's school holiday time);
- To support such families that invest in insurance systems for their children (to invest a certain part of income in insurance systems is extremely socially important and this positive activity needs to be encouraged);
- To support such families that legally employ a domestic help (job creation for people in pre-retirement age – groups of people with high unemployment);
- To facilitate a start and existence of family companies (such tax and labour-law solutions would be good that would give an advantage to the companies in which they transfer family business know-how);
- To promote development in the field of social services (it can be assumed that the increasingly greater role will have to be played by social and asylum housing, prevention services in general, secondary labour market and activities of non-governmental entities that are less restricted in searching clients and implementing non-mandatory support than the legally limited state),
- To analyse the overall housing situation and housing policy of the state (cost development must be confronted with development of incomes of the population).

  At the outlining of these topics it must be taken into consideration that time of economic difficulties bring through a real need of increased costs in the social sphere. Adoption of cost-saving measures in such time is not only unfruitful, but also counter-productive. Social policy which includes significant material support of families and children by non-insurance social benefits plays an important preventive role permanently, particularly in difficult times (Víšek, 1993). In such situation, it is impossible to set a goal for cutting costs in this area, but it must be ensured that development and efficiency of these costs are controlled effectively.

5 Conclusion

The analysis of development in non-insurance social benefits in the Czech Republic after 1990 has brought some key findings that constitute important impulses to start professional debates on the overall concept of family policy in our country, on position of particular instruments the family policy has available and on their mutual harmonisation. In the past, adequate attention was not paid to these issues, therefore, the Czech Republic is nowadays in the situation when it needs to adopt and carry out such activities rapidly that will help increase social and economic prosperity of the family in all the spheres of social life.

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THE ROLE OF BUSINESS CYCLE IN SHAPING INTERNATIONAL MIGRATION

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Abstract
Migration has always been an important contributor to population dynamics in many nations through history, but it has become particularly relevant lately for the future demographic structure of the US, Europe and other OECD countries as fertility rates are now below replacement rates in those areas and the sustainability of generous welfare programs is under strain. Understanding what factors explain migration trends and the changing composition of immigrants is crucial from the policy makers' point of view. In particular, it is important to identify different motives that drive the migration flows. Recent economic crisis surely influenced migration decisions and consequently surely shaped migration flows and the composition of migrants. This paper examines the importance of business cycle in international migration by using a unique dataset on immigration flows and stocks of foreigners in 42 OECD destination countries from all world countries over the period 1980–2010. Our preliminary results show that as expected migration rates responds to the conditions of business cycles: they decrease with crises in the host country economics and increase with crises in origins.

Keywords
Business Cycle, Economic Crisis, Migration, OECD Countries.

JEL Classification
F22, J61, O15.

1 Introduction

Migration has always been an important contributor to population dynamics in many nations through history, but it has become particularly relevant lately for the future demographic structure of the US, Europe and other OECD countries as fertility rates are now below replacement rates in those areas and the sustainability of generous welfare programs is under strain. Understanding what factors explain migration trends and the changing composition of immigrants is crucial from the policy makers' point of view. In particular, it is important to identify different motives that drive the migration flows. The classical explanation is that higher relative real wages and more attractive or abundant employment opportunities in the destination countries push migrants out of their countries of origin in search of better lives (Sjastaad, 1962; Harris and Todaro, 1970; Borjas, 1987). In addition to labor market differences, there are many other economic and non-economic factors that play a role in the migrant's decision-making. Those factors include the existence of networks of family and friends (Munshi, 2003; Pedersen, Pytlikova and Smith, 2008), cultural and linguistic distance (Adsera and Pytlikova, 2012), growing restrictiveness of immigration policies (Mayda, 2010; Ortega and Peri, 2012), climate change (Feng, Krueger and Oppenheimer, 2010; Cai, Feng, Pytlikova and Oppenheimer, 2013), differences across countries in immigrants' rights (Palmer and Pytlikova, 2013), as well as the desire for new experiences and adventure or pure random events that drive migrants out of their homes. Besides, the economic cycle – in particular the phases of economic growth and crisis -, and the environmental pollution surely shape migration flows and the composition of migrants. Yet, despite a large body of theoretical and empirical studies on the determinants of international migration, the latter factors are not well understood and remain on the whole an *under-explored* research area. This is mostly due to the limited data available to date to study those crucial factors appropriately, a constraint that this project intends to address.

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2 Literature on the determinants of migration

There are a variety of theories to explain why, when, and where people migrate. The classical explanation is that relative real wages and employment opportunities are some of the main determinants of the international migration. In addition, there are many other economic and non-economic factors that play a role in the migration decision-making, like e.g. cost of migration, cultural and linguistic distance, political pressures, conflicts and wars, networks of family and friends, educational pulls, social benefits, tax pressures, immigration policies, climate change and random effects such as desire to experience adventures or pure luck (Adams, 1993; Clark et al., 2007; Massey et al., 1993; Pedersen, Pytlikova and Smith, 2008). Last but not least, the growing restrictiveness of immigration policies in many OECD countries and their changing orientation towards some specific migration channels surely shape the migration flows and the composition of immigrants (Mayda, 2010; Ortega and Peri, 2013; Pytlikova, 2014). Below we provide a discussion of the role of particular migration determinants based on the existing theoretical and empirical contributions to the literature on determinants of international migration.

The economic differences between destinations and origins belong to the well-established drivers of migration in the theoretical ad empirical literature. The first contributions to the literature on determinants of migration found in neoclassical economics, stress *differentials in wages* as a primary determinant of migration (Hicks, 1932). The "human capital investment" theoretical framework (Sjaastad, 1962) adds *migration costs* to the model of migration, so that a person decides to move to another country only if the discounted expected future benefit of moving is higher than the cost of migration. The "human capital investment" model has been further adjusted by including the probability of being employed in each location (Harris and Todaro, 1970). In aggregate terms, *the differentials in wages and probability of unemployment are typically proxied by GDP per capita levels or GNP levels and GDP growth or unemployment rates* in destination and source countries, respectively.

In empirical studies, the destination and source country income enters regressions usually in the form of income ratios (Hatton and Williamson, 2002, 2003 and 2011; Hatton, 2005; Clark, Hatton and Williamson, 2007; Hanson and McIntosh, 2010; Mitchell, Pain and Riley, 2011), or as GDP per capita for destination and source countries separately (Karemera, Oguledo, and Davis, 2000; Pedersen, Pytlikova and Smith 2006 and 2008; Mayda, 2010; Belot and Ederveen, 2011) or as income differential (Vogler and Rotte, 2000; Ortega and Peri, 2009; Simpson and Sparber, 2010; Belot and Hatton, 2011). Some studies add also origin country GDP growth rates such as Hatton and Williamson, 2003 and Naudé, 2010. Studies using income ratios and differentials tend to agree that the income differentials play an important role in driving migration. Decomposing between destination and source country income levels separately uncovers that the positive pull income factor has much stronger effect than the push factor of income in origins. In particular, the effect of GDP per capita in the source country on migration flow appear to have mixed effect on migration: some studies find a negative effect of home income on migration (Karemera, Oguledo, and Davis, 2000; Pedersen, Pytlikova and Smith, 2008; Belot and Ederveen, 2011), whereas some studies find insignificant effect of income in origins on migration, e.g. Mayda (2009). The effect of GDP per capita in the source country on migration flows may be mixed since poverty constrains the ability to cover costs of migration. For instance, assessing the impact of income on the immigration decision in the U.S., Clark, Hatton and Williamson (2007), discovered that a 10% increase in the source country income would reduce emigration by 4.4%. However, they also find the importance of income and poverty, because an increase in income generates an increase in migration, depending on the initial level of poverty in the sending country. Some studies dig deeper into the issue by including a non-linear measure of origin country income and find that source country's GDP per capita has an inverted U-shape effect on migration, e.g. Vogler and Rotte (2000), Chicquar and Hanson (2005), Hatton and Williamson (2005), Pedersen, Pytlikova and Smith (2008), Naudé, (2010) and Docquier and Rapoport (2011), Adsera and Pytlikova, (2014). A study by Belot and Hatton (2011) interact

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share in poverty and distance (as a proxy for direct migration costs) and find that poverty constraint indeed bite harder where migration costs are higher. The evidence is supported also by studies using micro-data, for instance Chicquar and Hanson (2005) find that immigrant men are drawn disproportionately from the middle and upper middle of Mexico's wage distribution rather than from the bottom half. They find a U-shape patter of the effect of home income on migration, i.e. low-wage and high-wage individuals appear least likely to migrate to the United States.

In addition to the economic determinants, Borjas (1999) argues that generous social security payment structures may play a role in migrants' decision making. The idea behind this is that potential emigrants must take into account the probability of being unemployed in the destination country. The damaging consequences of unemployment may be reduced with the existence of generous welfare benefits in the destination country. Such welfare transfers constitute basically a substitute for earnings during the period devoted to searching for a job. However, empirical studies are not conclusive in this respect; see e.g. Zavodny (1997), Pedersen, Pytlikova and Smith (2006, 2008), among others.

The costs of migration are also an important part of migrants' decision making. They include not only the immediate out-of-pocket expenses, but also psychological costs connected to moving to a foreign country and leaving behind family, friends and a familiar environment. Costs typically increase with the physical distance between two countries. However, changes and improvements in communication technologies and declining transportation prices may have reduced the relevance of physical "distance" during the latest decades. Nevertheless majority of existing empirical studies confirms a strong negative effect of distance on migration. Further, network effects may also counteract the deterrent effect of "distance". Through "networks" potential migrants receive information about the immigration country - about the likelihood of getting a job, economic and social systems, immigration policy, people and culture. This facilitates the move and the adaptation of new immigrants into the new environment (Massey et al. 1993; Munshi, 2003). Network effects may also help to explain the persistence of migration flows; see e.g. Carrington, Detragiache and Viswanath (1996), Bauer, Epstein and Gang (2007), Heitmueller (2006) and Clark, Hatton and Williamson (2007). Empirical evidence has shown that migrant networks have a significant impact on sequential migration, see e.g. Pedersen, Pytlikova and Smith (2008), who also show that networks are more important to people coming from low-income developing countries compared to migrants originating from high-income countries. The latter is also supported by McKenzie and Rapoport (2010), Beine, Docquier and Ozden (2011) and Beine and Salomone (2012) who find that diasporas explain a majority of the variability and selection in migration flows.

Additionally, the linguistic and cultural distance between source and destination country is as well important. The more "foreign" or distant the new culture and the larger the language barriers are, the higher are the migration costs for an individual and the less likely it is that the individual decides to migrate, holding all other factors constant (Pedersen, Pytlikova and Smith, 2006 and 2008; Adsera and Pytlikova, 2014; Belot and Ederveen, 2011)

Besides, immigration policies and changes in these policies over time strongly contribute to shape migration flows as their impact among individuals from different source countries for each potential receiving country may differ (Clark, Hatton and Williamson, 2007; Mayda, 2009; Ortega and Peri 2009). Furthermore, conflicts and political pressures are found to a role in driving international migration Pedersen, Pytlikova and Smith, 2008; Adsera and Pytlikova, 2014, Hatton and Williamson, 2011, in particular an important driver of refugee flows (Hatton and Williamson, 2003; Naudé, 2010). Finally, negative effects of continuing climate change and natural disasters surely influence migration (Naudé, 2008, Reuveny and Moore, 2009; Feng, Krueger and Oppenheimer, 2010; Marchiori and Schumacher, 2011; Cai, Feng, Pytlikova and Oppenheimer, 2014).

Empirically, previous studies on the determinants of migration relied on analyses of migrants moving to one destination from one source country (Massey and Espinosa, 1997; Fussell and Massey, 2004; Feng, Krueger and Oppenheimer, 2010) or to one destination from multiple source countries (Vogler and Rotte, 2000; Karemera, Oguledo, and Davis, 2000; Hanson and McIntosh 2010; Chicquar

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and Hanson 2005; Clark, Hatton and Williamson, 2007; Bauer, Epstein and Gang, 2007; Mitchell, Pain and Riley, 2011; Hatton and Williamson, 2002, 2003 and 2011; Hatton, 2005; Simpson and Sparber, 2010). These studies have the advantage of focusing in depth on the particular qualities of the countries involved, and they are often able to utilize detailed data by education, gender and age, or even at the level of individual migrants or households. Expanding the scope to multiple pairs of sending and receiving countries, however, increases the quantity of data and allows for more general results, and leads to models that may better reflect the choices migrants face. A number of recent studies have taken this approach: Pedersen, Pytlikova and Smith, 2006 and 2008; Mayda, 2009; Ortega and Peri, 2009, Reuveny and Moore, 2009; Keuntae and Cohen, 2010; Belot and Ederveen, 2011; Belot and Hatton, 2011; Beine, Docquier and Ozden, 2011.

There is also a difference among those existing studies in the choice of model and dependent variable. The choice depends typically on the kind of data the authors have in hand, i.e. either migration flow data or foreign population stock data, rarely the studies have both, flow and stock, data[1]. Majority of the existing studies used gross migration flows and defined the dependent variable in the form of ratio, i.e. flows per source country population (Vogler and Rotte, 2000; Hatton, 2005; Pedersen, Pytlikova and Smith, 2006 and 2008; Clark, Hatton and Williamson, 2007; Mayda, 2009; Feng, Krueger and Oppenheimer, 2010; Mitchell, Pain and Riley, 2011; Hatton and Williamson, 2002 and 2011; Adsera and Pytlikova, 2014); whereas some studies used flows of migrants in levels as their dependent variable (Belot and Ederveen, 2011; Keuntae and Cohen, 2010; Karemera, 2000; Ortega and Peri, 2009; Simpson and Sparber, 2010 and Reuveny and Moore, 2009). Some studies used foreign population stock data for their analyses, and defined their dependent variable as a net flows (difference in stocks) per source country population (Beine, Docquier and Ozden, 2011; Naude, 2010; Hatton and Williamson, 2003; Hatton, 2005) or stocks as their dependent variable (Ortega and Peri, 2009).

3 The role of business cycle

The extensive literature on the determinants of migration is does not however take into account fluctuations of business cycles or uncertainty about future macroeconomic conditions. As mentioned above, in the traditional models, potential migrants mostly make decisions on the basis of long-term factors mentioned above: differentials in long-term income levels, living conditions, social systems and other demographic, cultural economic, geographic and social conditions. Yet, macroeconomic instability in the form of business cycle fluctuations associated with an increase in unemployment rate can affect bilateral migration flows. This accompanying phenomenon of crises can affects not only short-run but also long-run determinants of migration flows (Bertoli, Brücker, and Fernández-Huertas Moraga, 2013). According to the recent studies (e.g. Elsner and Zimmermann, 2013), the short-run economic factors (business cycles fluctuations and employment prospects) affect the level of bilateral migrant flows. Their analyses clearly show an increase in migration from countries that were hit by the crisis.

Potential immigrants face the location-decision problem and form expectations on their future income and therefore, they assess the *current* and *future* economic conditions both at origin and across some alternative destination countries. *Current economic conditions* are represented by variables such as lagged unemployment rates and GDP per capita growth. *Future economic conditions* (expectations about future economic prospects at origin held by potential migrants) are represented by variable in the form of the yields on the secondary market of government bonds with a residual maturity of 10 years (Bertoli, Brücker and Fernández-Huertas Moraga, 2013). These bonds reflect inter alia the expectations about future interest rates and fiscal stability. Higher government bond

[1] Studies that used both migration flows and stocks of foreign population are the following: Pedersen, Pytlikova, Smith, 2006 and 2008; Hatton, 2005; Belot and Ederveen, 2011, Adsera and Pytlikova (2014).

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yields can imply higher future state debt, which can induce subsequent fiscal restrictions to stabilize debt ratios. Ultimately, this can undermine economic growth.

There are some recent empirical studies, which analyze relationship between economic conditions and migration flows. For instance, the study by Boubtane, Coulibaly and Rault (2012) finds that immigration is influenced by host economic conditions. Using panel VAR techniques, the authors show that immigration can impact on the economy of a host country and at the same time, immigration can be influenced by host country economic conditions, namely by GDP per capita growth and employment opportunities proxied by total unemployment, total employment, native-born unemployment and foreign-born unemployment in the host country. Their results confirm that immigration flows respond positively and significantly to host GDP per capita growth and negatively and significantly to host total unemployment rate. Likewise, the study by Islam (2007) examines the causal link between *immigration and unemployment*. This study find no evidence of migration causing higher average rate of unemployment, but the results from the causality test based on the vector error correction model confirm that, in the short run, past unemployment causes (less) immigration (but not vice versa). There is also a long-run positive relationship among GDP per capita, immigration rate and real wages.

Other studies examine the causal link between *immigration and GDP per capita growth* (e. g. Morley, 2006; Mayda, 2010; Bertoli and Fernández-Huertas Moraga, 2011), especially in times of recession (Awad, 2009; Dobson, Latham, and Salt, 2009; Martin, 2009). Dobson, Latham, and Salt (2009) analyze influences of economic crises on migration flows and find that foreign immigration tends to fall after the hit of the crisis when unemployment rises. According to them, this phenomena is only temporary as the migration flows increase again before the end of a recession. The results indicate that migration flows are likely to remain more stable than it would appear.

In our paper, we add to the research discussion with analyses of international migration flows to 42 destinations from all world countries of origin over the period of years 1980 to 2010.

4 Data description

The dataset on international migration used for the analyses encompasses information on bilateral flows and stocks of immigrants from all world source countries in 42 destination countries over the period 1980–2010[2]. The dataset has been collected by requesting detailed information on migration inflows and foreign population stocks by source country from selected national statistical offices in 27 OECD countries. For six OECD countries – Chile, Israel, Korea, Mexico, Russian Federation and Turkey - the data comes from the OECD International Migration Database. For nine other destinations – Bulgaria, Croatia, Cyprus, Estonia, Latvia, Lithuania, Malta, Romania and Slovenia – the data is collected from Eurostat.

The international migration data set presents substantial progress over that used in past research on determinants of migration and over the existing datasets[3]. First, our data covers annually both migration flows and foreign population stocks[4]. Second the data is more comprehensive with respect to destinations, origins and time due to our own effort with data gathering from particular statistical offices. For an overview of comprehensiveness of observations of flows and stocks across all destination countries over time, see the Appendix Table A1 and Table A2, respectively. It is apparent

[2] The original OECD migration dataset by Pedersen, Pytlikova and Smith (2008) covered 22 OECD destination and 129 source countries over the period of years 1989-2000 (see Pedersen, Pytlikova and Smith (2008) for a description of the dataset). For the study by Adsera and Pytlikova (2014), the authors extended the number of destinations to 30 OECD countries and the number of source countries to all world countries, and the time period to cover years1980-2010. This current dataset covers 42 destinations.

[3] See data by Docquier and Marfouk (2006), OECD (2011), the World Bank (2011), and the United Nations (2011).

[4] Migration flow is the inflow of immigrants to a destination from a given origin in a given year. The definition usually covers immigrants coming for a period of half year or longer. Foreign population stock is a number of foreigners from a given country of origin living in a destination in a given year. The foreign population stock data is dated ultimo.

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that the data becomes more comprehensive over time and thus missing observations become less of a problem for more recent years.

In our dataset, as in the other existing datasets, different countries use different definitions of an "immigrant" and draw their migration statistics from different sources. For instance, countries as Poland and Slovak Republic define an ''immigrant'' by country of origin or country of birth, while countries as Austria, the Czech Republic, Denmark, Finland, Greece, Iceland, Italy, Norway and Sweden accounts an immigrant by citizenship and some countries as Belgium, France, Hungary, Germany, Luxembourg, Portugal, Spain, Switzerland and the United Kingdom accounts an immigrant by self-reported nationality. Different definitions are in place also for immigrant stocks. While some countries report the first generation of immigrants, including the ones that have received citizenship (country of birth definition preferred in our data), other countries include in the immigrant population the second and third generation, excluding the naturalized ones (definition by citizenship or country of origin), see Pedersen et al. 2008 and Adsera and Pytlikova, 2012 for a more detailed discussion on the restrictions given by migration flows and migration stocks. Appendix Tables A3 and A4 provide a detailed overview of definitions and sources of the data on migration inflows and immigrant stocks, respectively. The information on other economic and social factors for these countries has been collected from various sources, such us World Bank, OECD, ILO, IMF.

5 Empirical model specification

We base our econometric analysis on the "human capital investment" theoretical framework (Sjastaad, 1962)[5], which assumes that emigration rates to one destination are driven by difference in expected earnings and the costs of migration. Similarly as previous studies we proxy wages in origin and destination country by GDP per capita. The effect of GDP per capita in the source country on migration flows may be nonlinear since poverty constrains the ability to cover costs of migration. It has been shown in previous studies, e.g. Chiquiar and Hanson (2005), Hatton and Williamson (2005), Clark et al. (2007), and Pedersen et al. (2008), that source country's GDP per capita has an inverted U-shape effect on migration.[6] Therefore, the level of GDP per capita in the source country also enters the model in a quadratic form as a means to account for the non-linearity effects pointed by the theory.

Migration costs are determined by different factors. Generally, the larger the physical distance between two countries the higher are the direct migration costs associated with transportation. However, changes and improvements in communication technologies, internet, continued globalization of the economy and declining costs of transportation lead to a decline in direct costs of migration over time. Second, we expect that the larger the language barriers, the higher are the migration costs for an individual associated with a lower chance to transfer her skills and knowledge into the destination's labour market (Adsera and Pytlikova, 2014). Further, migration "networks" (i.e. networks of family members, friends and people of the same origin that already live in a host country) play an important role in lowering the direct and psychological migration costs (Massey et al., 1993; Munshi, 2003). The "networks" can provide potential migrants with the necessary help and information and thus facilitate the move and the adaptation of new immigrants into the new environment.

Thus, we expect that the migration costs associated with migration from country *i* to country *j* are larger with physical and linguistic distance between countries, but fall with the existence of migration networks. In our empirical specification we use the number of foreign population from country *i* living in country *j* per population of the source country *i*, s_{ijt} , to control for the network of migrants. To control for the direct cost of migration we include physical distance in kilometers between capital

[5] See applications of the theoretical model in Adsera and Pytlikova (2012); Ortega and Peri (2009); and Grogger and Hanson (2011).

[6] At income levels beyond dire poverty, migration increases, but after GDP reaches a certain level, migration may again decrease because the economic incentives to migrate to other countries decline.

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cities, $dist_{ij}$. Further, we include the linguistic proximity index based on information on families of languages from Ethnologue and constructed by Adsera and Pytlikova (2014), $lingprox_{ij}$, to control for linguistic distance between countries (and their official languages spoken by majority population).

The responsiveness of migration flows to economic shocks

Further in our paper we focus on question whether migrants respond to diverse macroeconomic shocks such as the Great Recession inflicted on European labor markets. For this purpose, we introduce a set of variables that measure changes in the economic conditions in sending and receiving countries, such as GDP growth rates and unemployment rates in source and destination countries.

Thus we run the following empirical model:

$$\begin{aligned}\ln m_{ijt} = \gamma_0 + \delta_j + \delta_i + \theta_t + \gamma_1 Cycle_{jt-1} + \gamma_2 Cycle_{it-1} + \gamma_3 \ln(GDP_j)_{t-1} + \gamma_4 \ln(GDP_i)_{t-1} + \\ + \gamma_5 \ln(GDP_i)^2_{t-1} + \gamma_6 \ln s_{ijt-1} + \gamma_7 lingprox_{ij} + \gamma_8 \ln dist_{ij} + \gamma_9 neighbour + \varepsilon_{ijt}\end{aligned} \quad (1)$$

where $\ln m_{ijt}$ denotes flows of migrants from country *i* to country *j* divided by the population of the country of origin *i* at time *t*. This model has a full set of year dummies, θ_t, to control for the time-series changes in migration flows common to all countries, and a full set of destination and country of origin effects, δ_j and δ_i, respectively, to control for the time-invariant characteristics of particular treatment and control countries.

In addition, we run the econometric model (2) with pairs of country fixed effects, δ_{ij}, in order to capture (unobserved) traditions, historical and cultural ties between a particular pair of destination and origin countries. The econometric model has then the following form:

$$\begin{aligned}\ln m_{ijt} = \gamma_0 + \delta_{ij} + \theta_t + \gamma_1 Cycle_{jt-1} + \gamma_2 Cycle_{it-1} + \gamma_3 \ln(GDP_j)_{t-1} + \gamma_4 \ln(GDP_i)_{t-1} + \\ + \gamma_5 \ln(GDP_i)^2_{t-1} + \gamma_6 \ln s_{ijt-1} + \gamma_7 lingprox_{ij} + \gamma_8 \ln dist_{ij} + \gamma_9 neighbour + \varepsilon_{ijt}\end{aligned} \quad (2)$$

All variables except dummy variables and the linguistic proximity index are defined in natural logarithms and thus their coefficient estimates represent impact elasticities. Standard errors are robust clustered on the level of pairs of countries. All time varying variables are lagged by one year, to capture that if they affect migration flows they do so with a lag. In addition, lagging these variables reduces the problem of endogeneity (reverse causality) as the variables might be affected by migration flows.

6 Preliminary results

In Table 1 we report the results of our empirical model, in which our variables of interest reflecting the business cycle are included *separately*: (i) unemployment rates in destination and origins and (ii) growth in destination and source country. There are three columns for each model specification including a model without any fixed effects and models with destination and origin fixed effects and with pair of country fixed effects. The coefficients to the unemployment rate at destination are significantly negative across most model and sample specifications. This implies that employment opportunities in destinations are important. Regarding the source country unemployment rates, the coefficients are negatively related to migration in the fixed models specification. Thus increase in origin country unemployment rates, ceteris paribus, increases migration from the countries. A clear

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picture emerges as well when it comes to the effects of GDP growth on migration flows – a dynamic receiving economy attracts more and a strong source labor market sends fewer migrants.

Table 1. Business cycle indicators and migration rates to 42 OECD destination countries from all world countries of origin for 1980-2010

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	FE	FE	OLS	FE	FE
VARIABLES	lnUnemplR	lnUnemplR	lnUnemplR	lnGDPgrowth	lnGDPgrowth	lnGDPgrowth
Ln Stock of Migrants_t-1	0.800***	0.675***	0.510***	0.784***	0.684***	0.521***
	(0.008)	(0.011)	(0.026)	(0.006)	(0.008)	(0.021)
Ln Destination GDPperCapPPPj_t-1	0.020	1.006***	1.005***	0.105**	1.108***	1.012***
	(0.059)	(0.156)	(0.150)	(0.042)	(0.125)	(0.121)
Ln Origin GDPperCapPPPi_t-1	0.610***	-1.120**	0.019	0.308**	-0.866***	-0.304
	(0.219)	(0.450)	(0.453)	(0.144)	(0.283)	(0.299)
Ln Origin GDPperCapPPPit-1 squared	-0.035***	0.063**	0.003	-0.017**	0.048***	0.017
	(0.013)	(0.026)	(0.026)	(0.009)	(0.017)	(0.018)
Ln Destination Business Cycle Ind_j_t-1	-0.127***	-0.058*	-0.123***	-0.067***	0.022***	0.023***
	(0.032)	(0.030)	(0.030)	(0.008)	(0.006)	(0.005)
Ln Origin Business Cycle Ind_i_t-1	-0.052**	0.065**	0.073***	0.025***	0.004	0.004
	(0.025)	(0.026)	(0.025)	(0.010)	(0.006)	(0.005)
Ln Distance in km	-0.169***	-0.372***	-	-0.104***	-0.365***	-
	(0.021)	(0.034)		(0.018)	(0.030)	
Neighboring Dummy	-0.212**	-0.222**	-	-0.098	-0.192**	-
	(0.100)	(0.086)		(0.091)	(0.077)	
Linguistic Proximity	0.219***	0.394***	-	0.231***	0.230***	-
	(0.073)	(0.076)		(0.060)	(0.064)	
lnTrade_t-1		-	-	-	-	-
Destination & Origin FE	NO	YES	NO	NO	YES	NO
Pair of country FE	NO	NO	YES	NO	NO	YES
Constant	-3.861***	-3.339	-13.185***	-4.285***	-5.462***	-11.743***
	(1.157)	(2.541)	(2.532)	(0.754)	(1.762)	(1.728)
Observations	31,147	31,147	31,147	43,129	43,129	43,129
Adjusted R-squared	0.841	0.897	0.289	0.837	0.895	0.237

Notes: Estimates without fixed effects and with destination and origin country and pair of country fixed effects. Dependent Variable: Ln(*Emigration Rate*). All models include year dummies. Robust standard errors clustered at the country-pair level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

7 Conclusion and Future Steps

This paper focuses on role of the economic cycle – in particular the phases of economic growth and crisis - in shaping international migration by using a unique dataset on immigration flows and stocks of foreigners in 42 OECD destination countries from all world countries over the period 1980–2010. Our preliminary results show that as expected migration rates responds to the conditions of business cycles: they decrease with crises in the host country economics and increase with crises in origins.

In the next future version of the paper we would like to consider alternative indicators of business cycle, such as measures of trade as a sum of bilateral exports and imports, and exports as a share in GDP in source and destination countries. In addition we will add variables on future economic conditions, such as the yields on the secondary market of government bonds with a residual maturity

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of 10 years[7], and Eurobarometer survey variables that tells us something about personal job market prospects and economic conditions.

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Appendix

Table A1. Country-Year Coverage migration flows

Dest	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	POL	PRT	ROM	SVK	SVN	SE
Year																											
2010	190				135	193	203	113	212	183				144	208		204	141			194	124	148		212	209	194
2009	190	184			141	193	203	113	209	183		26		139	209	188	205	141	209		198	123	150		212	208	192
2008	190	182	207	209	143	194	203	113	208	183	120	21		142	208	187	204	146	207		195	205	143	75	212	207	192
2007	190	93	190	190	147	193	203	113	190	183	124	19	191	128	2	181	190	142	190	190	197	205	126		211	190	192
2006	190	96		190	142	193	202	108	190	183	120	34	190	133	2	182	190	139	191		193	205	128		208	190	192
2005	190	85		189	142	191	203	66	190	183	107	114		121	2	185	189	137	189		187	205	124		208	190	192
2004	190	71		189	146	191	203	57	190	183	107	109		108	2	183	189	135	189		193	205	118		208	190	192
2003	189	70		189	142	191	203	57		183	127	107		121	2	180	189	127	189		191	205	114		208	190	192
2002	189	70		187	141	191	203	57		183	128	99		110	2	182	188	123	187		198	205	126		208	188	192
2001	189	70		131	115	84	203	57		183	130	106		117	2	181	195	116	195	187	197	205	114		208	196	192
2000	189	70		195	110	83	203	59		183	129	111		118	2	182	195	124	195	131	197	205	113		208	196	192
1999	189	70			108	193	203	58	188	183	118	110		114	2	181	195	123	195	131	191	205	114		208	196	159
1998	189	70		131	122	193	203	59	188	183	117	116	188	114	2	182	195	120	188	131	191	16	144		208	196	166
1997	189	55			111	193	203	39		183	118	48	183	114	2	179		110			194	14	144		208	24	164
1996	189	55			114	193	203	58		183	118	52	205	116	2	178		108			191	14	144		208	24	167
1995		55			117	193	203	39		183	118	54	203	117	2	48		110			187	13	144				165
1994		55			106	193	203	39		183	118	27	205	119	2	32		103			186	13	144				164
1993		48			97	193	203	39		183		39	205	106	2	32		99			185	11	143				168
1992		48				189	203	45		183		45	205	111	2	32		105			174	11	143				157
1991		48				172	203	42		183		49	206	104	2	32		95			160	11					148
1990		48				44	203	42		183		38	200	102	2	32		100			163	10					144
	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	POL	PRT	ROM	SVK	SVN	SE

Note: Columns: Destination Countries; Rows: Year; Cell: numbers of source countries, for which we have some observations of number of migrants for particular year.

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Table A2. Country-Year Coverage foreign population stocks

Dest	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	POL	PRT	ROM	SVK	SVN	SE
Year																											
2010	209				171	192	201			193		179		173	209	192		26	208		209	209	176		150	209	199
2009	209	185	208		172	190	201	112		191		171		180	208	190		26	207		207	209	177	196	145	208	199
2008	209	187	190		171	192	201	112		191	127	177		178		192	205	26	204	190	209		176	198	144	205	199
2007	209	178			168	193	200	112		191	128	174		174		188	205	26	205		207		179	196	142	204	199
2006	209	184			168	193	200	112		193	193	148	189	173	43	189	204	23	203		207		174		143	205	199
2005	209	182			166	139	201	112		193	204	97	191	165		189	204	23	203		208		173	195	138	205	199
2004	209	181			165	139	201	112		193		101	189	162		188	201	23	200		208		171	195	137	200	199
2003	209	181			163	138	201	112		193		100	190	156		188		23	203		207		167		149	200	199
2002	209	181		136	161	138	201	99		193		100		158	177	186		23			207	201	167	37	148	204	199
2001	207	181	189		163	138	201	99		193		97		154		187	201	12		190	206		166		142	205	199
2000	191	176			161	138	201	99	136	193		102	207	163		184		137			206		163		140	205	199
1999		174			164	138	201	99		193	162	87		163		185		12			204		157		136	205	111
1998		174			158	138	201	99		193		104		161		38		12			204		154		144	136	111
1997		55			152	138	201	99		193		100	189	159		189		12			204		151		144		111
1996		55			153	138	201	63		193		90	205	157	36	50		12			204		150		139		111
1995		55			150	138	201	58		193		85	205	146		50		12			200		150		140		111
1994		55			145	137	201	58		193		87	205			50		12			9		146				107
1993		48				137	201	58		193		87	205			50		12			9		139				104
1992		48				132	201	58		193		82	205			185		12			9		129				101
1991		48				117	201	58		193		70	205		2	184		12			9		125				98
1990	70	48				118	201	57		193	76		205					82			9		120				100
	AUT	BEL	BGR	CYP	CZE	DEU	DNK	ESP	EST	FIN	FRA	GBR	GRC	HUN	IRL	ITA	LTU	LUX	LVA	MLT	NLD	POL	PRT	ROM	SVK	SVN	SE

Note: Columns: Destination Countries; Rows: Year; Cell: numbers of source countries, for which we have some observations of number of migrants for particular year.

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Table A3. Inflows of Foreign Population: Definitions and Sources

Migration flows to:	Definition of "foreigner" based on	Source
Austria	Citizenship	Population register, Statistik Austria (1997 to 2002), Wanderungsstatistik 1996-2001, Vienna
Belgium	Citizenship	Population register. Institut National de Statistique.
Bulgaria	Citizenship	Eurostat.
Cyprus	Citizenship	Eurostat.
Czech Rep.	Citizenship	Permanent residence permit and long-term visa, Population register, Czech Statistical Office
Denmark	Citizenship	Population register. Danmarks Statistics
Estonia	Citizenship	Eurostat
Finland	Citizenship	Population register. Finish central statistical office
France	Citizenship	Statistics on long-term migration produced by the 'Institut national d'études démographiques (INED)' on the base on residence permit data (validity at least 1 year) transmitted by the Ministry of Interior.
Germany	Citizenship	Population register. Statistisches Bundesamt
Greece	Citizenship	Labour force survey. National Statistical Service of Greece 2006-2007 Eurostat
Hungary	Citizenship	Residence permits, National Hungary statistical office.
Ireland	Country of Birth	Labour Force Survey. Central Statistical Office. Very aggregate, only very few individual origins.
Italy	Citizenship	Residence Permits. ISTAT
Latvia	Citizenship	Eurostat
Lithuania	Citizenship	Eurostat
Luxembourg	Citizenship	Population register, Statistical Office Luxembourg
Malta	Citizenship	Eurostat.
Netherlands	Country of Birth	Population register, CBS
Poland	Country of Origin	Administrative systems (PESEL, POBYT), statistical surveys (LFS, EU-SILC, Population censuses). Central Statistical Office of Poland
Portugal	Citizenship	Residence Permit, Ministry of Interior.
Romania	Citizenship	Eurostat.
Slovak rep.	Country of Origin	Permanent residence permit and long-term visa, Slovak Statistical Office
Slovenia	Citizenship	Data for 1996-1997 taken from UN migration data. 1998 – 2009 Eurostat.
Spain	Country of Origin	Residence Permit, Ministry of Interior
Sweden	Citizenship	Population register, Statistics Sweden
United Kingdom	Citizenship	Residence permits for at least 12 months. IPS - office for national statistics, and EUROSTAT

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Table A4. Stocks of Foreign Population: Definitions and Sources

Foreign population stock in:	Definition of "foreigner" based on	Source
Austria	Country of birth	Statistics Austria, Population Census 2001 and Population Register 2001 to 2009. For census year 1981 and 1991 definition by citizenship
Belgium	Citizenship	Population register. Institut National de Statistique
Bulgaria	Citizenship	Eurostat.
Cyprus	Country of birth	Eurostat.
Czech Rep.	Citizenship	Permanent residence permit and long-term visa, Population register, Czech Statistical Office and Directorate of Alien and Border Police
Denmark	Country of origin	Population register. Danmarks Statistics
Estonia	Country of birth	Eurostat
Finland	Country of birth	Population register. Finish central statistical office
France	Country of birth	Census. Residence permit. Office des migrations internationals.
Germany	Citizenship	Population register. Statistisches Bundesamt
Greece	Citizenship	Labour force survey. National Statistical Service of Greece.
Hungary	Citizenship	National Hungary statistical office
Ireland	Country of birth	Censuses, Statistical office, Ireland
Italy	Citizenship	Residence Permits. ISTAT
Latvia	Country of birth	Eurostat
Lithuania	Country of birth	Eurostat
Luxembourg	Citizenship	Population register, Statistical office Luxembourg
Malta	Citizenship	Eurostat.
Netherlands	Citizenship	Population register, CBS
Poland	Country of birth	2002 Census, rest permits, Statistics Poland
Portugal	Citizenship	Residence Permit, Ministry of Interior, www.ine.pt
Romania	Country of birth	Eurostat.
Slovak Republic	Country of Origin	Permanent residence permit and long-term visa, Slovak Statistical Office
Slovenia	Country of birth	Eurostat.
Spain	1985-1995 Citizenship 1996-2009 Country of birth	Residence Permit, Ministry of Interior
Sweden	Country of Birth	Population register, Statistics Sweden
United Kingdom	Country of Birth	LFS, UK statistical office

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SOME EVIDENCE ON THE RELATION BETWEEN DISSIMILAR FISCAL POLICIES AND BUSINESS CYCLE SYNCHRONIZATION IN THE EUROPEAN UNION

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Abstract
The paper deals with the issue of fiscal policy harmonisation in Europe. In particular the paper examines the impact of dissimilar fiscal policies upon business cycle synchronization in the EU. The multivariate panel regression model with two-stage instrumental variables estimator is applied in the paper. The differences in structural budget deficits are estimated as a fiscal dissimilarity measure. In addition, other control variables including trade and intra-industry trade intensity, spatial and time dummies are applied in the regression model. The set of instrumental variables comprises various tax indicators, government expenditures and government political orientation measure. Various filtering techniques and macroeconomic indicators are applied to identify the business cycles. The main results of the analysis give an evidence of a robust and significant negative effect of fiscal dissimilarity upon business cycle synchronisation in the EU. From a policy perspective the paper shows the differences in national fiscal policies to be a potential source of macroeconomic imbalances in Europe.

Keywords
Business Cycle, European Integration, Fiscal Policy, Intra-industry Trade.

JEL Classification
E32, E62, H62.

1 Introduction

Considering the process of macroeconomic policy harmonisation in Europe, one might see that the levels of integration differ in case of monetary and fiscal policy. Whereas the monetary unification is an obligatory act for all EU member states joining the EU after 2004, the fiscal policy reminds rather heterogeneous across Europe. There is some progress in harmonisation due to the augmentation of the Stability and Growth Pact and by the Fiscal Compact rules introduced in Treaty on Stability, Coordination and Governance (European Commission, 2011). However, this is considered more as an attempt to reduce the negative effects of the indebtedness of the Euro area countries than a progress in economic integration in Europe. Kočenda et al. (2008) confirm the persisting extent of fiscal heterogeneity in Europe in their study. Moreover, they consider the Central and Eastern European Countries (CEEC) to be more fiscally disciplined than the EU15. Such heterogeneity in fiscal policy conduct can consequently destabilize economic activity and postpone the Euro area enlargement by the new EU member states. Also Feldstein (2005) criticizes the institutional structures of Europe, with centralized monetary and decentralized fiscal policy, which does not discourage the governments from irresponsible fiscal behaviour sufficiently. Accordingly countries might suffer from large chronic fiscal deficits and increasing debt-to-GDP ratios.

The fiscal heterogeneity and irresponsibility can be demonstrated comparing the diverse development of selected indicators before and after the hit of global financial crisis in 2007. The average debt-to-GDP ratio increased by 26.3% after crisis in the period 2007-2012 whereas the ratio increased only by 0.4% before the crisis in 2000-2006. Dividing the European countries into the

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groups of EU core, periphery and CEE countries[1] one can see a slight average decrease in the level of debt-to-GDP before 2007. The fiscal reaction was different in these groups after the crisis hit. Whereas the debt-to-GDP ratio of EU core and CEE countries increased similarly by roughly 19%, this ratio increased by more than 54% in the EU periphery countries in 2007-2012. One should also compare the actual indebtedness of individual EU countries. CEE countries such as Czech Republic, Poland, Slovakia, Slovenia and also Bulgaria and Romania still kept the indebtedness up to 60% of GDP in 2012[2]. Hungary's debt amounted to 80% of GDP. In contrast the average indebtedness of the Euro area countries amounted to the level of 90% in that year. The modification of the Stability and Growth Pact by the Fiscal Compact rules introduced in the Treaty on Stability, Coordination and Governance emphasized the fact that the problem of fiscal policy harmonisation particularly in a form of keeping joint fiscal responsibility is a highly timely issue.

Regarding the current debate on prospective enlargement of the Euro area, one might ask: How can the actual fiscal heterogeneity influence the monetary integration process in the CEE countries? The "New" Theory of Optimum Currency Areas (OCA)3 considers the business cycle similarity to be a crucial monetary integration indicator. Higher business cycle similarity implies lower costs of creating common monetary union from the OCA theory perspective. Hence, the paper asks the specific research question: What is the influence of fiscal dissimilarity upon business cycle synchronization of the EU countries?

As pointed out by Darvasz et al. (2005), Crespo-Cuaresma et al. (2011) there is no existing formal theoretical model describing the link between fiscal divergence and business cycle correlation. Moreover, Darvasz et al. (2005) state that, to their knowledge, there had been no paper exploring the effects of differences in national fiscal policies upon business cycles published before their empirical study. Using a panel of OECD countries they find the evidence that reduced primary deficits (or higher surpluses) improve business cycle synchronisation across countries. Using an original measure of cyclical synchronicity, based on relative differences in business cycle dispersion, Crespo-Cuaresma et al. (2011) find that fiscal policy and trade integration are important drivers of business cycle synchronization. The fiscal deficits are identified as potential sources of idiosyncratic shocks in the Euro area. Similarly, Artis et al. (2008) provide evidence of negative impact of the divergent fiscal policies as well as heterogeneous labour market rigidities upon business cycle synchronization. Examining on business cycle volatility factors, Furceri (2009) concludes that countries with similar government budget positions tend to have smoother business cycles. Exploring the issue from policy perspective, Holm-Hadulla et al. (2012) focus on the influence of numerical expenditure rules upon business cycles of the EU countries. They give an evidence of no pro-cyclical bias of spending policies of countries with strict numerical expenditure rules. On the contrary, countries without strict numerical expenditure rules are shown to have pro-cyclical bias of their spending policies. Hence, an argument for rule-based restrictions in national fiscal policies is provided in that study.

Considering the lack of literature dealing with the link between diverse fiscal policies and business cycles synchronization, our paper intends to contribute to filling this gap. The aim of the paper is to provide some empirical evidence of the impact of fiscal dissimilarity upon business cycle synchronization in the EU countries.

2 Methodology

The multivariate panel regression model is applied in the paper to examine whether fiscal dissimilarity reduces business cycle synchronization in the European Union. The set of analysed

[1] The following division is used. EU core BE, DK, DE, FR, LU, NL, AT, FI, SE; CEEC: BG, CZ, EE, CY, LT, LV, HU, PL, RO, SK, SI; EU periphery: IE, GR, ES, IT, PT.
[2] Hungary deviates from the CEE average debt amounting to 80 % of GDP
[3] See Mongelli (2002, 2008).

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countries comprises the EU27 excluding Bulgaria, Romania, Malta and Luxembourg due to low data availability. The analysed time span 1999-2011 is divided into three sub-periods 1999-2003, 2004-2007 and 2008-2011. Besides fiscal dissimilarity measure, other control variables are employed, namely trade measures and time and spatial dummies. Spatial dummies aim at capturing the effect of the Euro area membership and of being an old EU member[4]. As we are interested in the potential effects of the EU enlargement since 2004 and the crisis covering the final period of 2008-2011, the time dummies for each of the sub-periods are included with the expectations of significant effects of the crisis in 2008-2011. In order to deal with potential endogeneity problem we use the two-stage instrumental variables estimator.

Regarding the regression model quarterly data is used for measuring cross-correlation of business cycles as an explained variable for each sub-period. The average values of explanatory variables for each of the 4-year consecutive sub-periods within 1999-2011 are used in the model. In particular, the average values of the fiscal divergence measure and other controls are estimated using the annual data for each sub-period.

The resulting regression model takes the following equation form:

$$\boldsymbol{Corr}_{ij} = \boldsymbol{FISDISSIM}_{ij}\beta + \boldsymbol{Z_{ij}}\boldsymbol{\gamma} + \boldsymbol{\varepsilon}_i \quad (1)$$

for $i = 1, \ldots, M$ and $j = 1, \ldots, N$, where $\boldsymbol{Corr}_{ij}$ is a *MNT x 1* matrix standing for the measure of business cycle similarity between the country *i* and *j* in the sub-periods *1-T*. In particular, the correlations of cyclical components of national economic activity time series between country *i* and *j* are calculated as a similarity measure. The business cycles are estimated applying the Christiano-Fitzgerald filter (CF) and Hodrick-Prescott filter (HP) with standard lambda parameter λ=1600 for quarterly data in Gross Domestic Product (GDP) and Gross Value Added (GVA)[5] time series

$\boldsymbol{FISDISSIM}_{ij}$ denotes a *MNT x 1* matrix of the average differences of structural deficits in two countries over time and is defined as:

$$FISDISSIM_{ij,t} = \left| AVG\left(\frac{BUDGDEF_{i,t}}{GDP^*_{i,t}}\right) - AVG\left(\frac{BUDGDEF_{j,t}}{GDP^*_{j,t}}\right) \right| \quad (2)$$

where $AVG\left(\frac{BUDGDEF_{i,t}}{GDP^*_{i,t}}\right)$ and $AVG\left(\frac{BUDGDEF_{j,t}}{GDP^*_{j,t}}\right)$ are the average structural deficits of a country *i*

and *j*, respectively, in the sub-period analysed. Budget deficit-to-GDP/GVA ratio approximates the structural deficit in the analysis. The potential product GDP^* is estimated as a trend component dissected by Hodrick-Prescott and Christiano-Fitzgerald filters. The smaller the difference between the fiscal measures of both countries, the more similar yearly structural deficits the countries have. Recalling the research question we expect the negative sign at this variable that means rising business cycle similarity with declining fiscal divergence measure.

$\boldsymbol{Z_{ij}}$ is a *MNT x K* matrix of macroeconomic control variables and of time and spatial dummies. In particular, the overall trade intensity and intra-industry trade measures are used as control variables in the equation. The trade intensity is considered as a crucial business cycle similarity driver within the OCA endogeneity hypothesis (Frankel-Rose, 1998). In the latter development of the theory Fidrmuc (2001, 2004) finds the robust and significant influence of the intra-industry trade upon business cycle correlation. The trade intensity index (TI) and Gruber-Llyod index (GLI) estimating the share of intra-industry trade within the overall trade take the following forms in the analysis:

[4] Assesing the EU before 2004.

[5] Initially, we also used the industrial production cycles using the monthly data identified through the CF and the HP filter, λ=14400, which produced insignificant results. We attribute this to a low association of cycle correlation measured by monthly IP data with high volatility, lower standard deviation and much of frequency in high frequencies of the spectra contrary to fiscal measures based on yearly data.

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$$TI_{ij,t} = \frac{T_{i,j,t}}{T_{i,t} + T_{j,t}} \tag{3}$$

where $TI_{i,j,t}$ denotes the bilateral trade intensity between countries *i* and *j*.

and

$$GLI_{ij,t} = \left(1 - \frac{\sum_k \left|X_{k,ij,t} - M_{k,ij,t}\right|}{\sum_k \left|X_{k,ij,t} + M_{k,ij,t}\right|}\right) * 100 \tag{4}$$

where $X_{k,ij,t}$ and $M_{k,ij,t}$ denote the export and import of commodity *k* (SITC classification) between country *i* and *j*.

Time and spatial dummies explain the effects of Euro area membership and EU enlargement. In particular, the dummy variable EUR captures the effects of the Euro area membership, while the dummy labelled as OldEU tests the effects of being the traditional "*old*" EU member and the new EU member enlarging the European Union after 2004 and 2007, respectively. Considering the pairwaise, the dummy EUR=0 denotes that one or both examined countries stay aside from the Euro area, EUR=1 expects both countries to be the Euro area members. Similarly, the dummy OldEU=0 denotes that one or both countries joined the EU in or after 2004. OLDEU=1 considers both examined countries were the EU members before 2004.

$\boldsymbol{\varepsilon}_i$ is a *MNT x 1* matrix of error terms.

We use a set of instrumental variables to deal with endogeneity of the independent variable FISDISSIM. A set of instruments covering the tax influence includes the implicit tax rates of corporate income tax (CIT), personal income tax (PIT) and value added tax (VAT) in each country. We also include the government expenditures as a percentage of GDP and a proxy for the government political orientation of each country, which is bound by ranges <0; 1>. The higher ratio of left-wing oriented government members, the closer to zero the measure is and vice versa. That is, the value of 0 denotes fully left wing oriented government and fully right wing government refers to the value of 1. For a detailed description of instruments see table 1.

Table 1. Instrumental variables

Variable			Source
VAT	Implicit indirect tax rate		Eurostat
CIT	Implicit tax rate on capital, of which on capital and business income of corporations		Eurostat
PIT	Implicit tax rate on personal income		Eurostat
Politics	Government members orientation; right-wing → 1, left-wing → 0		Comparative Political Data Set III[1]
Gov_exp	Government expenditures as a percentage of GDP	Annual	Eurostat

Source: authors,[1]Armingeon, Klaus, et al. (2010).

3 Results

The identification of business cycles is a crucial part of the analysis. The band-pass filters were applied to identify the cyclical component of the GDP and GVA time series in line with growth cycle definition by Lucas (1977). The growth business cycles of selected CEE countries and Euro area average in 2000-2011 is depicted at figure 1. Comparing to relatively high deviations of the CEE

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cycles the Euro area cycle is rather smooth. Slovenia and Slovakia reached the highest peak in terms of GVA cycle-to-trend ratio in 2006/2007. All described countries including the Euro area experience a sharp downswing of the cycle since 2007. Polish economy seems to suffer the least from the recession within analysed country sample. The figure shows that all reported countries were hit by the economic crisis in the same time but with different intensity. Also the following reaction to the crisis hit differs across countries.

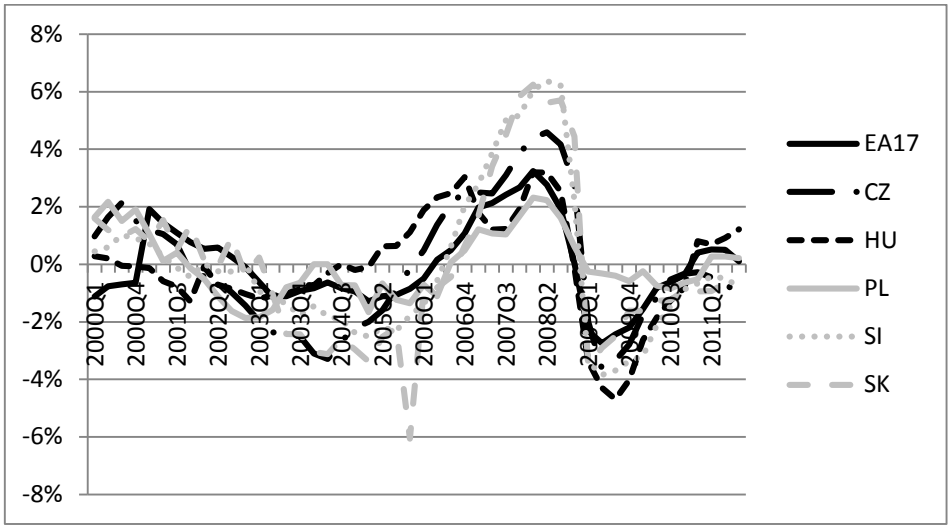

Figure 1. The Hodrick-Prescott filtered GVA cycles/trend ratio of selected CEE countries and the Euro area average in 2000Q1 to 2011Q4. (Source: Eurostat, authors' calculations)

The crisis has an effect also upon the fiscal policy development as shown at figure 2. The structural deficits estimated as the budget deficit-to-GDP trend (dissected with the Hodrick-Prescott filter) ratio are depicted at the figure. The structural deficits of the Euro area and the Czech Republic show rather stable patterns at around 0.5%. Other countries' deficits show more volatile patterns. Hungary moved to structural surplus in 2011.

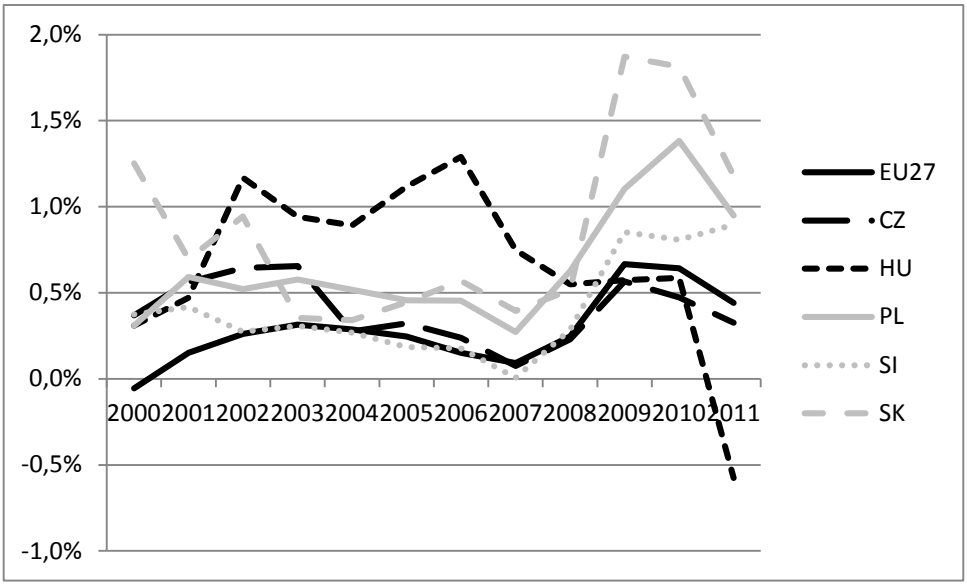

Figure 2. Structural deficit estimations of selected CEE countries and the Euro area average in 2000 to 2011. (Source: Eurostat, authors' calculations)

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Despite reported volatility, some similar patterns can be seen at the figure. Except for Hungary, the countries' structural budget deficits varied in a range between 0 and 0.6% till 2008. In 2008 to 2010 the structural deficits increased overreaching the Fiscal Compact limit of 0.5%. In 2011 the structural deficits declined with exception of Slovenia.

The table 2 shows the resultant β coefficients of the regression model specifications based on the equation 1. The reported coefficients illustrate the effect of fiscal dissimilarity upon the GVA or GDP cycles detrended by both filtering techniques[6].

Table 2. Effects of fiscal dissimilarity on business cycle synchronization

	GVA HP	GVA CF	GDP HP	GDP CF
Basic model	-1.293	-0.721	-1.005	-0.661
	(0.312)***	(0.220)***	(0.308)***	(0.219)***
Trade, GLI	-1.111	-0.642	-0.840	-0.576
	(0.307)***	(0.218)***	(0.306)***	(0.216)***
GLI	-1.140	-0.675	-0.856	-0.610
	(0.307)***	(0.218)***	(0.305)***	(0.216)***
GLI, EUR	-1.171	-0.678	-0.860	-0.612
	(0.307)***	(0.218)***	(0.306)***	(0.216)***
GLI, OldEU	-1.094	-0.670	-0.768	-0.604
	(0.309)***	(0.218)***	(0.307)**	(0.216)***
GLI, OldEU, EUR	-1.061	-0.666	-0.746	-0.600
	(0.307)***	(0.217)***	(0.306)**	(0.216)***
Instrumented: taxes	-9.440	0.063	-0.509	-0.065
	(2.377)***	(0.747)	(0.997)	(0.741)

Source: Authors' calculations

The results give an evidence of a robust and significant negative effect of fiscal dissimilarity upon business cycle synchronization for all model specifications without instruments. The negative link is also significant when the tax instruments are applied in case of GVA business cycles detrended with Hodrick-Prescott filter. Regarding the effect of our controls[7] in the model, there is a strong positive effect of intra-industry trade upon business cycle correlation in all model specifications. On the contrary the overall trade intensity has insignificant effect in our model. This is in line with results by Fidrmuc (2001, 2004). The results also indicate moderate positive effect (at 5% and 10% levels) of the Euro area membership upon correlation of the GDP and GVA cycles respectively. The possible effect of being an original ("old") member of the European Union before 2004 was found as non-significant. Testing for the time specific effects the second and third period show positive significant effects upon rising correlation of business cycles across the EU. This implies the positive impact of EU enlargement period as well as crisis period upon correlation of business cycles. The EU enlargement period seems to be slightly more influential (0.29) when compared to the crisis influence (0.22).

[6] The models instrumented with government spending and government orientation measure show insignificant results. Hence, they are not reported in the table.
[7] The detailed results are not reported in the paper due to limited space. They are available at the authors upon request.

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4 Conclusion

The question of the impact of different fiscal policies upon the synchronization of business cycles over time in the EU was examined in the paper. The differences in structural deficits among the EU countries were estimated as a measure of fiscal divergence in Europe. The paper gives an evidence of a negative effect of fiscal divergence upon business cycle correlation over the past decade. In addition to that, it also indicates positive influence of intra-industry trade and the significant time-specific effects capturing periods of the EU enlargement and global crisis. The Euro area countries are shown to have more correlated cycles than the non-member states.

From a policy perspective the paper shows the fiscal differences to be a potential source of macroeconomic imbalances in Europe. Hence the analysis provides arguments for higher effort to make some progress on fiscal policy harmonisation in Europe. On the contrary, this seems to be rather complicated task since the fiscal expansionary policy is conducted in non-co-ordinated way to tackle the crisis as the expansionary policy of the European Central Bank has had a little effect so far in Europe. The paper brings some incentives for future research on fiscal harmonisation processes in the EU. Regarding the fiscal policy differences, other measures such as fiscal irresponsibility or the indebtedness dynamics might be involved in the regression analysis to test the influence upon business cycle similarity in Europe. In addition, various interaction effects capturing the joint effects of fiscal measures and spatial or time dummies might be tested to find some more evidence on the relation between the fiscal policies and business cycle similarity in the EU.

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MACROECONOMIC EFFECTS OF BOES LARGE-SCALE ASSET PURCHASES

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Abstract
This paper examines the macroeconomic impact of large-scale asset purchases (LSAPs) conducted by the Bank of England in the period from March 2009 till February 2010. The impact of the first round of quantitative easing (QE) is evaluated by conducting counterfactual simulations of hypothetical paths of real GDP and inflation. The quantification is based on empirical evidence of reduction of long-term UK government bond yields. Other transmission channels are not considered. Conditional forecasts are calculated using VAR model. In contrast to other empirical literature the results indicate very small macroeconomic effect. The fact that the results reported in this article do not confirm the evidence from other empirical literature can be attributed to simplified methodology compared to other relevant articles on this topic. These methodological shortcomings will be addressed in future research.

Keywords
Large-scale Asset Purchases, Quantitative Easing, Vector Autoregression.

JEL Classification
C11, C32, E52, E58.

1 Introduction

Recent or rather still ongoing financial and subsequent economic crisis has led to aggressive reactions of the major central banks in the world. After lowering the key interest rates close to zero (zero lower bound), some central banks felt that additional measures were necessary to meet the inflation target and support economic recovery in general. The specific form of implemented measures differed across individual central banks. Lenza et al. (2010) find two main reasons for this fact. The first is different operational framework of monetary policy already in the pre-crisis period. The second is the structure of the financial sector in the region. Despite the differences in their implementation, the measures aimed to achieve the same goals; to support the functioning of financial markets and prevent the financial system from serious failures as a prerequisite for macroeconomic activity and price stability in the medium term.

From the perspective of monetary policy development, and financial and economic crisis itself, the bankruptcy of Lehman Brothers (14 September 2008) has become an important milestone (Fawley and Neely, 2013). In the period before the collapse of the U.S. investment bank, the major central banks (ECB, Fed, BoE, BoJ) sought to support the financial markets by changing the structure of their balance sheets at a constant total amount. The Lehman's fall triggered a series of measures that already represented a quantitative easing by their nature. Central banks have significantly increased the size of their balance sheets, and therefore the monetary base.

Dealing with the consequences of the financial crisis of 2008, the Bank of England introduced number of innovative measures. As described in Bean (2011), these measures included enhanced liquidity support, actions to deal with dysfunctional financial markets and large-scale asset purchases (LSAPs).

In April 2008, the Bank introduced Special Liquidity Scheme that allowed banks to exchange illiquid mortgage-backed securities (MBS) for Treasury Bills for up to three years. The scope of this program amounted to £185 billion. The volume of longer-term funding was increased and the range of accepted collateral in open market operations was expanded. Furthermore, a Discount Window Facility was introduced in order to provide short-term liquidity to stressed institutions. Lastly, after the launching of LSAPs, the reserve averaging scheme was suspended.

To support the functioning of financial markets the Bank also undertook a range of actions. Firstly, the Bank started purchasing high-quality commercial paper in order to reduce the liquidity premium

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that had become embedded in unusually wide spreads. As documented in Fawley and Neely (2013), this was followed by the purchases and subsequent sales of sterling investment-grade corporate bonds when the corporate bond market had become illiquid. Finally, in order to improve the availability of finance for a broader range of businesses, the Bank had launched purchases of secured commercial papers. Bean (2011) notes that the holdings of corporate assets peaked at the £3 billion level in May 2009.

On 5 March 2009, at the same time when the UK official rate was reduced to 0,5 %, the Monetary Policy Committee officially announced a large programme of asset purchases (LSAPs) which are commonly referred to as quantitative easing (QE). These assets purchases consisted mostly of UK government bonds or gilts. The aim of the programme was to inject a large monetary stimulus into the economy with the aim to boost nominal spending in order to meet the inflation target. In the period between March 2009 and February 2010 the Bank through the Asset Purchase Facility purchased almost £200 billion of assets. Kapetanios et al. (2012) point out that it represented approximately 14 % of UK GDP or nearly a quarter of the outstanding stock of government debt.

The objective of LSAPs was to affect the real economy in a number of ways. Nevertheless, the main channel through which these purchases should influence the development of the economy was the so-called portfolio balance channel. As explained in Lenza et al. (2010), asset purchases push up prices not only of the assets being purchased, but also of close substitutes for the purchased assets such as corporate equities and bonds. This in turn stimulates demand through lower borrowing costs and increased wealth.

The aim of this paper is to evaluate the effectiveness of unconventional monetary policy measures adopted by the Bank of England in the period from March 2009, particularly the wide-economy effects of LSAPs. The impact of the first round of quantitative easing (QE) is evaluated by conducting counterfactual simulations of hypothetical paths of real GDP and inflation. The quantification is based on empirical evidence of reduction of long-term UK government bond yields. Other transmission channels are not considered. Conditional forecasts are calculated using VAR model.

The remainder of the paper is organized as follows. Chapter 2 provides a review of empirical literature. Chapter 3 describes the methodology and data used in the article. The results are presented in Chapter 4. Conclusions are drawn in Chapter 5.

2 Empirical literature review

The empirical literature on the effects of unconventional monetary policy was initially focused more on the impact of quantitative easing on financial variables. In context of United Kingdom´s experience with QE, Meier (2009) assessed the impact of QE announcements using an event studies approach suggesting that long-term government bond yields declined between 40 and 100 basis points following the initial QE announcement in March 2009. The study of Joyce et al. (2010) is based not only on event study approach, but also on portfolio balance models. The results suggest that QE lowered long-term gilt yields by about 100 basis points.

The number of studies analysing the effects of unconventional monetary policy measures on product and inflation rises. One of the first such studies is the work of Lenza et al. (2010). The authors evaluated the effectiveness of ECB´s non-standard measures using BVAR model. The results suggest a positive influence on product and inflation. Baumeister and Benati (2010) also used the VAR model in their analysis, and confirmed a significant positive macroeconomic effect of implemented measures in the United States, the UK and the euro area. An extensive VAR analysis was also provided by Kapetanios et al. (2012). The authors evaluated the impact of BoE´s policy using BVAR model, MS-SVAR model and the TVP-SVAR model. Chung et al. (2011) chose a different approach. The authors evaluated the impact of LSAP on the U.S. economy using the FRB/U.S. macroeconomic model. Positive effect on product, inflation and unemployment was found as well. Andrés et al. (2004) and Harrison (2012) model the impact of unconventional measures using the DSGE model.

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3 Methodology of the analysis and data

The analysis of the macroeconomic impact of LSAPs conducted by the Bank of England can be characterized as a dynamic multivariate time series analysis with simultaneous relationships. The appropriate analytical tools for such analysis are vector autoregressive models (VARs) which were popularised in econometrics by Sims (1980) as a natural generalisation of univariate autoregressive models. Brooks (2008) says that a VAR is a systems regression model that is kind of hybrid between univariate time series models and simultaneous equations models and as such has often been advocated as an alternative to large-scale simultaneous equations structural models.

VAR model in its general form can be written as follows.

$$Y_t = c + A(L)Y_{t-1} + B(L)X_{t-1} + u_t, \tag{1}$$

where c is a vector of constants, Y_t is a vector of endogenous variables, $A(L)$ is a matrix of autoregressive coefficients of lagged values of Y_t, X_t is a vector of exogeneous variables, $B(L)$ is a matrix of autoregressive coefficients of lagged values of X_t and u_t is a vector of residuals.

The model in this article consists of the following four variables:

- R_t - the short-term interest rate (which is represented by the 3-month Treasury bill rate),
- S_t - the 10-year government bond yield spread (which is defined as the difference between the 10-year government bond yield and the 3-month Treasury bill rate),
- G_t - annual GDP, and
- I_t - annual CPI inflation.

Except for the short-term interest rate, all variables are assumed to be endogenous. All data are of quarterly frequency and are drawn from Bank of England online database and OECD online database.

The model is estimated for the period from 1st quarter 1984 to 2nd quarter 2011. The estimated coefficients therefore includes information from the period after the first round of LSAPs had been launched. This seems to be a reasonable yet perhabs still too simplified approach given the fact that the parameters in the model are not allowed to vary over time. Conditional forecasts are estimated for the period from 2nd quarter 2009 to 2nd quarter 2011. The model is estimated using OLS method.

3.1 Estimation procedure

At the very beginning of this VAR analysis, all variables were tested for presence of a unit root. The Augmented Dickey-Fuller test revealed that all variables are of I(1) nature. The first differences of these variables were therefore used in the model.

LR test with several information criteria was applied to find the maximum lag length of the model. Akaike information criterion and sequential modified LR test statistic suggested that the model should be of order 4. Wald test for lag exclusion was then performed to further specify lag structure of the model. Only first and fourth lags were found to be statistically significant.

Diagnostic checking is also an important part of a VAR modelling. Inverse roots of AR characteristic polynomial are provided in Figure 1. No root lies outside the unit circle so that the VAR satisfies the stability condition.

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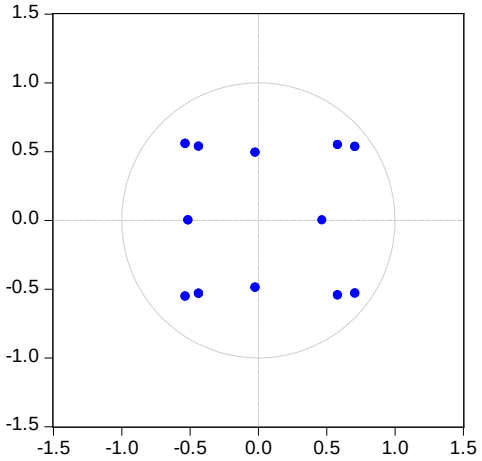

Figure 1. Inverse Roots of AR Characteristic Polynomial (Source: author's calculation)

Residual autocorrelation was tested using autocorrelation LM test. According to LM test results, there is no autocorrelation. Multivariate extension of the Jarque-Bera residual normality test then rejected joint normality distribution of residuals mainly due to the issue of kurtosis.

3.2 Counterfactual assumptions

The analysis of macroeconomic impact of LSAPs is based on the empirical findings in Joyce et al. (2011) who claim that the asset purchases may have depressed medium to long-term government bond yields by about 100 basis points. Two scenarios are considered: a policy scenario and no policy scenario. Under the policy scenario the actual levels of the 10-year government bond yield spread and the short-term interest rate are assumed during forecasting horizon. The policy scenario serves as a baseline prediction. Under the no policy scenario it is assumed that the 10-year government bond yield spread is 100 basis points higher. The difference between the two represents the impact of LSAPs.

4 Results

Contrary to other empirical literature, the results suggest rather negligible macroeconomic effect of LSAPs.

4.1 Results of counterfactual simulations

The difference between the level of real GDP under a policy and no policy scenarios ranges between -0.012 and 0.09 percentage points. The maximum positive effect was recorded in the fourth quarter of 2009. The impact of LSAPs on the level of real GDP is shown in Figure 2. The negative impact of implemented measures in the second half of the forecasting horizon is somewhat unexpected and probably also inaccurately quantified. This fact can be explained by the lack of explanatory power of the constructed model and by the length of the forecasting horizon.

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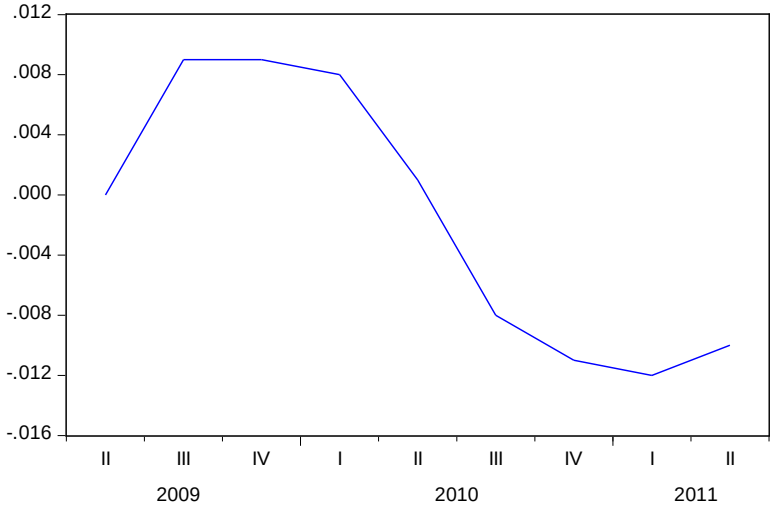

Figure 2. The impact of LSAPs on the level of real GDP in percentage points (Source: author's calculation)

Figure 3 shows the impact of LSAPs on the level of inflation. As you can see, the effect was found to be positive over the whole forecasting horizon, although the degree of influence of realized asset purchases was also found to be rather negligible. The difference between the level of inflation under a policy and no policy scenarios ranges between 0.00 and 0.27 percentage points. The maximum positive effect was recorded in the third quarter of 2009.

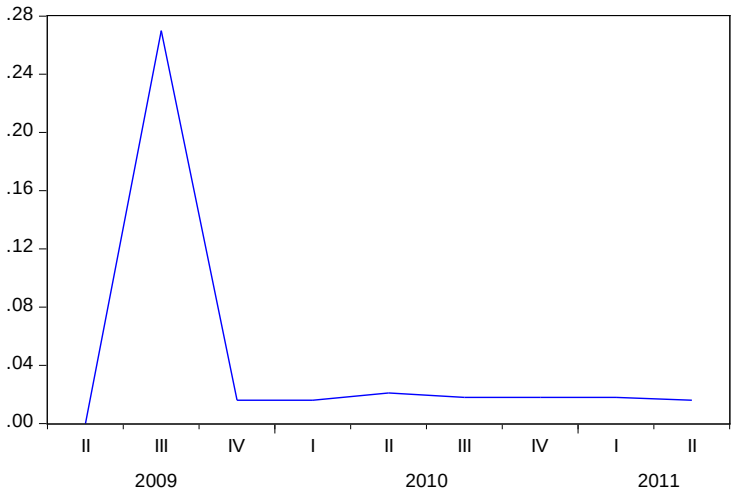

Figure 3. The impact of LSAPs on the level of inflation in percentage points (Source: author's calculation)

4.2 Impulse responses

The impulse response function is a classically employed tool to assess the impact of a shock to the i-th component of y onto the whole system. A shock to one variable does affect the future behaviour of the variable itself, but it is also transmitted to all of the other elements of the VAR. The impulse response function traces the effect of a one-time shock to one of the VAR elements on current and future values of the endogenous variables. For detailed description of the impulse response functions, see Luetkepohl (2011).

Figure 4 shows the response of the first difference of GDP to Cholesky one standard deviation innovation to the first difference of interest rate spread. It is evident that the interest rate spread has almost no effect and the impulse response function dies out nearly immediately which confirms previously stated results.

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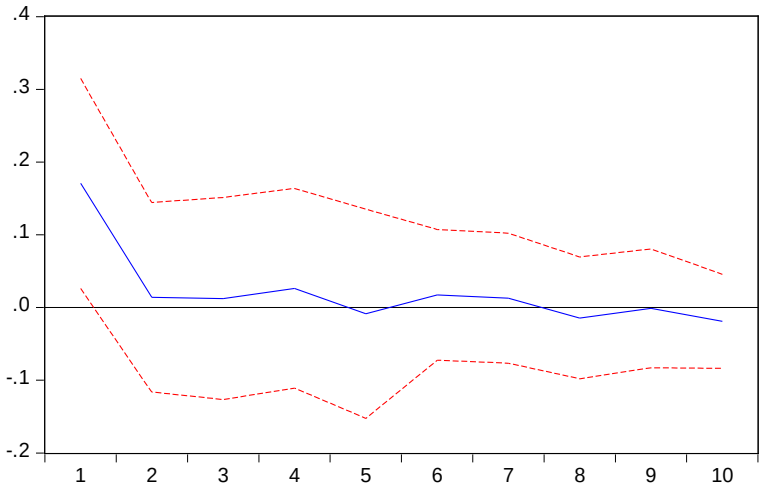

Figure 4. Response of D(GDP) to Cholesky one standard deviation D(SPREAD) innovation (Source: author's calculation)

Figure 5 presents the impulse response function for the first difference of inflation to Cholesky one standard deviation shock to the first difference of the interest rate spread. The function confirms previously stated fact that the effect of the interest rate spread compression is rather weak and rapidly dies out.

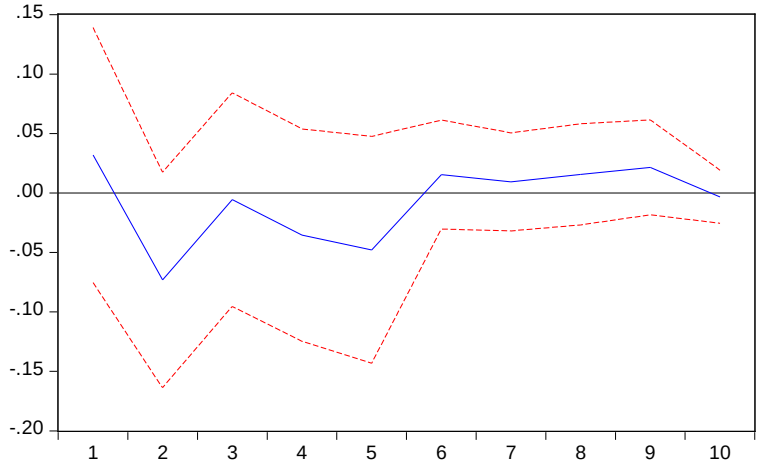

Figure 5. Response of D(INF) to Cholesky one standard deviation D(SPREAD) innovation (Source: author's calculation)

4.3 Variance decomposition

Variance decomposition separates the variation in an endogenous variable into the component shocks to the VAR. Thus, the variance decomposition provides information about the relative importance of each random innovation in affecting the variables in the VAR. For detailed description of variance decomposition, see Luetkepohl (2011).

Figure 6 may be viewed as another confirmation of previous result given the fact that the interest rate spread is unimportant to explain the variation in GDP. The percentage variance of the first difference of GDP due to the first difference of the interest rate spread ranges between 3,76 and 5,86 percent over the reported horizon.

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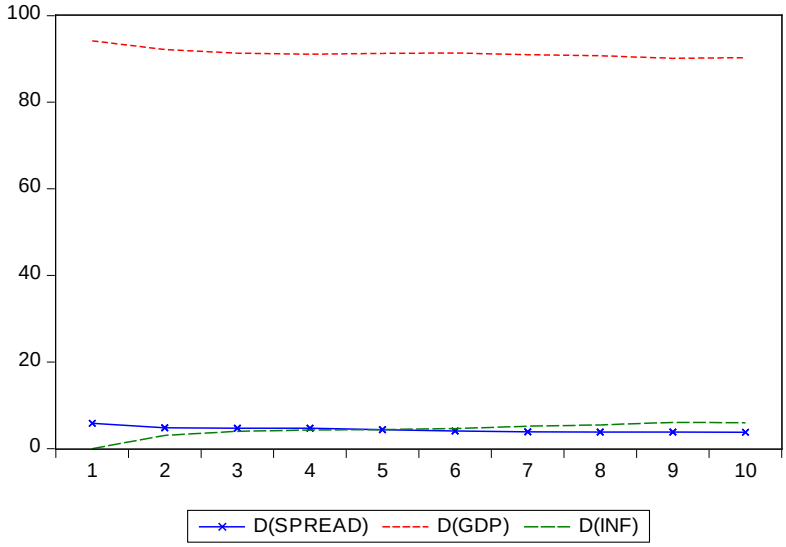

Figure 6. Percent of D(GDP) variance due to D(SPREAD) and other variables (Source: author's calculation)

Figure 7 then shows variance decomposition of the first difference of inflation due to the first difference of the interest rate spread and other endogenous variables in the model. As in previous case, the influence of the interest rate spread in negligible and ranges between 0,77 and 3,40 percent.

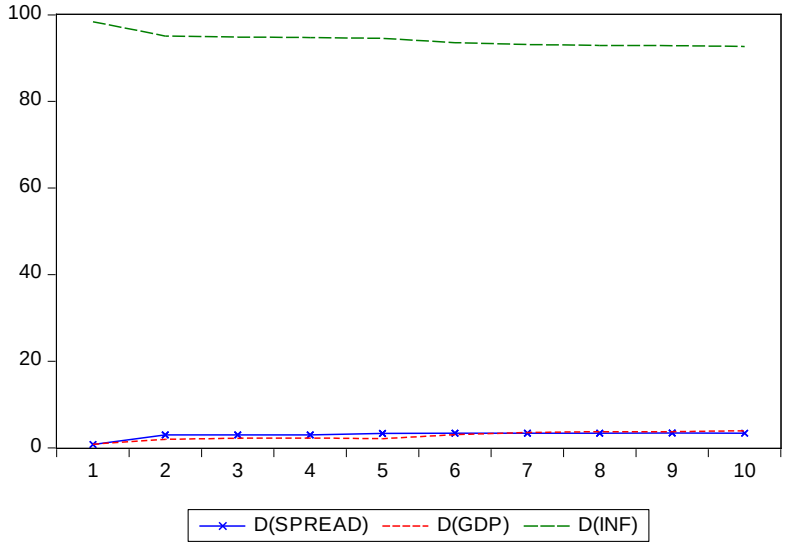

Figure 7. Percent of D(GDP) variance due to D(SPREAD) and other variables (Source: author's calculation)

5 Conclusion

The article aimed to evaluate the effectiveness of unconventional monetary policy measures adopted by the Bank of England in the period from March 2009, particularly the wide-economy effects of LSAPs. The impact of the first round of quantitative easing (QE) was evaluated by conducting counterfactual simulations of hypothetical paths of real GDP and inflation. The quantification was based on empirical evidence of reduction of long-term UK government bond yields. Other transmission channels were not considered. Conditional forecasts were calculated using VAR model.

In contrast to other empirical literature the results indicated rather negligible macroeconomic effect of LSAPs. The difference between the level of real GDP under a policy and no policy scenarios ranged between -0,012 and 0,09 percentage points. The maximum positive effect was recorded in the fourth quarter of 2009. The difference between the level of inflation under a policy and no policy scenarios ranges between 0,00 and 0,27 percentage points. The maximum positive effect was recorded in the third quarter of 2009.

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EMPIRICAL RESEARCH REGARDING THE ECONOMIC FACTORS INFLUENCING THE MERGER AND ACQUISITION ACTIVITY IN ROMANIA

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Abstract
The research conducted in this paper aims to analyze the correlation between the merger and acquisition activity in Romania, reflected in the number of operations concluded and a series of other variables, considered factors of influence, using two categories of econometric models (a regression model and a VAR model - Vector Auto Regressive Model – which was the basis of the analysis of the causality in Granger's sense). Starting from the most relevant studies in the field, the following variables are taken into consideration: the nominal GDP value, the BET_C stock exchange index, the reference interest rate of the National Bank of Romania, the medium exchange rate, RON/euro, the M2 monetary aggregate and the economy's degree of openness. By using the simple regression model, the hypothesis according to which the economy's degree of openness leads to the intensification of the mergers and acquisitions activity was not confirmed, while between the exchange rate and the number of mergers and acquisitions a weak correlation was revealed. The Granger causality test has identified the following variables with a significant impact on the number of transactions (with a probability of 95%), in their order of importance: the M2 monetary aggregate, the reference interest rate, the BET_C index, respectively GDP.

Keywords
Mergers and Acquisitions, Economic factors, Regression model, VAR/VECM, Granger causality, Romania.

JEL Classification
G34, G30.

1 Introduction

The growth and development of firms through mergers and acquisitions (M&As) represents currently one of the most encountered ways to expand enterprises. In Romania the M&A operations appeared much later comparatively to other countries and, in this sense, we can say that the start was given in the early '90s when the state has gradually given up to the patronage of the economic sector, thus allowing the emergence of the most enthusiast defenders of the value maximization principle, which are the private shareholders. Therefore, in Romania, the '90s were marked by the phenomenon of privatizations. We can state that the privatizations were premises of the development of the M&A market in Romania.

Macroeconomic factors play an important role in the specificity and dynamics of mergers and acquisition, so in this paper we analyzed the influence of factors such as GDP, BET_C index, M2 monetary aggregate, the National Bank interest rate, the exchange rate and the degree of openness of economy. Thus, in this study we try to emphasize the significance and the impact of these factors on M&A activity, providing an insight into specific corporate takeovers market in Romania.

The next section of the paper includes a literature review on macroeconomic factors influencing M&A operations, section 3 provides information on the research methodology used, the variables, the hypotheses set and the types of econometric models used, section 4 presents the results of the study, section 5 provides the conclusion of the study and the last section of the paper presents the acknowledgement.

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2 A review of the literature on macroeconomic factors influencing merger and acquisition activity

In the literature in the field, a number of studies have highlighted the macroeconomic factors that influence the activity of mergers and acquisitions. However, this area is even now arousing interest due to the distinct characteristics of the market for mergers and acquisitions.

A large number of papers are devoted to studying the relationship between M&A activity and stock markets. One of the first relevant studies on this topic belongs to Nelson (1959), who concluded that there is a direct and significant relationship between the M&A activity and the share prices, and a less significant relationship between the M&A activity and the industrial output value. Golbe and White (1988, 1993) were among the first who empirically observed the cyclic character of M&A activity and they pointed out that the M&A activity takes place in waves and that it is influenced by market changes, the cost of capital, the system of taxes as well as other factors.

The study of the relationship between stock prices and M&A activity has aroused the interest of other researchers (Melicher et al., 1983; Sharma and Mathur, 1989; Crook, 1995; Vasconcellos and Kish, 1998; Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004 or Gugler et al., 2005), which revealed that the takeover activity intensifies during periods of capital market *boom*. Holmstrom and Kaplan (2001), Dong et al. (2003) or Ang and Cheng (2006) are other researchers whose studies support the hypothesis of the over-evaluation of shares in explaining the enhancing of M&A activity. Clarke and Ioannidis (1996) showed that there is Granger causality between stock prices and the number, the value, respectively of mergers and acquisitions. Haque et al. (1995) showed a bidirectional link between the M&A activity and the share prices. On the other hand, Geroski (1984) examined the link between M&As and capital market indices, but he did not identify any causal link between M&As and share prices. Guerard (1989) identified a unidirectional link between stock prices and M&As in the U.S.A. during 1895-1964 (Granger causality from stock prices to the number of operations), but not between the industrial output and the M&A activity.

For the Romanian takeovers market, Cernat-Gruici et al. (2010) analyzed the relationship between M&As in Romania and the Romanian stock market, its evolution being reflected by the BET and BET-C indices. Using Granger causality test, the results of the research reveal that, for the analyzed period (2000-2009), a bidirectional Granger causality was identified.

Other studies (Crook, 1995; Ali-Yrkko, 2002; Nakamura, 2004; Resende, 2008) suggest that the gross domestic product significantly influences the M&A activity, such as a GDP growth will lead to an intensification of M&A activity. On the other hand, Healy and Palepu (1993) argue that a GDP growth could mean higher liquidity reserves at company level, which can lead to excess spending funds to purchase other national firms and, thus, to increase their market power. The neoclassical explanation of the M&A activity is that these operations represent an effective response to the reorganization opportunities arising from certain economic events, the waves of M&As being caused by a combination of economic, technological and regulatory shocks. Harford (2005) argues, however, that these types of shocks cannot by themselves generate a wave of M&As and in addition, the existance of sufficient liquidity to accomodate the asset reallocation is necessary. Resende (2008) also identified a direct correlation between money growth and the M&A activity. Other research (Bekenstein, 1979; Becketti, 1986) identified an inverse relation between GDP and the M&A activity. However, Becketti (1986), like many other researchers, concluded that the increase in the price of the shares is followed by an increase in the M&A activity.

The influence of interest rates on the M&A activity is highlighted in numerous studies. Thus, Melicher et al. (1983), Becketti (1986), or Yagil (1996) indicate that lower interest rates reduce the cost of financing the operations, thus boosting the corporate takeover activity and encouraging the cash payment. Also, when interest rates rise, Yagil (1996) shows that on the takeovers market, there is a tendency to substitute the payment in money with the payment in securities.

Boateng et al. (2011), Uddin and Boateng (2011) or Boateng et al. (2014) analyzed the cross-border M&A activity from a macroeconomic perspective and they indicated that the GDP, the money

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supply, the stock prices, the exchange rate, the inflation explains, largely, the variation in the number of cross-border operations and influence the decisions of firms to invest abroad. Vasconcellos and Kish (1998) or Harris and Ravenscraft (1991) argue that firms from countries that have a strong currency compared to the corresponding firms from foreign countries will be tempted to carry foreign operations, as a depreciated currency makes the assets of a company to be cheaper for investors who come from countries where the currency is stronger.

Economic openness may be a relevant factor when it comes to M&A activity. As Nakamura (2004) stated, the increase of the openness of economy is reflected in new business opportunities for foreign investors. Also, in addition to the positive effect that the decline in the interest rates and the growth of stock exchange indexes on M&As have, Kamaly (2007) highlighted the significant influence of the degree of openness of economy on the cluster operations. Thus, the openness of economy can significantly influence the M&A activity.

3 Research methodology

The first stage of this research was to collect quarterly data on Romania, during 2001 first quarter – 2013 fourth quarter, on the following variables, considered factors affecting the number of M&As transactions:

- the economic growth, measured by GDP nominal value, expressed in millions lei, current prices;
- the BET_C stock index;
- the National Bank interest rate (monetary policy interest rate, from 1 September 2011);
- the average exchange rate, RON/ EUR;
- the money supply, M2 monetary aggregate specifically, expressed in millions of lei;
- the degree of openness of economy, measured as the ratio of the sum of exports and imports and GDP.

Data were collected from the website of the National Institute of Statistics of Romania, www.insse.ro, from monthly reports and databases available on the website of the National Bank of Romania, www.bnr.ro, and the information provided by consulting companies such as PricewaterhouseCoopers, Raiffeisen Investment AG and Ernst & Young on the number of transactions. The BET_C stock index values were collected from the site of Bucharest Stock Exchange, www.bvb.ro; there were collected daily closing values then the quarterly average was calculated.

These data will represent the basis of investigating and validating or invalidating the following research hypotheses:

H1: The number of mergers and acquisitions increases during periods of economic growth.

H2: The number of mergers and acquisitions increases during stock growth.

H3: The number of mergers and acquisitions increases during periods of lower interest rates.

H4: The number of mergers and acquisitions increases when the domestic currency depreciates because this evolution attracts investors who hold a significant share in the takeover activity in Romania.

H5: The number of mergers and acquisitions decreases when money diminishes.

H6: The number of mergers and acquisitions increases with the degree of openness of economy.

The validation of these assumptions will be based on the results of two types of econometric models:

- simple regression models between the endogenous factor - the number of M&A operations and exogenous factors, mentioned in the previous paragraphs. Based on these patterns, we identify the strength of the correlation between the two variables and its statistical significance. We will also validate or invalidate the research hypotheses stated above.

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- a VAR (Vector Auto Regresive Model) model, which will underpin the Granger causality analysis. With the help of the second model and the variance decomposition method, we determine which of the variables considered as factors influencing the number of M&A operations has the greatest influence on them. Also, the impulse response functions show us the deviation from the equilibrium level, expressed as a percentage of the number of mergers and acquisitions in response to a shock (change) of 1% for each influential factor, that is the number of time periods necessary so that, after the intervention of shock, the level of the number of M&A operations return to the equilibrium level.

The essential difference between the two models is the approach of variables. For the first group of models, we can talk about a dependent variable and its influencing factors, and in the second case all variables are influencing factors and dependent variables, at the same time. The data will be processed using the Eviews software.

4 Results

The aim of these models is to study the correlation between selected variables. In order to eliminate the trend, we will use the log of the initial series. Some of the data were deseazonalized using Tramo-Seats method (the degree of openness of the economy, GDP as well as imports).

Table 1. Variables used in the modelling

Name of the initial variable	Symbol for the initial data series	Symbol for the transformed variable
Number of mergers and acquisitions	TRANZ	LOG_TRANZ
GDP	PIB	LOG_GDP_SA
M2 monetary aggregate	M2	LOG_M2
Exchange rate RON/Euro	CS	LOG_ER
BET_C Index	BET_C	LOG_BET_C
Degree of the openness of the economy	GDE	DO_SA
National Bank's interest rate	RDR	LOG_IR

Source: the authors.

Using the scatterplot between LOG_TRANZ and the exogenous variables, we will be able to describe the correlation the latter has on the number of mergers and aquisitions.

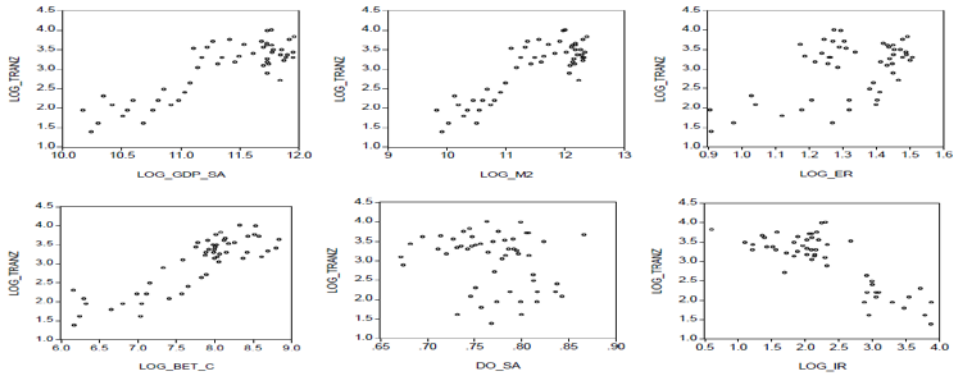

Figure 1. Scatterplot between the number of mergers and acquisitions and exogenous variables (Source: authors' calculus using Eviews)

Analysing the above graphical representations, we can conclude that the number of mergers and aquisions is directly and linearly correlated with the GDP, M2 monetary aggregate, the exchange rate

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and the BET_C index, the National Bank interest rate influences indirectly and linearly the number of mergers and aquisions, while the degree of openness does not significantly influence the dependent variable.

The above mentioned hypothesis will be confirmed using econometric modelling. We will develop linear models between the number of M&As and selected exogenous variables, some of the estimation results being presented in Table 2.

Table 2. Estimation results of the linear simple regression model between the number of mergers and acquisitions and exogenous variables

Exogenous variables	R-squared $\hat{\hat{R}}^2$	Fisher statistic F_{calc}	P	Coefficient of exogenous variable	t Statistic	P
LOG_GDP_SA	0,72*	128,46	0	1,11*	11,33	0
LOG_BET_C	0,74*	143,01	0	0,86*	11,95	0
LOG_IR	0,66*	100,60	0	-0,74*	-10,03	0
LOG_ER	0,28*	19,45	0	2,42*	4,41	0
LOG_M2	0,71*	123,86	0	0,75*	11,12	0
DO_SA	0,04	2,4	0,12	-3,48	-1,55	0,12

*Significant values for a 5% confidence level
Source: authors' calculus using Eviews.

The R-squared values confirm that the number of M&As is significantly influenced by all the variables except by the degree of openness. The exchange rate has the weakest influence on the number of M&As but the correlation is statistically significant. The coefficient of the interest rate is negative, so we can state that a raise of its value has a negative impact on the number of mergers and acquisitions. The tests for the independence, homoscedasticity and normality of the errors confirm the validity of the models.

Regarding our research propositions, some of them are validated by our calculus, as seen in Table 3.

Table 3. Research propositions and related decisions using linear models

Research propositions	Decision
H1: The number of mergers and aquisions increases in periods of boom.	Validated
H2: The number of mergers and aquisions increases in periods of periods of stock exchange growth.	Validated
H3: The number of mergers and aquisions increases when interest rates decrease.	Validated
H4:The number of mergers and aquisions increases when the national currency depreciates, being an incentive for foreign investors.	Validated, weak correlation
H5: The number of mergers and aquisions decreases when M2 monetary aggregate diminishes.	Validated
H6: The number of mergers and aquisions increases with the degree of openness of the economy.	Not validated

Source: authors' results using Eviews.

VAR and VECM models have been largely used for describing correlations and causality between macroeconomic variables. We will use this approach in order to identify the Granger causality between the number of mergers and aquisions and the other selected variables.

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First we have investigated the stationarity of data, using ADF test with intercept and trend. All the variables are I(1) for a 5% level of confidence, except the log of GDP which is I(1), for 10% level of confidence.

This is why we will use cointegration tests in order to identify the number of cointegration equations, after estimating a non restricted VAR model. Johansen cointegration test has indicated 4 cointegration equations at 1% and 5% level of confidence. A VECM model with 4 cointegration equations was then estimated, all the tests regarding the errors being validated. The Granger causality tests has shown that the exchange rate and the degree of openness of the economy cause the less the number of mergers and acquisitions, as seen in Table 4.

Table 4. Granger causality tests resuls for D (LOG_TRANZ)

	Chi-sq	df	Prob.
D(LOG_IR)	18.29375	2	0.0001
D(LOG_GDP_SA)	7.763016	2	0.0206
D(LOG_M2)	29.68678	2	0.0000
D(DO_SA)	4.280598	2	0.1176
D(LOG_ER)	1.585839	2	0.4525
D(LOG_BET_C)	8.158431	2	0.0169

Source: authors' calculus using Eviews.

We will use the impulse response function in order to simulate the response of the number of M&As to a 1% increase of the other variables as well as impulse.

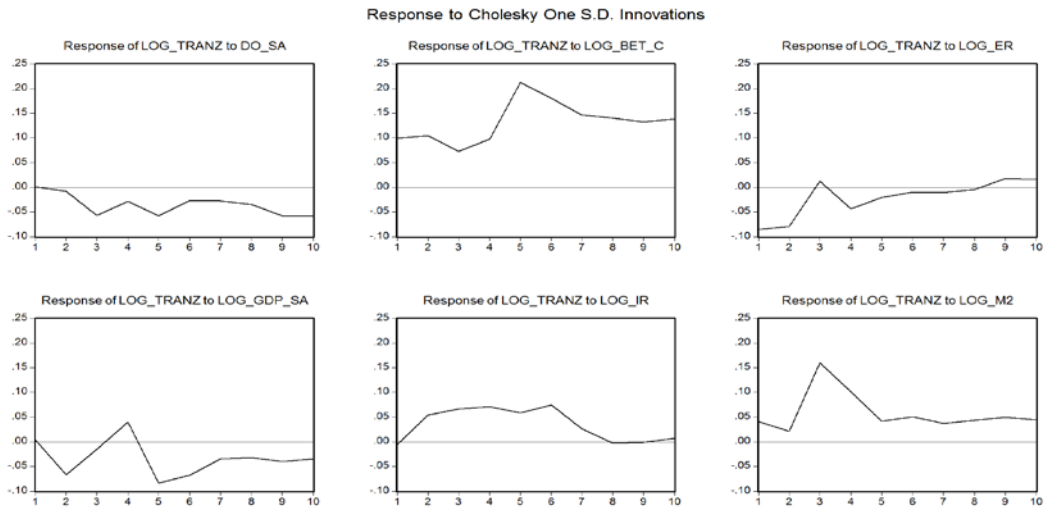

Figure 2. Impulse response function of the number of mergers and aquisitions at 1% increase of selected variables (Source: authors' calculus using Eviews)

A growing stock market index influences the number of mergers and acquisitions. A positive but lagged effect on the number of M&As has the increase of GDP, interest rate and of M2 monetary aggregate. The degree of openness and the exchange rate has a negative but insignificant impact on short run on the number of mergers and aquisitions. The resuls of the estimations of the VECM model and Granger causality test will help us validate the research propositions, as seen in Table 5.

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Table 5. Research propositions and related decisions using a VECM Model

Research propositions	Decision
H1: The number of mergers and aquisions increases in periods of boom.	Validated
H2: The number of mergers and aquisions increases in periods of periods of stock exchange growth.	Validated
H3: The number of mergers and aquisions increases when interest rates decrease.	Validated
H4: The number of mergers and aquisions increases when the national currency depreciates, being an incentive for foreign investors .	Not validated
H5: The number of mergers and aquisions decreases when M2 monetary aggregate diminishes.	Validated
H6: The number of mergers and aquisions increases with the degree of openness of the economy.	Not validated

Source: authors' results using Eviews.

Analysing the results of the 2 models, we can state that most of them are similar. H1, H2, H3 and H5 research propositions are validated by both models, while H6 is not validated by neither one. In what concerns hypothesis H4, assuming that between the exchange rate and the number of mergers and aquisitions exists a one-direction relationship, we can state that the variables are weakly correlated. Using a more complex approach (a bi-directional correlation), the hypothesis is not validated. Most of the correlations between macroeconomic variables are bi-directional ones, so being the one between the exchange rate and the number of mergers and aquisitions, but in the case of Romania this one is not confirmed by the hystorical data.

5 Conclusion

The two types of models used to analyze the macroeconomic factors that influenced the activity of M&A in Romania, provided largely similar results. Simple regression models used to analyze the correlation between the endogenous factor - the number of M&A transactions - and each of the exogenous factors taken separately (GDP, BET_C stock index, M2 monetary aggregate, the reference interest rate, the exchange rate and the degree of openness of the economy), led to the acceptance of hypotheses H1, H2, H3 and H5. After the analysis using the simple regression model was rejected the hypothesis that the degree of openness of the economy leads to increased M&A activity, while there is a connection between the exchange rate and the number of M&As, yet poorly intense.The test for Granger causality identification showed the following variables with significant impact on the evolution of the number of transactions (with a probability of 95%) in order of importance: the M2 monetary aggregate, the reference interest rate, the BET_C index, GDP respectively.

Regarding the influence of money supply on M&A activity, expressed by the number of transactions, the results coincide with those of Resende (2008). Indeed, the availability of liquidity may play an important role in deciding the merger or the acquisition, a direct correlation between the money growth and the M&A activity being identified.

The results we have obtained regarding the interest rate are consistent with those of researchers Melicher et al. (1983), Becketti (1986) or Yagil (1996) and reveal the causality in Granger's sense of this variable on the evolution of the number of mergers and acquisitions. Indeed, the lower interest rates reduce the cost of operation financing, thus boosting the corporate takeover activity. Conversely, the higher the interest rates, the more discouraged the investors will be, which is reflected in a decrease in the number of transactions.

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The number of M&As is influenced by the evolution in the capital market, reflected by the BET-C stock index. Thus, the econometric analysis revealed a Granger causality of the stock price on M&A operations. The results of the econometric analysis are consistent with those obtained by Nelson (1959), Melicher et al. (1983), Sharma and Mathur (1989) or Clarke and Ioannidis (1996). The managers' decisions to merge or acquire other companies are strongly influenced by the stock market evolution and are determined by the prospect of higher future profits. The results indicate that a strong and stable capital market may encourage or discourage executives to initiate expensive mergers or acquisitions. However, the success of such operations cannot be fully secured by arising stock market, which means that many M&As fail even in good times of the capital market.

The gross domestic product variable is a cause in Granger sense for the evolution in the number of mergers and acquisitions, and the result that we have obtained is consistent with the one obtained by Crook (1995), Ali-Yrkko (2002), Nakamura (2004) or Resende (2008) and, thus, it is different from that obtained by Bekenstein (1979) or Becketti (1986). Thus, the study conducted showed the positive impact of GDP on M&A activity, highlighting the fact that its growth will lead to an increase in the takeover activity. In periods of economic growth, favorable economic conditions drive the M&A activity. The managers' optimism regarding the M&A operations increases due to a favorable outlook for future profits. In periods of economic growth, firms face fewer financial constraints, the access to capital is easier and cheaper, and therefore the investors are encouraged to carry out expansion projects. On the other hand, the recession times and the unfavorable economic conditions lead to a decrease in the number of operations performed. Basically, in these times, many businesses aim to survive, so that the expansion projects are considered only by the companies that have sufficient liquidity. The recession times have resulted in greater financial constraints of companies, so that many of them are forced to reduce production and costs.

The openness of the economy and the exchange rate do not represent causes in the Granger sense of the evolution of the number of mergers and acquisitions. Although many M&A transactions involved foreign investors, it seems that the degree of openness of the economy and the exchange rate evolution have not influenced the decision to invest in Romania.

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THE CAUSES OF BANKRUPTCY AND IMPACT OF THE ECONOMIC CRISIS ON THE CORPORATE INSOLVENCY´S EVOLUTION IN THE CZECH REPUBLIC

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Abstract
This article aims to analyze the causes of bankruptcy and the impact of the financial crisis on the corporate insolvency´s evolution and the changes in the Czech republic regime. There is needed to create the procedure regulating the exit of companies from the economy and improve its insolvency law and save viable businesses and to stimulace the creation of new ones. Less willing to risk opening a small business may mean changing bankruptcy codes, which could create stagnation in our economy. Clear causes of bankruptcy are drawn between failures in management, marketing and financial aspects. We want to compare the Czech republic position to European Union in term of time and recovery rate and dynamics of business insolvencies´number and to propose specific measures to improve its situation. In this context, we try in the article also mention the specifics of companies which are employing people with disabilities and also the issue of financial literacy, especially for persons with disabilities.

Keywords
Insolvency, Recovery Rate, Economic Crisis, Small and Medium-sized Enterprises, Persons with Disabilities.

JEL Classification
E24, G33, J14, J64, K35.

1 Introduction

A key role in the health of the economy by providing employment and job growth plays small business. There is a strong correlation between national economic growth and the level of national entrepreneurial activity (Small Business Administration, Advocacy Small Business Statistics and Research 2002). The significat raise in the number of insolvent companies were affected by the 2008 global economic crisis and emphasize the importance of improving insolvency regimes. Restricted access to credit, reduction in trade finance and foreign direct investment influenced companies in the world. It was good oportunity for governments and policymakers to engage in significant reform of the bankruptcy process by many EU member states, including the Czech republic.

Their insolvency laws were improved through specific mechanism like: empowering creditors, insisting on gualifications, promoting out-of-court workouts, keeping abuse in check, setting time limits, promoting specilized courts, protecting secured creditors and increasing transparency. After the adoption of market-based economy the post-communist economies that have experienced the transition are the emerging economies in central and Eastern Europe.The Great Depression which was originated in the U.S., was the biggest global recession and spread around the world at a rapid race, and was not limited to financial market bud had a major influence the real economy, economic growth, unemployment.

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2 Literature rewiew

Free enterprise system is depend on nation´s traditional values of individual initiative, social mobility and political freedom. The importance for government and corporate policy is to analyse the causes of bankruptcy and the efficiency of bankruptcy and reorganization procedures (Ravid and Sundgren, 1998). The top performing economies are characterized by continuation of viable business, speed and low costs (Doing Business). Bankruptcy reforms support reorganization because is fastest than foreclosure or liquidation. Reorganization diminish failure rates small and medium-sized enterprises (SMEs) that support bankruptcy reforms (Doing Business). The creation of solid reorganization and the survival of viable businesse are items on which is focused modern bankruptcy laws. By giving efficient companies a chance at a fresh start, bankruptcy law helps maintain a higher overall level of entrepreneurship in an economy (Armour and Cumming, 2008). Keeping viable firms operating are the most important goals of insolvency systeme. Early liquidation of sustainable businesses should prevent a good bankruptcy regime (Djankov et al. , 2008). In the French legal origin countries, which have highly formal bankruptcy procedures are the odds of saving the firm especially low. Foreclosure with no or limited court oversight and floating charge are simpler mechanisms and essentially transfer control of the firm to the secured creditor, might be preferred Djankov (2008). Encouraging the creation of new firms and promoting healthy competition in the economy can help keep efficient firms in existence by lower bankruptcy costs Cirmizi et al. (2010). Especially for small and medium-size enterprises well-functioning bankruptcy regimes can facilitate access to finance and improve growth in the entire economy (Uttamchandani and Menezes, 2010).

Especially for small and medium-size enterprises well-functioning bankruptcy regimes can facilitate access to finance and improve growth in the entire economy (Uttamchandani and Menezes, 2010). Less developed credit market leads that secured creditors must be protected or granted priority under the law, or they will have less incentive to lend in the future (Claessens and Klapper, 2003). Creditors investments must keep reinvesting in viable firms and in a case of bankruptcy they can recover most of them and improve companies ,access to credit (Doing Business). Lower cost of debt are associated with stronger regulation protections for creditors as well as an important increase in the overall level of credit Funchal (2008). Maximize the total value of recovered debt and make it possible to do so at a low costs are economies with good bankruptcy procedures (Doing Business). In going-concern sales are recovery rates higher (mean 39 %) than in piecemeal liquidations (mean 27 %). On average 69 % (median 83 %) secured creditors receive (Ravid and Sundgren, 1998). Famous financial conglomerates colllapsed, had to be hastily merged or needed support from government (Mitchell and Wilmarth, 2008).

3 Research methodology

In order to make a comparative analysis between the EU average and the Czech Republic We have gathered data from Creditreform, Doing Business, Rulet Hermes, Business Dynamics in the 2007 – 2012 period. We have used the following variables:

- The average time to close a business represents time to resolve insolvency (years);
- The percentage of change in number of insolvencies (2011/2010);
- How many cents on the dollar claimants (creditors, tax authorities, and employees) recover from an insolvent firm is recovery rate (cents on the dollar).
- Own research of financial literacy and assistance for persons with disabilities in the case of insolvency i.e. financial distress, insolvency of social and health reasons, ignorance of the rules, lack of financial literacy for people with specific disabilities - visual, hearing, physical and multiple disabilities (Sikorová et al., 2014).

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4 New business success and failure

For all small business entrepreneurs is not an eminent conclusion in business failure. Business failure is avoidable in most cases that shown facts. A business life cycle have all products. It consist of product introduction, growth, maturity and decline. Changing condition in the market place causes some failures. According to report by Dun and Bradstreet are result of poor management caused by a lack of knowledge (in many forms) that is roughy 90 percent of small business failures (Texas Economic Development, n.d.). It can be said as general knowledge gap and it may include understanding cash flow, poor location selection, lack of market information or understanding and poor marketing practices. Through proper management all of these knowledge gaps are avoidable. The failure is for small business the greatest form of failure that requires a bankruptcy filling. Failures often leads to a Viking of bankruptcy Hale (2004) and according to statistics in many countries 95 percent of small businesses fail within five years. Companies with less than 20 employees have only a 37 percent chance of surviving four years that report Dun and Bradstreet. But only ten percent of these closures will close in bankruptcy. Business failure cases many of the same mistakes that can be avoidable and bankruptcy provides a vehicle for giving business owners a new start. Poor management simply fails and is forced to file for bankruptcy, often lies in the early detection of signs of failure.

Is nearly impossible to define the differentiation between the use of the term failure and bankruptcy. Bankruptcy can be stated as a direct entity to the causes of failure. Citing Sheperd (1994), in the paper: *„Trade Credit and Small Business: A Cause of Business Failure"*. Bradley and Rubach define failure as „the organization stops performing those functions that are expected of it". Bradley and Rubach also cited Sherperd in identifying bankruptcy as an entity of failure as „ the filling of a bankruptcy petition reveals the failure of an organization and bankruptcy is recognized as a manifestation that an organization is no longer functioning properly." For in-depth view into actual bankruptcy use the bankruptcy statistics and specific surveys. For the use of failure and bankruptcy will researcher interrelate.

5 The Czech republic bankruptcy system

Bankruptcy and insolvency proceedings are regulated by the Insolvency Act, which specifis:

- the cases in which a debtor becomes insolvent;
- how the debtor settles with creditors;
- individual methods of credit settlement.

If you have creditors whom you are unable to repay you may be declared insolvent. The debtor is considered incapable of repaying debtsunder exact circumstances which specifies the law. When the business has multiple creditors and when the sum of liabilities exceeds the value of the business owner´s assets is often considered incapable. The act also sets out the procedure where there is a threat of bankruptcy.

There are several ways of addressing bankruptcy:

- Bankruptcy proceedings involve the gradual sale of the bankrupt´s assets, and the sharing out of the revenue generated among the creditors.
- New forms of managing the insolvency procedure, such as reorganisation and discharging the debt.

In 2012 started statistical research of the results of insolvency proceeding in the Czech Republic and partial results show creditors´returns in the Czech economic area far below the anticipated level but are significantly lower than international statistics suggest Schonfeld et al. (2013). The company death is a much more common cause of company closer than bankruptcy. In 2012 was founded 23 242 companies that is about 408 less than in 2009 but the companies deaths was in 2012 more about 387 (5924) than in 2009. According to collection of harmonized data by Eurostat in Europe 2009/2010 which measured the impact of the regulatory framework on the level of insolvencies and the Czech

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Republic had the number of deaths / 10 000 firms 171 and the number of insolvencies/10 000 firms 14, the percentage of insolvencies on deaths had 1.2%. The Czech Republic belongs to lowest rank of percentages of insolvencies on deaths. Cyprus, Romania had 0.00% but Luxemburg had the highest 32.4%.

Our study also resulted very interesting conclusion. In the current period is increasing the number of employees of companies (especially SMEs), who find themselves in financial distress, unable to pay its obligations to the bank, insurance and other entities and declared personal bankruptcy. Very often the employer finds this fact in delay and is forced to solve the extremely difficult situation. These employees are losing motivation to greater work effort and despite all efforts will be on the subsistence minimum for 5 years. Employer despite of financial distress employees can get itself into insolvency and accountancy offices and financial accountancy offices must solve series of questions how to get out of this situation. The court-ordered payments and other statutory payments has to be paid out of the employee´s salary in priority and all information then appear on the employers payroll office (SMEs), Sikorová (2013). As indicated above, is particularly significant in this context is the continuity of staff, who are also persons with disabilities and despite of this purpose they solve the security of their own compensation needs and secure their basic life function for themselves or their family members.

At the Silesian university (SU) in Opava, School Business of Administration (SBA) in Karviná we are trying to prevent a number of the above mentioned problems. We implement special programs for disabled students, seniors and their family members and students of University of third age (UTA) not only in teaching financial literacy, but we follow the continuity of the importance of solving a collaborative problems which are linked to intergenerational dialogue and participation of students with disabilities in presentation, teaching and project activities under the name of "Integration with disabilities and what students with disabilities UTA can.manage" (Sikorová et al., 2013).

It is also excellent team work and excellent cooperation with student, students UTA and persons with disabilities who are at risk of financial position. It is motivation to show that people with disabilities and seniors can manage a lot, it is not worth giving up, give them power, hope and most importantly improve their lives and show them how to help. Specifically we implement courses for the visually impaired in braille addressing the basics of financial literacy. For the hearing-impaired persons we have the same course which we financed and processed by ourselves. Of course for people with physical disabilities and multiple disabilities (on a mechanical or electric wheelchair) frequently with visual disabilities we have started more than 10 years ago started. And why do we devote our research just this group of people is obvious. Such people become the most frequently targeted by unfair marketing and then they get into an unnecessary financial problems and there is a direct link on their job and employing SMEs. (Sikorová et al., 2014).

Based on the use of scientific methods of analysis, synthesis, comparison, deduction, a number of mathematical and statistical methods, including methods of abstraction and scientific prediction, we manage to apply to specific outcomes in their own research and a number of respondents, we learned how not to get into financial distress. It's also great to help these people, but that is for us the greatest joy when we can help people to share their knowledge and experience and most importantly allow them to overcome their further study, work, overcoming adversity, engage in other activities and help in working life, help these people personally and show that there is always hope that life has for them much more sense and can enjoy from it. And learn to take care of their finances and thus not getting to complicated situations and their employers - small and medium enterprises.

5.1 Small business bankruptcy

A key ingredient to the health of the nation´s economy has been identified small business. Last effort for failing businesses has been identified bankruptcy. The major causes of business failures were found as a result of a survey in *the paper Financial Difficulties of Small Business and Reasons for Their Failure in 1998.* The causes were divided into:

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- Outside business conditions (38.5%): includes general costs of doing business, insurance, increasing in competition.
- Financing (28%): includes: high debt, inability secure new capital, loss of capital.
- Inside business conditions (27.1%): includes trade credit problems, location, loss of clients, management mistakes.
- Tax (20.1%).
- Disputes with a particular creditor (18.8%): includes lawsuit, and contract disputes, includes foreclosures.
- Personal (16.9%): includes divorce and illness.
- Calamities (9.6%): includes disasters and accidents, includes fraud, theft.
- Other (6.4%): includes involuntary bankruptcy filings, buying time.

Causes in bankruptcy are grouped into marketing, management and financial and lack of experience in any of these categories can lead to catastrophic failure and bankruptcy. While not all causes of bankruptcy fall into these categories and we can identify specific causes of small business bankruptcy. Specific causes include unrealistic expectations, personal issues, under capitalization, natural disaster (fire, irreparable damage to a critical facility, destruction of key equipment or the death of a key employee), poor cash flow, poor location, poor record keeping, growing pains, loss of key person, lack of technology, poor planning, trade credit.

6 The insolvencies´ evolutions in the Czech republic

Protect investors ensuring sustainable financial development leading to economic growth should the legal system according to La Porta (1997, 1998). The finance and Law Theory is based on the following criteria:

- The type of regulatory Framework applied, that is civil law or common law;
- Whether bankruptcy regulations are favorable to debtor and creditors.

Legal systems based on civil law have all countries in Europe. Common law have the United Kingdom and Ireland. Element from common law and civil law is pluralistic law which have Malta and Cyprus. Civil Law is divided into three sub-groups: French Civil law, German Civil law, Scandinavian Civil Law and Combined civil law (French and German civil law) (European Commission). The Czech Republic fits into German Civil law.

High rate of insolvency compared to the rates of firm deaths have countries with English Common Law. Lower rate of insolvency compared to the rate of firm deaths have countries with French Civil Law. The type of legal system (common law, type of civil law) does not have a direct impact on the efficiency of bankruptcy procedures.

Two main insolvency sources are:

- Euler Hermes (2010), Les Défaillances d'entreprises dans le monde
- Creditreform, Insolvencies in Europe 2009/2010.

According to the main sources and a European Commission´s survey the majority of EU members countries-11 have debtor friendly legal system with lower efficiency , 6 countries have debtor friendly legal system with higher efficiency, neutral legal system have 5 countries, creditor friendly with higher efficiency have 4 countries and 2 countries have creditor friendly legal system with lower efficiency. The Czech Republic is among debtor friendly with lower efficiency. Debtor-friendly laws are considered to lead to a higher number of insolvencies because they establish ownership rights which are advantageous to the debtor. (European Commission). The efficiency of the system may affect the existence of out-of-court settlements, the existence of fast track procedures for SMEs, the different treatment of honest and dishonest bankrupts, the existence of an early warning system.

As a reaction to the economic crisis are following recommended reforms that should be done by the Czech republic:

- Create special insolvency department within tribunals

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- Establish the type of early warning tools-training course, informational meeting and public agencies
- Introduction of out-of-court debt restructuring options (creditor and debtors can more easily agree to change the term of debt repayments, allowing the debtors to continue to do business without initiating insolvency proceeding in court) (Doing Business)
- Inforesses a legal background the legislation in-court reorganisation proceedings
- Respect to honest and dishonest entrepreneurs facing bankruptcy.

In ‚Doing Business' economies where reorganization is the most common insolvency proceeding are the highest recovery rates, but in my opinion in the Czech Republic is not true because the most common proceeding is bankruptcy. Where liquidation is the most common procedure the recovery rates are very significant.

The Table 1 shows in terms of resolving insolvency an average profile for the Czech Republic compared to the EU-27.

Table 1. Resolving Insolvency in the Czech Republic – EU average

Economy	Year	Time (years)	Recovery rate (in % cents on dollar)
European Union	2007	2.11	59.41
	2008	2.08	57.55
	2009	2.08	57.56
	2010	1.95	60.36
	2011	1.99	60.85
Czech Republic	2007	6.5	21.3
	2008	6.5	20.9
	2009	6.5	20.9
	2010	3.2	55.9
	2011	3.2	56.0

Source: World Bank, IFC 2012, Doing Business.

The time and the recovery rate tripled over the past 6 years in the Czech Republic. The time to resolve insolvency last more in Bulgaria, Romania and the Slovak Republic. When in going-concern sales are higher than in piecemeal liquidations are recovery rate higher (Ravid and Sundgren, 1998) and this is confirmed in the case of the Czech Republic.

The best-ranked EU countries in terms of recovery rate, in 2012 are Finland (89.7%), Netherlands (88.8%), Belgium (88.7%) and United Kingdom (88.6%). The lowest recovery rate has Romania (29.2%). We must mention that the Czech Republic has higher recovery rate to the EU average (46.64% of the EU average) and this is due to the 2009 insolvency reform. In the years of crisis (2009 and 2010) was the recovery rate in the Czech Republic below the average EU and than (2010 and 2011) registered a high increase.

According to data in the Table 1 the effective insolvency law sharply increased yields of creditors of the insolvency proceedings, reduce the time and reduce the costs incurred by lenders on the course of the insolvency proceedings. These numbers make the Czech specialists in insolvency law insolvency practice astonishment, because it is vastly different from their experience. Bankruptcy Act (No. 328/1991) was subjected to overwhelming criticism because did not adequately protect creditors throughout its effectiveness and did not offer adequate security. In the preparation of the new Insolvency Act (182/2006) was one of the priorities to strengthen the rights of creditors in insolvency proceedings. This priority was based on a few basic ideas. First of all, it was a mechanical assumption that strengthen creditor rights and thanks to their greater interest in the results and better control of the insolvency proceedings it improves these processes. It was based on the fact that the law on bankruptcy during the time its effectiveness did not protect the interests of creditors and allowed

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borrowers range of obstruction and above there were many case of handling bankruptcy proceedings. The legislature assumed the strengthening the rights of creditors as positive result from a theoretical point. However, it appeared that it does not work exactly. It turned out that the input hypothesis did not take into account other factors and especially the motivation of the participants of the insolvency proceedings. The first five years of use of the Insolvency Act did not make fundamental changes – even changes in the behavior of creditors. It is quite evident that the insolvency law is more appropriate legal framework and opens up significantly more space for creative, fast and effective solution to the debtor´s bankruptcy than it was the Law on Bankruptcy. On the other hand, that significant improvement of the regulatory environment did not bring expected results. One of the reasons that participants in insolvency proceedings in many cases are not interested actively participate in it because of their experience with entire bankruptcy system which do not guarantee the return of funds spent on active enforcement in insolvency proceedings. Lenders do not regulate their conduct in accordance with the theoretical assumptions, but primarily by the probability of recovering at least some interest part of receivables compared with the incurred transaction cost Richter (2008). In this decision-making process on the one side lies the transaction costs which are necessary to make a part to the bankruptcy and on the other, the potential revenues from a successful insolvency proceedings against the debtor.

Since the onset of the economic crisis in 2008 and according to the Creditreform and Euler Hermes data, the number of insolvencies in the EU average raised in 2009, diminished in 2010 and then increased again in 2011 and the same situation was in the Czech Republic (as is shown in Table 2).

Table 2. The insolvencies´evolution in the Czech Republic and the EU average (2007-2011)

EU average	2007	2008	2009	2010	2011	Change 2010/11 in %
Czech Republic in corporate failures	4 600	4 500	6 200	5 559	6 753	+ 21.5
EU average	153 029	176 292	218 624	217 613	218 029	+ 0.19

Source: Euler Hermes, Les défaillances dans le monde.

In the individual countries the economic environment was influenced substantially by the debt crisis and its repercussions in the nations especially in the nations of Western Europe .In the Czech Republic has increased the number of insolvencies but it is due to insolvency reform in 2009 where was implemented a new alternative way of solving insolvency for persons - discharge of debt.

After 37,139 corporate failures in 2010 in Central and Eastern Europe in 2011 was produced a total of 39,423 cases. The sharpest increases were noted in Bulgaria (1,500 cases; plus 114.3%), Hungary (20,322 cases; plus 16.2%), Czech Republic (6,753 cases; plus 21.5%) and Slovenia (675 cases; plus 32.4%). Notable downturns in corporate failures in Romania (4,580 cases; minus 16.4%), Lithuania (800 cases; minus 66.8%) and Estonia (256 cases; minus 66.8%) (Business Dynamics).

Researche survey Business Danymics reported that in 22 countries are debtor willing to use and out-of-court settlement, banks are in one third of countries willing. The least willing to use it are tax authorities in one third of the countries. It is regulated by law or by legal practice in 16 out of the 33 countries Belgium, Bulgaria, Croatia, Finland, France, Greece, Hungary, Iceland, Ireland, Latvia, Montenegro, the Netherlands, Poland, Portugal, Spain and the United Kingdom except the Czech Republic. This process cannot be part of the insolvency proceedings according to the Insolvency Act No. 182/2006. Businesses that become insolvent in the Czech Republic are required to announce this to the court to commence insolvency proceedings. In my opinion, if we change legal framework the creditors will not make decision if transaction cost are higher than the potential revenues from a successful insolvency proceedings against the debtor in case of not fraudulent behaviour.

Taking into consideration the Credit reform data the fastest insolvency procedure is encountered in Ireland (0.4%) and the slowest in the Slovak Republic (4 years).

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Here is the apparent link to importance of just ongoing research of financial literacy and own research in conditions of the Czech Republic for persons with disabilities (students at the Faculty of Business administration, Silesian university in Opava, students of full-time and combines studies, including students the University of third age and the Virtual university of the Third age SU OPF in Karviná).

In this context is important the significant sub-concept focused on financial literacy in schools and especially the cooperation "ČSOB" and the National council of persons with disabilities in the Czech Republic and some universities by transmissioning of key knowledge and implementation followed by evaluation "Test to verify the practical knowledge of family finances for persons with disabilities". SU OPF in Karviná successfully participated in this project and also in the project "The school without barriers and the Programme the school without barriers and without borders on the international level.

7 Conclusion

Evidence failure rates of small business in the Czech Republic are related nature of a capitalistic market in relying on competition where only the strongest survive. Poor planning, lack of financing, lack of business experience and lack of personal discipline are some of the major causes of bankruptcy. Success is obviously not a guarantee, but nor is failure. An exit strategy should be an important part of strong business plan when business runs into problems.

Measured by Doing Business the Czech Republic has advanced the most toward the frontier in resolving insolvency in the past 5 years and provides a good example of successful evolutionary reforms. Shows that meaningful improvements to insolvency systems require sustained, continuous efforts. A new insolvency law went into effect in 2008 and declared reorganization the preferred method of resolving insolvency. Stricter government oversight and insolvency representatives became subject to educational and professional requirements led to improvement liquidation and reorganization proceedings. On the other hand, that the first five years of us of the regulatory environment did not bring expected results – even changes in the behavior of creditors. One of the reasons that participants in insolvency proceedings in many cases are not interested actively participate in it because of their experience with entire bankruptcy system which do not guarantee the return of funds spent on active enforcement in insolvency proceedings. Participant must consider the probability of recovering at least some interest part of receivables compared with the incurred transaction cost.

The Czech Republic must affect the efficiency of the bankruptcy system, such as: different treatment of honest and dishonest bankrupts, the existence of an early warning system, it must strengthen the rights of secured creditors and implement out-of-court-settlement. It is important to reduce creditors risk leading to a lower cost recovery and strengthen participation in insolvency proceedings.

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THE IMPACT OF FINANCIAL MARKETS ON REAL ECONOMY IN THE CONTEXT OF SUSTAINABLE ECONOMIC DEVELOPMENT

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Abstract
Financial sector and financial markets may promote sustainable development financing activities that ensure sustainable development in the long run. According to sustainable development concept, economically sustainable system must be able avoid extreme imbalances which damage economic growth. Recent financial crisis has shown that imbalances in financial markets may impede real sector's activities and investment and finally to reduce sustainable economic development. There is no clear evidence in the scientific literature whether well developed financial markets ensure faster economic growth and recovery of the economy in the post crisis periods. The aim of the paper is to assess the impact of financial markets development on the real economy. Empirical analysis focuses on the data of the European Union countries. The study covers years 2000 – 2012, using annual data. The research has shown that GDP and investment growth was higher during 2000 – 2012 years in the case of lower economic and stock market development's countries, but economic recovery was more complicated in the case of these EU countries in years 2010 – 2011. But the research results do not prove that relationship between economic recovery and stock market's development exists.

Keywords
Financial Crisis, Financial Markets, Sustainable Economic Development, Real Economy.

JEL Classification
G01, G10, 011, E20.

1 Introduction

One of the major sustainable development concept's statements is that economically sustainable system must be able avoid extreme imbalances which damage economic growth. Recent financial crisis has shown that financial sector's shocks determine imbalances in real economy. The main channel, through which these imbalances spread globally, was financial markets. Real economy's reaction to the financial markets' shocks displays through decreased private investment, consumption, exports and finally economic growth. A lot of attention has been paid on the investigation of link between financial system's development and economic development or economic growth in recent years. According to the scientific literature, well developed financial markets create higher opportunities to allocate financial resources effectively and thus boost economic growth and economic development. But there is no clear evidence whether well developed financial markets ensure faster economic growth and recovery of the economy in the post crisis periods. So understanding the link between financial markets and the real economy is still relevant.

The aim of the paper is to assess the impact of financial markets development on the real economy. The research object: the relationship between the real economy and financial markets development. The research methods: the systemic, logical and comparative analysis of scientific literature, the analysis of statistical data, descriptive statistics, hierarchical cluster analysis, correlation analysis. Empirical analysis focuses on the data of the European Union (EU) countries. The study covers 2000 – 2012 years, using annual data.

2 Importance of Interrelation Between Sustainable Economic Development and Financial Markets

Sustainable development is development which meets the needs of the present without compromising the ability of future generations to meet their own needs (Harris, 2000). Sustainable development includes three aspects: economic, environmental and social. According to Harris

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(2000), an economically sustainable system must be able to produce goods and services on a continuing basis, to maintain manageable levels of government and external debt, and to avoid extreme sectoral imbalances which damage industrial production. The implementation of sustainable development concept is very complicated in practice, because it is very difficult to combine principles of sustainable development concept with goals of those who can implement this concept, because usually activities associated with sustainable development do not generate profit in the short run.

Pisano, Martinuzzi and Bruckner (2012) analyzed how financial sector's activities can be combined with the sustainable development concept. The authors made conclusion that sustainable development has a multidimensional and holistic perspective, in which a balance among environmental protection, social equity and economic development is pursued, while the main goal of the financial sector and financial markets is the maximization of financial profits. Despite this inconsistence, according to Doppelt (2000), the financial sector may have two overall roles to play in promoting sustainable development. First, it could apply principles of sustainability to its internal operations and develop policies and programs to reduce its pollution and waste. Second, it could develop products and services which encourage environmentally sustainable investments and business practices.

Anwar, Shabir and Hussain (2011) empirically investigated the contribution of financial sector in sustainable economic development of Pakistan (study covers 1973 – 2007 years). A stable long run and short run relationship was found between financial sector indicators and the sustainable economic development. Causality test showed that financial sector development was the basis for economic development.

Summarizing literature analysis it can be stated that the financial sector and financial markets may promote sustainable development financing activities that ensure sustainable development in the long run. In this context there are very important private sector's activities and facilities to invest to the sustainable development. But recent financial crisis has shown that imbalances in financial markets may impede real sector's activities and investment and finally to reduce sustainable economic development. Therefore it is very important to investigate the link between financial markets and the real economy.

3 Theoretical and Empirical Aspects of the Financial Markets Impact on the Real Economy

The link between financial markets and the real economy has attained a lot of attention in the recent years. According to Weber (2014) financial institutions and financial markets exert a dominating influence on the economy and sustainable development, because capital is channelled to different markets, regions, sectors or projects through financial institutions and markets.

According to economic theory, there should be a strong link between economic activity and security prices, given that the stock price is the discounted present value of the firm's payout (Duca, 2007). The impact of financial markets on the real economy may emerge through the cost of capital, consumption effect, which is associated with consumers' expectations, and financial accelerator (when company's stock price value increases, its market value increases, increasing the ability of firm to borrow more) (Duca, 2007). The financial markets are the source of financial resources to finance business investment. The role of financial markets increases when the banking sector is unable to increase supply of funds, despite the fact, that banking sector usually is the main source of funds.

According to scientific literature, there is no doubt that the main determinant of long term economic growth and sustainable development is investment. The higher growth of investment is key factor of higher economic growth in the long run; and financial markets support this higher economic growth providing financial resources to finance it.

In recent years scientists tested the link between financial markets and the real economy empirically. One of the main trends of such research is research that test link between financial

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markets and GDP growth. The relationship between financial markets and real economy usually is bidirectional. For example, Rajavat and Joshi (2013) found that capital formation as well as gross domestic savings affect the volume of share traded at the stock market in the case of Indian stock market (1988 – 2012 year; Johansen cointegration test was applied). Review of empirical research that tested relationship between financial markets and the real economy is presented in the Table 1.

Table 1. Empirical Research Results on the Financial Markets Impact on the Real Economy

Authors	Research sample	Research method	The main conclusions
Duca (2007)	United States, United Kingdom, Japan, France, Germany	Granger causality test	Stock prices Granger cause GDP (except in the case of Germany).
Adamopoulos (2010)	Germany, 1965 – 2007	Vector error correction model	There is a unidirectional causality between stock market development and economic growth with direction going from stock market development to economic growth.
Mansor (2011)	Thailand, 1993 – 2007	Cointegration test, VAR	Long run relationship among the variables (real GDP, market capitalization ratio, investment ratio, aggregate price level) exists. There is positive and sizeable impact of stock market development on real GDP and investment ratio.
Ray (2012)	India, 1990 – 2011	Granger causality test	There exist unidirectional causality between stock price (going from stock prices) and inflation, foreign direct investment, GDP, exchange rate, gross fixed capital formation.
Hossain, Hossain and Sadi (2013)	Malaysia, 1991 – 2009	Granger causality test	There exists a long and short–run correlation between stock market and economic growth; Granger Causality test suggests a unidirectional causality relationship.
Nwaolisa, Kasie and Francis (2013)	Nigeria, 1999 – 2011	Multivariate regression	Relationship was insignificant.
Hailemariam and Guotai (2014)	17 emerging and 10 developed economies, 2000 – 2011	Generalized method of moments	There exists statistically significant relationship between stock market development and economic growth both directly, as well as indirectly by boosting investment behaviour. Stock market development is an important wheel for economic growth.

Source: author's research results.

Summarizing the research results it can be stated that majority of empirical studies focuses on the stock market. It can be concluded that financial markets have significant impact on the real economy. But it is still unclear whether the financial markets and higher its development has positive effect on the real economy in post crisis periods. In order to evaluate this issue, further research is needed.

4 Research Methodology

Data. This study is carried out using annual data ranging from 2000 to 2012 in the case of the EU countries (except Croatia). The cross–sectional data is used. Arithmetic average is used for calculation of financial market and GDP per capita country's indicators and geometric – for real economy's indicators (except GDP per capita). The impact of stock market development on the real economy is investigated in this study. The description of indicators used in this research is presented in Table 2. The source of the data is the World Bank's World Development Indicators database.

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Table 2. Description of Indicators

Indicator Name	Definition
	Indicators of the financial market
Market capitalization of listed companies (% of GDP)	Market capitalization is the share price times the number of shares outstanding. Listed domestic companies are the domestically incorporated companies listed on the country's stock exchanges at the end of the year.
Stocks traded, total value (% of GDP)	Stocks traded refer to the total value of shares traded during the period. This indicator complements the market capitalization ratio by showing whether market size is matched by trading.
Stocks traded, turnover ratio (%)	Turnover ratio is the total value of shares traded during the period divided by the average market capitalization for the period. Average market capitalization is calculated as the average of the end–of–period values for the current period and the previous period.
	Indicators of the real economy
Gross fixed capital formation (GFCF) (annual % growth)	Average annual growth of gross fixed capital formation (formerly gross domestic fixed investment) based on constant local currency. Aggregates are based on constant 2005 U.S. dollars.
GDP growth (annual %)	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2005 U.S. dollars.
GDP per capita (constant 2005 US$)	GDP per capita is gross domestic product divided by midyear population. Data are in constant 2005 U.S. dollars.

Source: The World Bank.

The assessment of the financial market development's impact on the real economy. This study focuses on the impact of stock market development on the real economy. Following statistical methods are used: hierarchical cluster analysis, descriptive statistics, correlation analysis (Spearman's rho correlation). Microsoft Excel and IBM SPSS Statistics 17.0 software packages are used.

Stage 1. Calculation of indicators. The evaluation of countries data has shown that the peak of the recent financial crisis was reached in 2009. In order to assess the stock market's impact on the real economy's recovery, cumulative GDP growth (Cum. GDP) and GFCF growth (Cum. GFCF) rates are calculated using data of 2010 – 2011 years. Data of 2012 is not used because decline of economic growth was observed in majority of countries in 2012. Then arithmetic GDP growth and GFCF growth rates of 2010 – 2011 years data are calculated.

Stage 2. Classification of the EU countries using cluster analysis: grouping variables – market capitalization of listed companies; stocks traded total value and stocks traded turnover ratio. Analysis of descriptive statistics is performed in clusters and all countries' sample. Analysis of spearman's correlations between indicators is performed in clusters and all countries' sample.

Stage 3. Investigation of the stock market impact on economic and investment growth recovery. The arithmetic GDP growth and GFCF growth rates of 2010 – 2011 years are compared with 2000 – 2012 years average rates in order to evaluate whether GDP and GFCF growth have reached the average growth rates.

5 Empirical Results

The descriptive statistics of the stock market and the real economy's data (see Table 3) shows that there are large differences between the EU countries stock market's development, GDP and investment growth. Cumulative data of GDP and GFCF growth (2010 – 2011 years) shows that not all countries have recovered after the crisis peak in 2009.

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Table 3. Descriptive Statistics of the EU Countries' Data

Indicator	N	MIN	MAX	Mean
GDP growth	27	0.4	4.5	2.3
Cumulative GDP growth	27	-12.0	12.1	3.7
GFCF growth	19	-3.4	7.4	1.4
Cumulative GFCF growth	19	-34.6	30.3	-1.0
GDP per capita	27	3860	79271	25851
Market capitalization	27	6.0	160.8	52.4
Stocks traded total value	27	0.8	162.3	40.4
Stocks traded turnover ratio	27	0.8	160.7	61.0

Source: author's calculations.

The cluster analysis was used in order to better assess the stock market's impact on the real economy. Three clusters were obtained using hierarchical cluster analysis (see Table 4). The first cluster is characterized as low stock markets development's cluster where stocks traded total value and stocks traded turnover ratio are significantly lower than in the case of the second cluster. The second cluster is described as high stock markets development's cluster, where countries stock markets' liquidity (stocks traded turnover ratio) is very high. It is very interesting that market capitalization is the highest, but the stocks traded turnover ratio is the lowest in the case of Luxembourg compared with the other clusters.

Table 4. Descriptive Statistics of Clusters

Clusters	1st Cluster				2nd Cluster				3rd Cluster
Countries	Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Estonia, Greece, Hungary, Ireland, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovak Republic, Slovenia				Denmark, Finland, France, Germany, Italy, Netherlands, Spain, Sweden, United Kingdom				Luxembourg
Indicator	N	MIN	MAX	Mean	N	MIN	MAX	Mean	Average
GDP growth	17	0.5	4.5	2.8	9	0.4	2.3	1.4	2.7
Cumulative GDP growth	17	-12.1	12.1	3.4	9	-0.2	9.5	4.0	5.0
GFCF growth	9	-3.4	7.40	2.0	9	-0.6	3.1	0.7	3.1
Cumulative GFCF growth	9	-34.6	30.3	-6.5	9	-10.9	15.4	3.1	11.4
GDP per capita	17	3860	46326	17221	9	25431	46810	36216	79271
Market capitalization	17	6.0	64.9	29.9	9	37.6	129.3	82.8	160.8
Stocks traded total value	17	0.8	26.8	11.1	9	49.1	162.3	100.0	1.3
Stocks traded turnover ratio	17	3.2	76.7	32.2	9	78.8	160.7	121.9	0.8

Source: author's calculations.

The differences of GDP and GFCF growth rates between the clusters show that the first cluster countries' GDP growth was higher than the seconds'. But there are observed larger differences between countries in this cluster, especially in the case of GFCF growth. Cumulative data shows that majority of countries have reached and exceeded 2000 – 2012 years average growth rates during 2010 – 2011 years, but recovery process was more succeed in the case of the second cluster's countries compared with the first cluster. In the second cluster – negative cumulative GDP and GFCF growth rates were in the case of Spain, negative GFCF growth was in the case of Italy and Netherlands. The economy of Greece has not recovered; the GFCF growth of Bulgaria, Ireland and Portugal was negative in the case of the first cluster. According to descriptive statistics, it may be concluded that recovery of investment growth was slower than GDP in the EU countries, but

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economic recovery of the countries was more complicated in the case of cluster that is described as low stock markets development's cluster.

The spearman's correlation analysis was performed in order to better assess relationship between stock market's development and the real economy in the case of all sample and clusters (see Table 5).

Table 5. Results of Spearman's Correlations

	GDP growth	Cum. GDP growth	GFCF growth	Cum. GFCF growth	GDP per capita	Market capitali-zation	Stocks traded total value	Stocks traded turnover ratio
				All Sample				
GDP growth	1.000	.422*	.714**	.298	-.553**	-.513**	-.683**	-.681**
Cum. GDP growth	.422*	1.000	.544*	.904**	-.045	-.049	-.212	-.167
GFCF growth	.714**	.544*	1.000	.640**	-.232	-.186	-.414	-.489*
Cum. GFCF growth	.298	.904**	.640**	1.000	.188	.140	-.077	-.100
GDP per capita	-.553**	-.045	-.232	.188	1.000	.838**	.595**	.479*
N	27	27	19	19	27	27	27	27
				1st Cluster				
GDP growth	1.000	.672**	.817**	.417	-.676**	-.627**	-.691**	-.576*
Cum. GDP growth	.672**	1.000	.483	.817**	-.397	-.363	-.522*	-.358
GFCF growth	.817**	.483	1.000	.467	-.767*	-.767*	-.750*	-.733*
Cum. GFCF growth	.417	.817**	.467	1.000	-.183	-.333	-.433	-.267
GDP per capita	-.676**	-.397	-.767*	-.183	1.000	.777**	.674**	.478
N	17	17	9	9	17	17	17	17
				2nd Cluster				
GDP growth	1.000	.417	.517	.300	.150	.850**	.717*	-.017
Cum. GDP growth	.417	1.000	.750*	.950**	.367	.350	.000	-.450
GFCF growth	.517	.750*	1.000	.850**	.417	.383	-.100	-.767*
Cum. GFCF growth	.300	.950**	.850**	1.000	.450	.200	-.233	-.617
GDP per capita	.150	.367	.417	.450	1.000	.400	-.067	-.583
N	9	9	9	9	9	9	9	9

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

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

Source: author's calculations.

The correlation analysis show that GDP growth was higher in countries which GDP per capita was smaller and stock markets' development was lower in the case of all countries' sample. Higher GDP growth and lower development of stock markets was observed in the case of countries which economic development was lower. Results show that investment growth was less associated with stock market's development than that GDP growth. According to correlation coefficients, there is no relationship between stock market's development and economic recovery in post crisis period in the case of all countries' sample.

Very similar results were found in the case of the first cluster. But there is observed stronger negative relationship between investment growth (GFCF growth) and stock market's development than that in the case of all countries' sample. This means that investment growth was higher in the lower stock markets' development and lower economic development's countries. Relationship

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between economic recovery (cumulative GDP and GFCF growth) and stock's market development was negative, but statistically significant was only in the case of stocks traded total value indicator.

Positive relationship was found between GDP growth and stock market's development (in the case of market capitalization and stock traded total value indicators) in the case of the second cluster which is described as high stock markets development's cluster, where countries stock markets' liquidity (stocks traded turnover ratio) was very high. Statistically significant negative correlation was found between investment growth and stocks traded turnover ratio. Results show that GDP growth and investment growth are very different in high development countries; and determinants of GDP and investment growth may be very different.

According to correlation results, it cannot be made conclusion about relationship between economic recovery and stock market's development. The arithmetic GDP growth and GFCF growth rates of 2010 – 2011 years are compared with 2000 – 2012 years average rates in order to better evaluate whether relationship between economic recovery and stock market's development exists (see Table 5).

Table 6. Results on Investigation of the Stock Market Impact on Economic and Investment Growth Recovery

	1st Cluster		2nd Cluster		Luxembourg	
Indicator	GDP	GFCF	GDP	GFCF	GDP	GFCF
Countries that reached 2000 – 2012 years growth average						
Countries	Austria, Belgium, Estonia, Malta, Poland	Austria, Belgium, Estonia	Denmark, Finland, France, Sweden Germany, Italy	Denmark, Finland, France, Germany, Sweden		
Number	5	3*	6	5	No	Yes
Countries that did not reach 2000 – 2012 years growth average						
Countries	Bulgaria, Cyprus, Czech Republic, Greece, Hungary, Ireland, Latvia, Lithuania, Portugal, Romania, Slovak Republic, Slovenia	Bulgaria, Czech Republic, Greece, Ireland, Portugal, Romania	Netherlands, Spain, United Kingdom	Italy, Netherlands, Spain, United Kingdom		
Number	12	6*	3	4	Yes	No

*There is no data of 8 countries in the case of 1st cluster.

Source: author's calculations.

Of seventeen of the first cluster's countries only five countries reached 2000 – 2012 years GDP growth average during 2010 – 2011 years, while of nine of the second cluster's countries six countries reached this average. The investment recovery also was better in the case of the second cluster.

6 Conclusion

Summarizing the research results it can be concluded that the financial sector and financial markets may promote sustainable development financing activities that ensure sustainable development in the long run.

The empirical research results show that GDP and investment growth was higher during 2000 – 2012 years in the case of lower economic and stock market development's countries. The investment growth was less associated with stock market's development than GDP growth.

According to correlation results, it cannot be made conclusion about relationship between economic recovery and stock market's development. There is no relationship between stock market's development and economic recovery in the post crisis period in the case of all countries' sample.

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Overall research results show that economic recovery was more complicated in the case of lower economic and stock market development's countries in 2010 – 2011 years. The recovery of investment growth was slower than that GDP in the EU countries.

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NEW PERSPECTIVE ON THE DEVELOPMENT OF COMPETITION POLICY

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Abstract
Competition policy is one of the main segments of economic policy. Competition is an essential instrument to ensure a healthy rivalry. It is necessary that the principles and rules of competition were not adversely affected. Globalization of the world economy with an increased coherence between different economies, which is one of the main aspects of enlargement not only of the economic crisis. Such risks, particularly in the economic area have to face competition protection. The current competition problems can be interpreted in terms of economic and legal. Competition policy at European Union emphasizes respect for a system of open and competitive markets in achieving economic targets. In 2013 Proposal for a directive of the European Parliament and of the Council on certain rules governing actions for damages for infringements of the competition law took place within the Council of the EU. At present, once again preparing changes in the area of competition in Slovak Republic, which could come into force on 1st July 2014.

Keywords
Amendment to the Act, Competition, Competition Policy.

JEL Classification
L40, L49.

1 Introduction

The ambition of every country is to have a well-functioning and effective protection of competition. This requires several factors. Modern competition law must be flexible and competition authority must apply the rules of competition. It is necessary to have a qualified judiciary with the required expertise in this issue. The combination of these factors should have positive results. The results should be in accordance with the competition rules, and should not violate competition.

When a certain part fails or does not function properly, competition problems distort the market situation. Consumers lose the benefits of competition and the economy loses benefits as well. Of course, the trends in the world affect competition. It is therefore necessary to update the rules on competition, which should meet the requirements of the market and improve their implementation.

Competition is the key mechanism of the market economy, which ensures optimal utilization of resources in the economy. Competition puts pressure on innovation and economic growth. Healthy competition will ensure the good functioning of the market for consumers. Its positive effects are widely recognized and documented by numerous empirical studies. Competitive pressure:

- maximizes benefits for the consumer as well as overall social benefits,
- positively influences the effective allocation of resources and production of maximum revenues for which the economy has a potential,
- positively influences the production effectiveness, stimulates the cost reduction, eliminates wasting in production,
- stimulates more effective methods of production and edges less effective entities out of the market,
- has a positive influence on the dynamic effectiveness, stimulates innovation and development of new products.

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2 Competition policy and its position in the national economy

Competition leads to efficient use of resources and hence is a pre-requisite for growth. The effect of competition is divided into three categories: (Cabral, 2000).

- Productive efficiency: competition drives firms to use their inputs in the most efficient way in order to supply goods and services at the lowest possible costs. Hence, competition effects productivity through a resource efficiency channel. As a result of resource efficiency, competition will drive inefficient companies out of business and allows efficient companies to enter markets and/or gain market share. Hence, competition replaces inefficient with efficient production through an entry/exit channel.
- Dynamic efficiency: competition drives companies to innovate and create new products and services to gain market share. Hence, competition leads to technological progress through an innovative channel.
- Allocative efficiency: competition drives firms to only produce the goods and services that consumers demand. Efficient allocation also means that consumers who values the goods or services at least as much as the true cost of producing the product will be the consumers buying the product in the end.

Competition policy has an impact on the efficiency of the economy. We expressed it by the overview below:

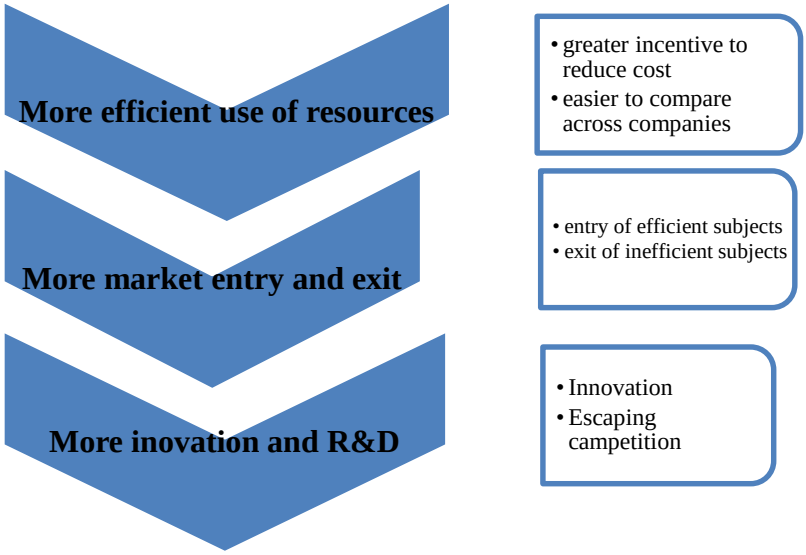

Figure 1. Competition versus productivity (Source: European Parliament, 2013b)

The purpose of competition policy is to overcome the effects of the global crisis and to promote and protect market principles, which release barriers to entry and exit from the market, and also ensure the same conditions for all actors - state, private sector, consumers. According to the OECD study, lower regulatory barriers to competition may increase the nominal growth of GDP p.c. on 2-3 %, and therefore the country, which offers an attractive environment, has a chance to quickly overcome the crisis. (Annual report Antimonopoly office of the Slovak Republic, 2012.).

Weakening competition may extend rapid economic downturn during several years. Programs of governments and competition authorities must aim to protect competition, enabling efficient allocation of resources, and promote technological development and innovation. This will increase productivity and accelerate growth. The contribution of competition policy to economic growth is not directly measurable, but there are nevertheless appropriate indicators. It is the overall factor productivity. For example, the potential gains from improving competition and thus force the network

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industries is estimated to be 1.5 % to 2 % of GDP. (Annual Report of the Antimonopoly Office of the Slovak Republic, 2013).

For example, according A. Heimler of 2009 - The economics crisis: new challanges for regulatory reform and competition?, increased competition in the longer term does not lead to net job losses, but their growth. (Zemanovičová, 2010). Other effects of competition are summarized in the following table 1.

Table 1. Relationship between competiton and growth

Conclusion	Data
D. W. Jorgensen and K. Nomura conclude that open markets and competition from abroad increase produktivity	42 sectores in the US and Japan from 1960-2004, confirmed this fact. (The industry origins of the US-Japan productivity gap)
J. R. Baldwin and W. Gu conclude that competition contributes with up to 70 per cent to productivity growth	28.000 Canadian production companies from 1973-1999. (Competition, firm turnover and productivity growth)
M. Asplund and V. Nocke conclude that competition increases with market size and allows more efficient companies to replace less efficient companies.	Statistical data and interviews/surveys from 1.030 Swedish hair salons. (Firm Turnover in Imperfectly Competitive Markets)
P. Aghion, R. Blundell, R. Griffith and S. Prantl conclude that market entry increases growth and productivity.	3.827 companies in 166 different sectors from 1980-1993. (Entry and Productivity Growth: Evidence from Microlevel Panel Data)

Source: European Parliament, 2013c.

3 Changes in the development of the law framework for the protection of competition

In reality legislative system are mixed and will emphasize different criteria at different times. Thus US policy has frequently used structural tests, although behavioural kriteria have also been applied. For example, US policy towards mergers and and dominant firms between 1919 and 1951 were orientated towards the abuse principle, but since the early 1950s emphasis has increasingly shifted towards structural kriteria, and very recently, efficiency considerations. In the United Kingdom several Monopolies Commision reports have shown concern for performance aspects, while in continental Europe a mixture of conduct and performance criteria has long prevailed. This is especially the case in France, with the Conseil de la Concerrence, while the German system is closer to the American one. (Jacquemin, 2014).

In line with developments in European competition policy and the Slovak Republic to the formal approach in dealing with competition cases economic approach. In practice, this means that the takes into account the real impact on the behavior of businesses and consumers.

The last two amendments to the Law on Protection of Competition introduced into the Slovak legal competition other news.

With effect from 1 January 2012 in area of concentration has introduced a simplified procedure for treatment of concentrations that do not raise concerns about the threat of competition.

This mode should increase efficiency and speed up the assessment of concentrations. If the Authority by notice or by simple examination, finds that in this case there are no competition concerns that would require a deeper analysis of the case. It introduced a new, so-called "two-stage" procedure for the concentration.

In introducing this concept to Slovakia was inspired by the practice of other Member States and the European Commission and the simplified procedure in certain cases in area of concentration. Simplified management is particularly true in the case of transition from joint control to sole control, or if the notice clearly states that there is no undue horizontal overlaps or vertical connection, where

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it would be possible to identify the affected markets. The same applies for the case of joint venture, unless the parent companies do not act in the same areas as in the enterprise.

However, the concentration of the type described do not exclude the use of simplified procedures in other cases. The relevant provisions of the Act is general enough so that the right assessment of the Office which cases the concentration could be completed in this way. The basic criterion for decision is whether the notified concentration or results of the investigation would require an in-depth analysis of the effects of the concentration on competition.

According to this philosophy, it is sometimes preferable to use depth analysis in cases that typically fall under the simplified procedure and issue a decision with full reasons.

Amendment of the Act introduced also switch from recently used dominance test to so-called SIEC test, so Significant Impediment of Effective Competition. Within new regime the Office assesses whether a concentration does not result in significant distortion of effective competition in the relevant market where the creation or strengthening of dominant position is only one of possibilities how such significant distortion of effective competition may occur. The Slovak legal adjustment thus uses the same test as the European Commission does according to the Regulation on the Control of Concentrations between Undertakings. (Annual report Antimonopoly office of the Slovak Republic, 2013).

In accordance with the development of the European competition policy also the Slovak Office replaces its formal approach in dealing with competition cases by more economic approacheas. The Slovak institution has priorities also in terms of the method of solving competition concerns. Experience shows that in many cases the initiation of administrative proceedings and imposing sanctions is not the best solution. On the contrary, the alternative solution can be the use of advocacy activities, adoption of commitments or settlement, which may be a faster, more effective and more beneficial remedy both for consumers and competition.

3.1 Amendment to the Act on Protection of Competition in Slovakia no. 151/2014 Coll.

The amendments respond to the need for legislative changes in certain areas following changes in the practice. They also aim at enhancing the efficiency of the competition rules. The most significant changes concern the introduction of new instruments in the Slovak competition policy. Some additional changes relate to the decision-making process. First, the Office intends to modify the system of time limits in the merger control area and to introduce notification using specific forms to simplify and speed up the process. The area of antitrust is also subject of certain amendments: the provisions on commitments and the leniency programme will be amended to increase legal certainty for undertakings. The leniency programme has been revised to reduce the concerns of potential leniency applicants and increase their motivation to submit a leniency application, thereby intending to increase the number of revealed cartels. The draft amendment provides for possible limitations in case of actions for damages against a successful leniency applicant. The amendment also foresees the possibility to use settlement as an alternative method of case resolution for all types of competition infringements.

The amendment introduces a completely new instrument in Slovak competition practice: financial reward to natural persons that provide evidence of the cartel, representing 1 % of the fine imposed for cartel (maximum 100,000 eur). The Office expects that this change will, together with the current leniency programs contribute to the fight against cartels. (Amendment to the Act on Protection of Competition in Slovakia no. 151/2014 Coll.)

In response to efforts at European level to increase the effectiveness of private enforcement of competition law, the amendment introduces a rule under which the successful applicant of not imposing a fine (full immunity) under the leniency program also gives immunity from private rights, which are enforced by the potential damage entities. Together to an existing immunity in the area of criminal law so an entrepreneur can obtain comprehensive protection against administrative, criminal

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and private-consequences of infringement of competition law, where the first on their own initiative submitted to the Office decisive evidence of the cartel.

The law will directly take into account the possibility of the applicant for leniency - submit an application for a marker with the possibility to provide specific evidence later. (epravo.sk, 2014). The amendment modifies the eligibility conditions of undertakings to obtain full or partial immunity under the leniency program. Full immunity from imposition of fines would be in contrast to the current legal regulation, also accessible undertaking which was the initiator of an agreement restricting competition (but not the undertaking which forced another to participate in such an agreement).

Reduction of the fine by 50 % (partial immunity) will be available as an initiator, which entered into anti-competitive agreement and undertaking which forced others to participate in it. On the contrary, the new condition is that the applicant for leniency must fulfill prohibition - not aware of another undertaking with the application and its contents.

With the consent of the Authority, the applicant for leniency able to continue breaking the law after its application. If necessary to maintain the effectiveness of inspections carried out by the Authority on the basis of information obtained from the request.

About imposed or no imposed of the exceptions to the prohibition to exercise the rights and obligations of the merger, the Authority will decide within 20 working days of receipt of the application.

Criteria of turnover - the obligation to notify the concentration - will no be calculated on the basis of the previous year closed, but for the previous period, although it was not closed - generally based on the accounts relating to the following financial year at the time of the merger in the audited if required verification.

The period for issuing of decision about concentration begin to run from the date of the merger, even if notification is not complete. In the case of an incomplete notification, the Office should ask the notifier to supplement its notification. Period for the decision will be run when all requested documents and information will be complete.

The amendment introduces new rules regarding the protection and accessibility of information and secrecy. Application content about Infliction of a fine or not granting penalties under the leniency program will be excluded from file inspection until dispatch call before issuing a decision. Inspection of documents will require the written consent of the person providing them.

Because of the shortcomings that have been identified by practical application so requirements mandate to perform inspections increasing. Rights of inspectors office and the corresponding obligations of the entrepreneur will have a more detailed and clearer adatation. The law also establishes special penalties up to the amount of 5 % and 1 % of turnover for breaching of the individual duties in the inspection of businesses, and up amount to 80,000 eur, respectively 25,000 eur for breach of those obligations on individuals.

The amendment introduced into the Slovak competition law institute atypical financial reward individual - a natural person for proof of an agreement restricting competition. Similar Institute is a rarity in Europe and there are only a few countries such as the UK and Hungary, but not extensive experience with its application.

The notifier, who is not an entrepreneur or employee of an entrepreneur, who is an applicant for leniency, and he is the first, who submitted to the Office information on the horizontal agreement restricting competition, and if he requested, so he shall be entitled to a remuneration of 1 % of the total fines imposed on all participants in an anti-competitive agreement, up to a maximum of 100,000 eur. Decision imposing the fine must be lawfully and enforceable (possibly confirmed by the administrative court) and fines paid. If the entrepreneur does not pay fine, then remuneration – 50 %, belong to the notifier that would otherwise have belonged to the entrepreneur but not more than 10,000 eur.

New institute arouse mixed reactions, while not ruling provision of rewards to the person who is personally directly involved in the negotiation and application of the cartel.

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The amendment provides mainly for entrepreneurs mostly favorable changes - attractive leniency program with the possibility to obtain immunity from private rights, transparent and binding adjustment institutes settlement, commitments or leniency program, favorable treatment of merger control and more consistent protection of trade secrets and confidential information.

Amendment to Act no. 151/2014 is valid from 1 July 2014.

In 2013 Proposal for a directive of the European Parliament and of the Council on certain rules governing actions for damages for infringements of the competition law took place within the Council of the EU. (European Commission, 2013). Main objective of this Directive determined by the European Commission is the effective enforcement of EU competition rules through optimisation of interaction between enforcement of these rules by the public tools and their enforcement by the private tools, as well as ensuring that a person who has suffered harm caused by an infringement of the EU or national competition law is able to obtain full compensation for that harm. The proposal has two complementary goals. First, to make that EU right to compensation a reality in all member states by removing key practical difficulties which consumers and companies frequently face when they seek redress. Second, the proposal aims at optimising the interplay of such private damages claims with the public enforcement by the EC and national competition authorities, to safeguard strong public enforcement and to achieve a more effective enforcement overall.

4 Conclusion

The European Parliament's 2013 study on competition policy concluded: "Competition plays a crucial role in promoting productivity and innovation as drivers of economic growth. This means that competition policy, which intensifies competition, will stimulate growth." (European Parliament, 2013a).

Competition and competition policy are part and parcel of the general conditions required for innovation to flourish. They provide incentives to innovative enterprises and start-ups, they encourage companies to become more efficient, and they promote subsidies designed to stimulate R&D and innovation. Competition policy fosters competitiveness in a global context. Healthy competition in the Single market prepares European companies to do business on global markets and succeed. It also underpins a modern industrial policy, as reflected in the Lisbon Treaty's provisions on industry (Article 173 TFEU) which states that action taken by the EU and the member countries shall be in accordance with a system of open and competitive markets. Furthermore, competition policy is the necessary counterpart of Single Market regulation. The impact of the regulatory measures on firms' strategies and investment can be undermined if Single-market and competition rules are not properly enforced.

In 2013, all competition-enforcement instruments have contributed to promote growth and competitiveness across the European economy. Antitrust enforcement has deterred and punished the artificial fragmentation of the internal market. State aid modernisation has been developed to encourage the design of growth-enhancing public spending. Important decisions have been taken in sectors of strategic importance such as financial services, telecoms, the digital economy, and energy. International co-operation in competition policy-making and enforcement helped to tackle the challenges posed by the growing internationalisation of business. Finally, 2013 saw two important milestones for EU competition policy. Firstly, Regulation no. 1/2003, when adopted, ushered in a new era in the enforcement of EU antitrust rules and has now, a decade later, led to a stocktaking and reflection for further improvements. Secondly, the Commission adopted a Proposal for a Directive on antitrust damages actions – a long-awaited measure by stakeholders and a policy priority for the current Commission. The proposal is set to remove a number of practical difficulties which victims frequently face when they try to obtain fair compensation for the damage they have suffered as a consequence of infringements of EU competition law. Competition policy has an important position because it provides:

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- free entry of new operators into the market, removing barriers to entry and creating the conditions for a free market exit,
- monitoring and elimination of distortions of competition,
- protect consumers against the behavior of producers, importers and other suppliers disadvantage consumers.

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TIME COMPARISON ANALYSIS OF EFFICIENCY DIFFERENCES IN COMPETITIVENESS: THE CASE OF EU NUTS 2 REGIONS

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Abstract
The European Union faces increased competition from other continents, their nations, regions and cities. The EU's competitiveness depends on a multiplicity of actions that can optimise the potentials within its Member States and especially their regions. Regions are increasingly becoming the drivers of economy and the locomotives of performance. Based on respect to importance of regions, the European Commission has developed the Regional Competitiveness Index with the aim to improve the understanding of territorial competitiveness at the regional level. The RCI shows the strengths and weaknesses of each of the EU NUTS 2 regions, however regional ability in using options enough and hence the competitiveness of European regions must be efficient enough. The paper is focused on using the Malmquist Index for time comparison of efficiency differences in the dynamic of competitiveness. In the paper, efficiency analysis will be applied to 268 NUTS regions within the group of 27 EU Member States and time comparison will be analysed based on competitiveness scores and ranks of each region in the RCI 2010 and the RCI 2013 approach. Results of efficiency changes will be discussed with respect to the stage of development of each regions.

Keywords
Competitiveness, DEA, Efficiency, NUTS 2 Region, RCI.

JEL Classification
C61, O18, R15, R58.

1 Introduction

The European Union (EU) is going through one of the most difficult periods since its establishment, with multiple challenges facing the region's policy-makers. Recent years have seen a myriad of economic and social difficulties, i.e. stagnating economic growth, rising unemployment leading to social tensions, continuing financial troubles and sovereign debt crises in several European countries, exacerbated by the fact that the future outlook remains uncertain. There is widespread agreement that the roots of this prolonged crisis lie in the lack of competitiveness of many countries. The EU faces increased competition from other continents, their nations, regions and cities. The EU competitiveness depends especially on contributions from its own regions, cities and rural areas in all corners of the continent. In this context, an asset for Europe is its rich regional diversity which for each region and larger territory represents a unique set of potentials and challenges for development calling for a corresponding targeted policy mix to become reality. This regional diversity represented by specific territorial endowment is also possible to consider as a competitive advantage of each region. Increasing the competitiveness of Europe and its regions is one of the main aims of the EU. The key to success seems mainly to lie in the active use of territorial potentials for the development of economic functions across a wider area, and to support through national policies. Territories thus have diverse potentials and challenges. In the EU, the process of achieving an increasing trend of performance and a higher level of competitiveness is significantly difficult by the heterogeneity of countries and regions in many areas. Although the EU is one of the most developed parts of the world with high living standards, there exist significant and huge economic, social and territorial disparities having a negative impact on the balanced development across Member States and their regions, and thus weaken EU's performance in a global context (Melecký, 2013). In relation to competitiveness, productivity and efficiency are complementary objectives, which determine the long-term development of countries and regions – as Porter has mentioned, productivity is one relevant way for enhancing competitiveness (Porter, 2003). Porter further states that the aim of national society is raising the living standard and quality of life of its people. The living standard is determined by the

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productivity of economy, which is measured as the value of output per input – productivity depends thus on the efficiency of transformation of inputs into outputs. The ability to raise mentioned standard depends on productivity, efficiency, and effectiveness with which national resources are used.

Motivation of this paper is based on mutual relationship between two significant themes presented by productivity and competitiveness in the context of regional economies. At a time when the EU has to deal with increased pressures on public balances, stemming from demographic trends and globalisation, the improvement of the efficiency of public spending features high on the political agenda. This fact is closely connect with the aim of competitiveness, because rational using of sources/funds for activities could ensure the effective provision of these activities and their corresponding results, which is having an impact on the competitive advantages of each territory. From this point of view, the main aim of the paper is to measure efficiency changes over the reference period and to analyse a level of competitive performance in EU NUTS 2[1] regions based on advanced Data Envelopment Analysis approach – the Malmquist Productivity Index measuring the change of technical efficiency and the change of technological efficiency. Because efficiency analysis is closely lined with competitiveness, the EU Regional Competitiveness Index is used as initial database and approach. The main focus is thus to evaluate the RCI time series which may serve as a tool to assist the EU NUTS 2 regions in setting the right priorities to further increase their competitiveness.

2 Relations between Competitiveness and Productivity

In recent years, the topics about measuring and evaluating of competitiveness and efficiency have enjoyed economic interest. These multidimensional concepts remain ones of the basic standards of performance evaluation and it is also seen as a reflection of success of area in a wider comparison. The exact definition of competitiveness is difficult because of the lack of mainstream view for understanding this term. Competitiveness remains a concept that can be understood in different ways and levels despite widespread acceptance of its importance. The concept of competitiveness is distinguished at different levels – microeconomic, macroeconomic and regional. Anyway, there are some differences between these three approaches; see e.g. (Krugman, 1994). Competitiveness is monitored characteristic of national economies which is increasingly appearing in evaluating their performance and prosperity, welfare and living standards. The concept of competitiveness has quickly spread into regional level, but the notion of regional competitiveness is also contentious. In the global economy regions are increasingly becoming the drivers of the economy and generally one of the most striking features of regional economies is the presence of clusters, or geographic concentrations of linked industries (Porter, 2003). Current economic fundamentals are threatened by shifting of production activities to places with better conditions and regions thus play an increasingly important role in the economic development of states. Nowadays competitiveness is one of the fundamental criteria for evaluating economic performance and reflects the success in the broader comparison. Territories need highly performing units in order to meet their goals, to deliver the products and services they specialized in, and finally to achieve competitive advantage.

Comparative analysis of efficiency in public sector is thus starting point for studying the role of efficiency, effectiveness and productivity regarding economic governance of resources utilization by public management for achieving medium/long-term objectives of economic recovery and sustainable development of national economies. Increasing productivity is generally considered to be the only sustainable way of improving living standards in the long term. Efficiency/productivity is thus a central issue in analyses of economic growth, the effects of fiscal policies, the pricing of capital assets, the level of investments, the technology changes and production technology, and other economic topics and indicators. The efficiency is provided by the relationship between the effects, or outputs such as found in literature review, and efforts or inputs. Figure 1 illustrates the conceptual framework of efficiency and effectiveness. The efficiency is given by the ratio of inputs to outputs, but there is difference between technical efficiency and allocative efficiency. Technical efficiency implies a relation between inputs and outputs on the frontier production curve, but not any form of

[1] The Nomenclature of Territorial Units for Statistics (NUTS).

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technical efficiency makes sense in economic terms, and this deficiency is captured through allocative efficiency that requires a cost/benefit ratio. The effectiveness implies a relationship between outputs and outcomes. In this sense, the distinction between output and outcome must be made. The outcome is linked to welfare or growth and thus may be influenced by multiple factors. The effectiveness is more difficult to assess than efficiency, since the outcome is influenced political choice.

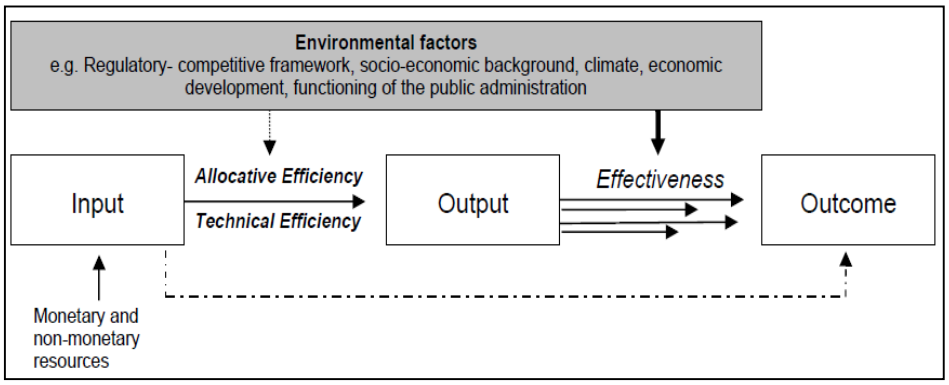

Figure 1. The relationship between the efficiency and the effectiveness (Source: Mandl et al., 2008).

3 Productivity Analysis of EU NUTS 2 Regions by DEA Approach

Based on information mentioned above, the concept of competitiveness is usually linked to productivity (Porter, 1990). Competitiveness may be defined as a measure of the degree in which each economic entity can compete with economic entity. However, the concept of competitiveness may be applicable not only to firms, but also to whole economies. An economy is competitive if firms in that economy face lower unit costs than firms from other economies. Every factor that increases the productivity, and therefore lowers the unit costs of firms in an economy contributes to the competitiveness of the respective economy (Charles and Zegarra, 2014).

According to the Institute for Management and Development (2012), competitiveness is ‘‘a field of economic knowledge, which analyses the facts and policies that shape the ability of a nation to create and maintain an environment that sustains more value creation for its enterprises and more prosperity for its people’’ (p. 502). Other words, competitiveness measures ‘‘how a nation manages the totality of its resources and competencies to increase the prosperity of its people’’ (IMD, 2012, p. 502). This understanding of competitiveness and interpretation of this concept is thus very closely linked with understanding of efficiency and effectiveness concepts; see Figure 1.

3.1 Framework of Empirical Analysis

The efficiency analysis starts from building database of indicators that are part of Regional Competitiveness Index (RCI) approach created by Annoni and Kozovska (2010) in 2010, and then in 2013 updated by Annoni and Dijkstra (2013). The roots of the RCI lay in the most known competitiveness indicator, the Global Competitiveness Index (GCI) reported by the World Economic Forum (WEF). To improve the understanding of territorial competitiveness at the regional level, the European Commission has developed this index which shows the strengths and weaknesses of each of the EU NUTS 2 regions. The RCI is based on eleven pillars describing both inputs and outputs of territorial competitiveness, grouped into three sets describing basic, efficiency and innovative factors of competitiveness. Pillars of the RCI are grouped according to the different dimensions (input versus output aspects) of regional competitiveness they describe. The terms ‘inputs’ and ‘outputs’ are meant to classify pillars into those which describe driving forces of competitiveness, also in terms of long-term potentiality, and those which are direct or indirect outcomes of a competitive society and economy. From this point of view, the RCI approach seems to be convenient with respect to used methodology of DEA and its division to input and output nature of incoming database. The RCI data

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file consists of 66 indicators in 2010, and 73 indicators in 2013; but initial indicators are not used in the paper. Database of analysis presented by three sub-indices of the RCI, i.e. SubInd1: the RCI-Basic, SubInd2: the RCI-Efficiency and SubInd3: the RCI-Innovation. These three (separately for the RCI 2010 and the RCI 2013) sub-indices represent inputs of efficiency analysis and the RCI 2010 and the RCI 2013 represent output of efficiency analysis (with respect to the RCI construction and nature of DEA method).

As regions move along the path of development, their socio-economic conditions change and different determinants become more important for the regional level of competitiveness. As a result, the best way to improve the competitiveness of more developed regions will not necessarily coincide with the way to improve less developed regions. To take this into account, and following the WEF-GCI approach, the EU NUTS 2 regions are divided into 'medium', 'intermediate' and 'high' stages of development in the RCI 2010 (Dijsktra, L. et al., 2011). This is done on the basis of regional GDP per head for 2007 in PPS (Purchasing Power Standard). The EU NUTS 2 regions are classified into the three stages of development in the RCI 2010, according to the thresholds listed in Table 1.

On the basis of membership of each region to suitable stage of development, is this region within each sub-pillar assigned by weight. In the RCI 2013, the weighting system and the regions classification into development stages have been slightly modified, also following the suggestions by the WEF team in charge of the GCI. Five classes, instead of three of the RCI 2010, are used to allow for a smoother change in the weighting values across development stages based on GDP per head for average 2007-2008-2009 in PPS. The RCI does not have any transition stages which are instead used in WEF-GCI with country specific set of weights, but by adding two more classes, the RCI 2013 try to cope with this issue (Table 1).

Table 1. The RCI 2010 Weighting Scheme

Percentage of GDP (PPS/inhabitant)	Development stage	Weights 2010 (w)			
		SubInd1: the RCI-Basic	SubInd2: the RCI-Efficiency	SubInd3: the RCI-Innovation	SUM
< 75	Medium (M)	0.4	0.5	0.1	100 %
≥ 75 and < 100	Intermediate (I)	0.3	0.5	0.2	100 %
≥ 100	High (H)	0.2	0.5	0.3	100 %
Percentage of GDP (PPS/inhabitant)	Development stage	Weights 2013 (w)			
		SubInd1: the RCI-Basic	SubInd2: the RCI-Efficiency	SubInd3: the RCI-Innovation	SUM
< 50	1	0.3500	0.5000	0.1500	100 %
≥ 50 and < 75	2	0.3125	0.5000	0.1875	100 %
≥ 75 and < 90	3	0.2750	0.5000	0.2250	100 %
≥ 90 and < 110	4	0.2375	0.5000	0.2625	100 %
≥ 110	5	0.2000	0.5000	0.3000	100 %

Source: Annoni and Dijkstra, 2013; own elaboration, 2014.

In the first step of analysis, the correction of database is made, i.e. computing the scores for the three groups of dimensions – Basic, Efficiency and Innovation sub-indices. Because of DEA requirement on positive values, it was necessary to correct the initial scores of three sub-indices as inputs and the RCI 2010-the RCI 2013 as outputs (several regions showed negative values in some scores). For all 268 EU NUTS 2 regions across two period 2010 and 2013, the correction was made as follows: it was calculated the minimum value for the whole group of three input sub-indices, where min in the RCI 2010 equals -2.710; and the minimum value for the whole group of three input sub-indices, where min in the RCI 2013 equals -1.913. Based on these minimum values, the value 2.720 was added to the initial scores of calculated sub-indices in 2010. Based on these minimum values, the value 1.920 was added to the initial scores of calculated sub-indices in 2013. All sub-indices gained positive values by this correction, what is required for DEA. After this correction, it was possible to

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multiply the adjusted score of each sub-index by weight corresponding to the stage of development of each region, and get the final score of each of three sub-indices. In following step, the RCI score is computed as weighted score of the three sub-indices, i.e. the RCI is defined as follows (1) and (2):

$$\mathrm{RCI(region)} = w_{\mathrm{basic}}\mathrm{RCI}_{\mathrm{basic}}(\mathrm{region}) + w_{\mathrm{efficiency}}\mathrm{RCI}_{\mathrm{efficiency}}(\mathrm{region}) + w_{\mathrm{innovation}}\mathrm{RCI}_{\mathrm{innovation}}(\mathrm{region}), \quad (1)$$

$$w_{\mathrm{basic}} + w_{\mathrm{efficiency}} + w_{\mathrm{innovation}} = 1. \quad (2)$$

Gained values of calculated sub-indices and values for the RCI 2010 and 2013 are coming as initial variables into Data Envelopment Analysis (DEA). As it was already mentioned above, three-sub-indices represent inputs of efficiency analysis and the RCI represents output; three inputs and one output are thus compared in each period. DEA was first proposed by A. Charnes, W. W. Cooper and E. Rhodes (CCR model) in 1978. Since DEA was first introduced, researchers in a number of fields have quickly recognized that it is an excellent and easily used methodology for modelling operational processes for performance evaluations, e.g. (Hančlová, 2013; Melecký, 2013). In DEA, there are several methods for measuring efficiency, besides the basic DEA models, certain modifications exist. DEA is mathematical approach for providing a relative efficiency assessment and evaluating performance of a set of peer entities called Decision Making Units (DMUs) which convert multiple inputs into multiple outputs. In recent years, research effort has focused on investigation of the causes of productivity change and its decomposition.

The Malmquist Productivity Index (MPI) has become the standard approach in productivity measurement over time within the non-parametric research. The MPI has been introduced firstly by Caves, Christensen and Diewert in 1982. Färe, R. et. al (1994) defined an input-oriented productivity index as the geometric mean of the two MPIs developed by Caves et al. The MPI allows measuring of total productivity by means of distance-functions calculation, which can be estimated by solution of mathematical programming problems of DEA kind. Suppose there are *n* DMUs which consume *m* inputs to produce *s* outputs. If a performance measure is added or deleted from consideration, it will influence the relative efficiencies. Empirically, when the number of performance measures is high in comparison with the number of DMUs, then most of DMUs are evaluated efficient – the obtained results are not reliable. There is a rough rule of thumb (Cooper, W.W. et al., 2007) expresses the relation between the number of DMUs and the number of performance measures as follows (3):

$$n \geq \max\{3(m+s), m \times s\} \quad (3)$$

Nevertheless, in some applications the number of performance measures and DMUs do not meet the mentioned formula (3). To tackle this issue, it should select some performance measures in a manner which comply (3) and impose progressive effect on the efficiency scores. These selected inputs and outputs calls selective measures. But formula (3) needs more considerations. Toloo et al. checked more than 40 papers that contain practical applications and statistically, they found out that in nearly all of the cases the number of inputs and outputs do not exceed 6 (Toloo, 2012). A simple calculation shows that when $m \leq 6$ and $s \leq 6$, then $3(m + s) \geq m \times s$. As a result, in this paper instead of using (3), following formula (4) is applied:

$$n \geq 3(m+s) \quad (4)$$

In the case of this paper, the rule of thumb is met, because number of DMUs is three times higher than sum of input and outputs, i.e. $268 \geq 3\,(3 + 1)$, $268 \geq 3\,(4)$, $268 \geq 12$.

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Suppose we have a production function in time period *t* as well as period *t+1*. MPI calculation requires two single period and two mixed period measures. The two single period measures can be obtained by using the CCR model with Constant Returns to Scale (CRS). Suppose each DMU_j *(j=1, 2,…, n)* produces a vector of output $y_j^t = (y_{1j}^t, \ldots, y_{sj}^t)$ by using a vector of inputs $x_j^t = (x_{1j}^t, \ldots, x_{mj}^t)$ at each time period *t, t=1... T*. MPI measuring the efficiency change of production units between successive periods *t* and *t+1*, is formulated via (5):

$$MPI_0\ \left(x^{t+1},\ y^{t+1},\ x^t,\ y^t\right)\ =\ E_0 * P_0, \tag{5}$$

where E_0 is change in the relative efficiency of DMU_0 in relation to other units (i.e. due to the production possibility frontier) between time periods *t* and *t+1*; P_0 describes the change in the production possibility frontier as a result of the technology development between time periods *t* and *t+1*. Modification of MPI_0 (6) makes it possible to measure the change of technical efficiency and the movement of the frontier in terms of a specific DMU0:

$$M_0 = \frac{\theta_0^t\left(x_0^t, y_0^t\right)}{\theta_0^{t+1}\left(x_0^{t+1}, y_0^{t+1}\right)}\left[\frac{\theta_0^{t+1}\left(x_0^{t+1}, y_0^{t+1}\right)}{\theta_0^t\left(x_0^{t+1}, y_0^{t+1}\right)} \cdot \frac{\theta_0^{t+1}\left(x_0^t, y_0^t\right)}{\theta_0^t\left(x_0^t, y_0^t\right)}\right]^{1/2}. \tag{6}$$

where $\theta_0^t\left(x_0^t, y_0^t\right)$ is a function that represents the production technology S^t in the time period *t* and assigns to evaluated DMU_0 the efficiency rate. Function $\theta_0^{t+1}\left(x_0^t, y_0^t\right)$ gives the relationship of inputs and outputs of the time period *t* with production technology S^t in the time period *t +1* and function $\theta_0^t\left(x_0^{t+1}, y_0^{t+1}\right)$ present inputs and outputs of the time period *t +1* with production technology S^t in the time period *t*. Function $\theta_0^{t+1}\left(x_0^{t+1}, y_0^{t+1}\right)$ gives the relationship of inputs and outputs of the time period *t+1* with production technology S^t in the time period *t +1*. The first component E_0 measures the magnitude of technical efficiency change (TEC) between time periods *t* and *t +1*. Obviously, $E_o <=> 1$ indicating that technical efficiency declines, remains and improves. The second terms P_0 measures the shift in the possibility frontier, i.e. technology frontier shift (FS), between time period's *t* and *t+1*. As a result, the MPI < 1 indicates deterioration in productivity of the DMU_o from Period 1 to Period 2; result of the MPI = 1 shows there is no change in total factor productivity and the MPI > 1 shows progress in the total factor productivity (Cooper, Seiford and Tone, 2007).

3.2 Efficiency Results in Location of Factors Influencing the Competitive Attractiveness of EU NUTS 2 Regions

Many European NUTS 2 regions have strong economies, are well integrated into international networks and are the locus of enterprises and labour forces that are globally competitive. However, not all regions make a strong contribution towards competitive aims. How well are the EU's regions performing, and what makes a region competitive? In order to get an impression on where EU NUTS 2 regions are placed, their stage of development is used as a reference the RCI thresholds for classifying European regions on the basis of their stage of development. Within efficiency analysis of competitiveness, comparison of the RCI 2013 with the RCI 2010 and recognition of development in efficiency competitiveness is made, results provide evidence that territorial capital and potentials for development are inherent in the regional diversity that is a major characteristic of Europe. Results of efficiency analysis by the MPI are presented in Table 2 (with respect to the extent of results, results for the 10 best and the 10 worst regions are presented).

Consistent with the theory of economic growth and economic development, the RCI results confirm that the most competitive regions are those with the highest level of economic development (stage of development was defined in part 3.1 of this paper). In the field of competitiveness, the best

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"top-ten" group includes Utrecht, the highest competitive region in both editions of the RCI, the London area and the area including Oxford, the two Netherland regions of Noord and Zuid Holland which comprise Amsterdam, the Danish region Hovedstaden (including Copenhagen), Stockholm and Île de France (including Paris). The other entries in the top-ten are the Frankfurt region (Darmstadt) and the Surrey, East & West Sussex in the United Kingdom. It is striking that seven out of the top-ten are either capital regions or regions including large cities. At the other end of the competitiveness scale, it is possible to find some regions which are unfortunately steadily worst performers. These are the Bulgarian region Severozapaden, the Greek region Notio Aigaio, and two southern Romanian regions Sud-Est and Sud-Vest Oltenia. The RCIs show a more polycentric pattern with strong capital and metropolitan regions in many parts of the EU. Some capital regions are surrounded by similarly competitive regions, but in many countries the regions neighbouring the capital are less competitive. As this was also observed for the both RCI editions, the RCIs show that in the past three years (2013 to 2010 edition) no spill over effects helped to lift these lagging-behind surrounding regions. The general economic and financial crisis certainly did not help. Thus, the substantial disparities within several countries also highlight the need for regional analysis and the limits of a purely national approach. The RCI 2010 and the RCI 2013 results underline that competitiveness has a strong regional dimension, which national level analysis does not capture (Annoni and Dijsktra, 2013). For example, in some countries like France, Spain, United Kingdom, Slovakia, Romania, Sweden and Greece, the level of variability of the RCI scores is particularly high with the capital region almost always being the best performer within the country. Italy is an exception as Lombardy is the Italian most competitive region. These results demonstrate that territorial competitiveness in the EU has a strong regional dimension, which national level analysis does not properly capture in the EU. The gap and variation in regional competitiveness should stimulate a debate to what extent these gaps are harmful for their national competitiveness and to what extent the internal variation can be remediated.

Part of the explanation to the large inequalities within EU NUTS 2 regions may then have to do with the differences in competitiveness. An economic entity in region which has low competitiveness may not have similar opportunities as an economic entity in a highly competitive region. This fact remains and is confirmed. But what does it mean for efficiency in competitiveness? In the case of efficiency analysis of competitiveness and in time comparison analysis of change in 2013 to 2010, the results are just a little bit different. Why? The concept of competitiveness may then be important not only to evaluate why some regions grow faster than others, but also why some regions have a better and more efficient distribution of competitiveness over time than others. Is it a high level of competitiveness necessarily associated with a high level of efficiency, and vice versa? It may not always be the case because evaluated regions having lower level of inputs, resp. values of the sub-indices, these regions were able to achieve competitiveness at level of the RCI. The RCI value may not be high, and even in the less competitive regions is not, but it is necessary to compare the values of three inputs and one output. Very important is also the fact that with given level of inputs regions were able to achieve level of output, although less in 2013 than in 2010, overall it is possible to state that the regions with the production of output based on inputs operate more efficiently in 2013 than in the case of 2010, and otherwise. These results are not surprising. Finally, Table 2 shows reordered regions, from best to worst, their MI score and the corresponding rank (low ranks are associated to high MI scores, and also to high RCI score). Hereafter, these ranks are referred as 'reference ranks'. According to the efficiency analysis and derived results from the MI solution, it emerges that 2013 to 2010 efficiency ratio of 268 NUTS 2 regions of the EU27 Member States range from 0.857 – 268th position (FR91 – Guadeloupe) to 1.905 – 1st position (RO42 – Vest). 183 NUTS 2 regions of all 268 evaluated regions have recorded positive trend in competitiveness efficiency, 84 NUTS 2 regions of all 268 evaluated regions have achieved negative positive trend in competitiveness efficiency comparing 2013 to 2010. These results mean that 2/3 of all 268 regions make improvement in their competitiveness, i.e. in utilization of inputs (sub-indices) for producing output (competitiveness). Just

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the only one NUTS 2 region has recorded unchanging trend in competitiveness efficiency. This region DE22 – Niederbayern is ranked at 184th position, its value of the MI is 1.000, Catch-up' value is 0.998 and Frontier-shift' value is 1.002. Differences in the MI' values are not so large in the case of inefficient regions (difference 0.904 between the first and last value of the MI within this group), as in the case of efficient regions (difference 0.142 between the first and last value of the MI within this group). This is due to the fact that most regions were evaluated as efficient and this group thus contains two times more regions than the group of inefficient regions. Range of the MI in the case of efficient regions moves from 1.905 (1st rank, RO42 – Vest) to 1.001 (183th rank, SE33 – Övre Norrland). Range of the MI in the case of inefficient regions moves from 0.999 (184st rank, NL32 – Noord-Holland) to 0.857 (268th rank, FR91 – Guadeloupe 1.001).

Based on the MI results is clear, that the best efficiency changes in competitiveness comparing 2013 to 2010 were achieved by NUTS 2 regions belonging to the group of EU12 countries than in the case of NUTS 2 regions belonging to the group of EU15 countries. This fact is not surprising, because it has the key political implications and there are several reasons/factors for it, as follows:

1. new EU Member States constantly fall into the category of less developed and competitive states based on GDP per head in PPS – reason for inclusion of their NUTS 2 regions in the appropriate categorization stage of development;
2. belonging of each region to relevant stage of development testifies to its competitive advantages and disadvantages and determines its weaknesses;
3. the threshold defining the level of GDP in % of EU average has been taken as a reference as it is the criterion for identifying regions eligible for funding under the established criteria of the EU Regional Policy framework;
4. new EU Member States are often significantly dependent on the exports into old EU Member States and on the flow of money for this exchange shift.

All these factors affect the convergence trend of new EU Member States and their regions to old EU Member States, and the growth in old EU Member States has implicative impact on growth in new EU Member States. This growth may have the same degree in EU12 countries as in EU15 countries, or rather is a higher and multiplied. Many of the differences in economic growth and quality of life within a country may be explained by the differences in competitiveness. Regions with more paved roads, with better institutions, with better business environment, and with better human capital, for example, may experience faster economic growth and a clearer reduction in poverty levels (Charles and Zegarra, 2014). All these trends and facts have very significant on competitiveness of all EU Member States and changes of its level and efficiency/inefficiency development. The gaps and variation in regional competitiveness should give rise to a debate on to what extent these gaps are harmful for their national competitiveness, and to what extent the internal variation can be remediated (Dijsktra, Annoni and Kozovska, 2011). The internal variation and heterogeneity also underlines the inevitable steps needed to make at national level. Policies oriented to solve the main economic and social problems of their citizens may then not focus only on the improvement of the aggregate or average indicators of competitiveness but also on the reduction of the regional differences in competitiveness.

With respect to gained results, it is possible to create groups of European regions – classification of each region to relevant group is based on two dimensions of the MI – Catch-up effect and Frontier-shift effect. Character of technical efficiency change contributes only to quantitative based economic growth which has its limits; this is disconcerting with reference to limited sources, utilization of sources and possibility/impossibility to their recovery. Results for EU15 countries, resp. their NUTS 2 regions are more or less similar, but it is necessary to note that also significant number of EU15 regions is located in quadrants with high level of FS, and high level of EFCH. It means that significant part efficiency change is caused especially by the change in the production possibility frontier as a result of the technology development in period 2010-2013, i.e. technology frontier shift. This fact is positive information with respect to factors of competitiveness, it signifies that regions are able to

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utilize their internal factor endowment in effective way and are able to apply technological progress for boosting of their competitive advantages, i.e. they contribute thus to qualitative based economic growth and it is option how to raise the steady state. What are factors having impact on steady state? Traditional factors such as physical infrastructure and access to land, labour, materials, markets and capital remain the basic determinants of competitiveness.

However, the economy has changed, and so has regional policy. In the days when smoke-stack industries sat protected by national tariff barriers, regional policy was mainly about hard infrastructure – new factories and roads bestowed by governments, gifts from outside the region itself. Today the response involves upgrading the business environment through "soft infrastructure". Fewer tangible assets need to be cultivated, that enhances territorial capital and enables a region to realise its own potential. The exact formula for efficiency development in competitiveness will depend on the particular region. In less prosperous states and regions gaps in health care can be a barrier to economic development. Promotion of social inclusion and sustainable communities may be particularly important in metropolitan regions. In addition, the urban environmental quality has become a factor of more importance.

Table 2. Malmquist Index 2010-2013 Scores and Ranks for EU NUTS 2 Regions

NUTS 2	MI	Rank
TOP 10 REGIONS		
RO42	1.905	1
RO32	1.727	2
EL42	1.585	3
RO22	1.574	4
RO21	1.559	5
BG34	1.536	6
EL11	1.453	7
RO31	1.445	8
RO11	1.441	9
FR94	1.439	10
THE WORST REGIONS		
BE23	0.933	259
DEB3	0.928	260
FI1D	0.924	261
DE72	0.921	262
DEA4	0.920	263
ES64	0.916	264
DE91	0.914	265
FR93	0.890	266
FR92	0.884	267
FR91	0.857	268

NUTS 2	MI	Catch-Up	Frontier-Shift
TOP 10 REGIONS			
RO42	1.905	1.299	1.466
RO32	1.727	1.176	1.468
EL42	1.585	1.175	1.349
RO22	1.574	1.130	1.393
RO21	1.559	1.093	1.427
BG34	1.536	1.123	1.368
EL11	1.453	1.150	1.264
RO31	1.445	1.077	1.342
RO11	1.441	1.063	1.356
FR94	1.439	1.259	1.143
THE WORST REGIONS			
BE23	0.933	0.937	0.996
DEB3	0.928	0.944	0.984
FI1D	0.924	0.951	0.971
DE72	0.921	0.935	0.985
DEA4	0.920	0.934	0.985
ES64	0.916	0.948	0.967
DE91	0.914	0.926	0.988
FR93	0.890	0.934	0.952
FR92	0.884	0.913	0.968
FR91	0.857	0.885	0.968

Source: own calculation and elaboration.

4 Conclusion

Globalisation makes international competitiveness a key concern in regional development. Large geographic, demographic and cultural diversity of the EU brings also differences in socio-economic position of the EU Member States, and especially their regions. Different results in economic performance and living standards of the population indicate the status of the competitiveness of each country and its regions. Comparisons can enable NUTS 2 regions to identify their strengths and weaknesses in a European context and to enrich their development strategies, project ideas and cooperation arrangements. In the core of Europe all types of regions are doing well with regard to both restructuring potential and economic situation, indicating a high potential regional competitiveness.

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In particular, countries in the core of Europe, Ireland, large parts of the UK, the regions in Western France, Spain, and the capital regions of Norway, Sweden and Finland are well placed in the field of competitiveness. Economically weaker regions, with deficits concerning their restructuring potential, can be found in most countries, in particular in Central and South-Eastern areas of Germany, Poland, Czech Republic, Austria, Italy, Hungary, Romania, Bulgaria, Greece and Cyprus. Many of these areas also have a labour market classification below the European average. Cyprus, however, differs in this regard from its neighbouring countries. The European territorial pattern seems mainly shaped by different national levels. In addition, a substantial difference exists between rural and urban areas. The more urbanised regions have as expected the best potentials for pursuing strategies of innovation and knowledge-economy based on a particularly creative, segment of the competitive society. Some areas, more than others, may take on the idea of new/creative industries on the one side, or on the other side on the idea of traditional industries, as a motor for economic development and innovation. As development potentials and opportunities and the interplay of development trends and policies differ between areas, there is no one-size-fits-all solution. Each NUTS 2 region must make its own decisions about the right combination of policy objectives in the field of competitiveness that will guide its development.

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ECONOMIC DEVELOPMENT IN THE VISEGRAD COUNTRIES FROM THE PERSPECTIVE OF MACROECONOMIC IMBALANCE PROCEDURE

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Abstract
The seriousness of problems stemming from macroeconomic imbalances in the EU and particularly in the euro area contributed to introduction of the Macroeconomic Imbalances Procedure which also includes a Scoreboard of 11 indicators. The results of the Scoreboard serve as an alert mechanism and are interpreted from an economic perspective with a view to identifying developments in the member states that may point to a risk of imbalances. The aim of the paper is to evaluate the risk of imbalances in the Visegrad countries using selected indicators from the Scoreboard. Furthermore, we extend the existing Scoreboard methodology of absolute indicators by implementation of relative indices that are more valuable for effectiveness of the policy making process. The results suggest that the only Visegrad country with a significant risk of imbalances is Hungary. However, the relative indicators revealed a sign of possible imbalances also in Czechia and Poland.

Keywords
Macroeconomic Imbalance, International Competitiveness, MIP Scoreboard, Relative Indicators.

JEL Classification
E61, E66, H12.

1 Introduction

Several years after the financial crisis it is evident that the crisis was the most immense shock to the European economy since 1930s. However, the impact on individual European Union (EU) member countries as well as the adjustment and recovery of national economies differ remarkably across the EU. Explanation of the intra-EU differences can be found in several factors. Buti (2011) argues that one of the most prominent ones was the accumulation of increasingly large macroeconomic imbalances and expansion in competitiveness divergences in the pre-crisis period. Gros (2012) points out that the imbalances are critical mainly in the euro area where they were built up over the last decade as massive capital flows moved from the North part to the South part of the euro area and Ireland. Since the start of the crisis and even more intensively after the crisis culmination the abundant private capital flows have abruptly stopped. Such a crunch in financing contributed to the seriousness and deepening of the crisis in number of countries and caused severe pressures on domestic demand and public finances.

Additionally, previous studies and analysis of the European Commission did reveal imbalances in several areas of the EU economies. For example, an overview of the most serious findings on external and internal imbalances in the EU economy can be found in the European Commission (2010). However, at that time, the policy discussions and responses were not systematic and lacked teeth. To remedy this, the European Commission proposed to establish a procedure to prevent and correct macroeconomic imbalances. This surveillance mechanism is called Macroeconomic Imbalance Procedure (MIP). While the MIP is designed and applied for all EU Member States, it is primarily targeted to the euro area countries that cannot apply an independent exchange rate policy in order to adjust macroeconomic imbalances. Accordingly, the vast majority literature dealing with the MIP and all corresponding aspects focuses on the euro area.

Therefore, the present paper fills the gap in literature and analyses selected indicators involved in the MIP in the environment of the Visegrad countries (Czechia, Hungary, Poland, Slovakia). The aim of the paper is to realize how useful can be the MIP in assessing vulnerabilities and imbalances in the analysed countries and whether the MIP can be a beneficial tool for the economic policy design. In

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this context, we also propose application of relative indicators that can supplement the existing MIP with more appropriate benchmarking of the countries and better identification of misbalancing trends.

The remaining of the paper is structured as follows. The Section 2 introduces the MIP and its rationale. The main components of the MIP as well as indicators included in the MIP are also described in this section. The Section 3 continues with application of selected macroeconomic indicators on the Visegrad countries. We present evolution of these indicators over the 12-year period and compare the absolute values of the indicators with the official thresholds for the years 2007 (pre-crisis) and 2012 (post-crisis). Furthermore, we calculate relative indicators and compare performance of individual Visegrad countries with the EU, euro area and the whole Visegrad group. The Section 4 concludes the paper with summary of the most important findings and results.

2 Macroeconomic Imbalance Procedure as a part of the EU economic governance

The recent financial crisis stimulated the EU to propose and adopt a comprehensive reform in the macroeconomic governance of the EU. The new system consists of three components, namely the Six Pack, the Two Pack and the Treaty on Stability, Coordination and Governance (TSCG). All the rules are grounded in the European Semester which represents the calendar of the EU's economic policy planning and actions.

The Six Pack describes a set of European legislative measures to introduce greater macroeconomic surveillance. Four of the six instruments in the Six Pack are used to conduct further reforms of the Stability and Growth Pact (SGP) particularly focusing on improving compliance. These reforms do not change any of the conditions already imposed by the SGP, but aim to enforce greater budgetary discipline among the euro area Member States by stipulating that sanctions come into force earlier and more consistently. The remaining two pieces of legislation in the Six Pack relate to the MIP. The TSCG is an International treaty which functions as an extension to existing EU regulations, utilising the same reporting instruments and organisational structures already created within EU in the three areas: Budget discipline enforced by the SGP, Coordination of economic policies, and Governance within the euro area. Since the fiscal provisions of the TSCG represent the core of the Treaty the TSCG is often referred to as the EU Fiscal Compact Treaty or a new stricter version of the SGP. The Two Pack comprises two Regulations designed to further enhance economic integration and convergence amongst euro area Member States. The first Regulation applies to all euro area Member States, with special rules applying to those in the corrective arm of the SGP, the Excessive Deficit Procedure (EDP). The second Regulation sets out clear and simplified rules for enhanced surveillance for Member States facing severe difficulties with regard to their financial stability, those receiving financial assistance, and those exiting a financial assistance programme.

2.1 Principles and course of the Macroeconomic Imbalance Procedure

The MIP rests on two pieces of legislation: The first regulation sets out the details of the surveillance procedure and covers all the Member States. The second regulation establishes the enforcement mechanism including the potential use of sanctions and is only applicable for the euro area Member States. The overall design follows the implicit logic that the MIP has two arms: a preventive arm with the alert mechanism and a stronger corrective arm with effective enforcement of corrective actions solving more serious cases of imbalances. The position of the MIP in the EU economic governance framework and all elements of the MIP are graphically presented in Fig. 1.

The MIP includes three core components. The alert mechanism facilitates the early identification and the monitoring of imbalances based on qualitative economic and financial assessment. The scoreboard comprises a set of indicators with indicated thresholds differentiated for euro and non-euro area Member States that are used in the early identification of external and internal imbalances. The in-depth review aims at determining whether the potential imbalances identified in the early-warning system are benign or problematic.

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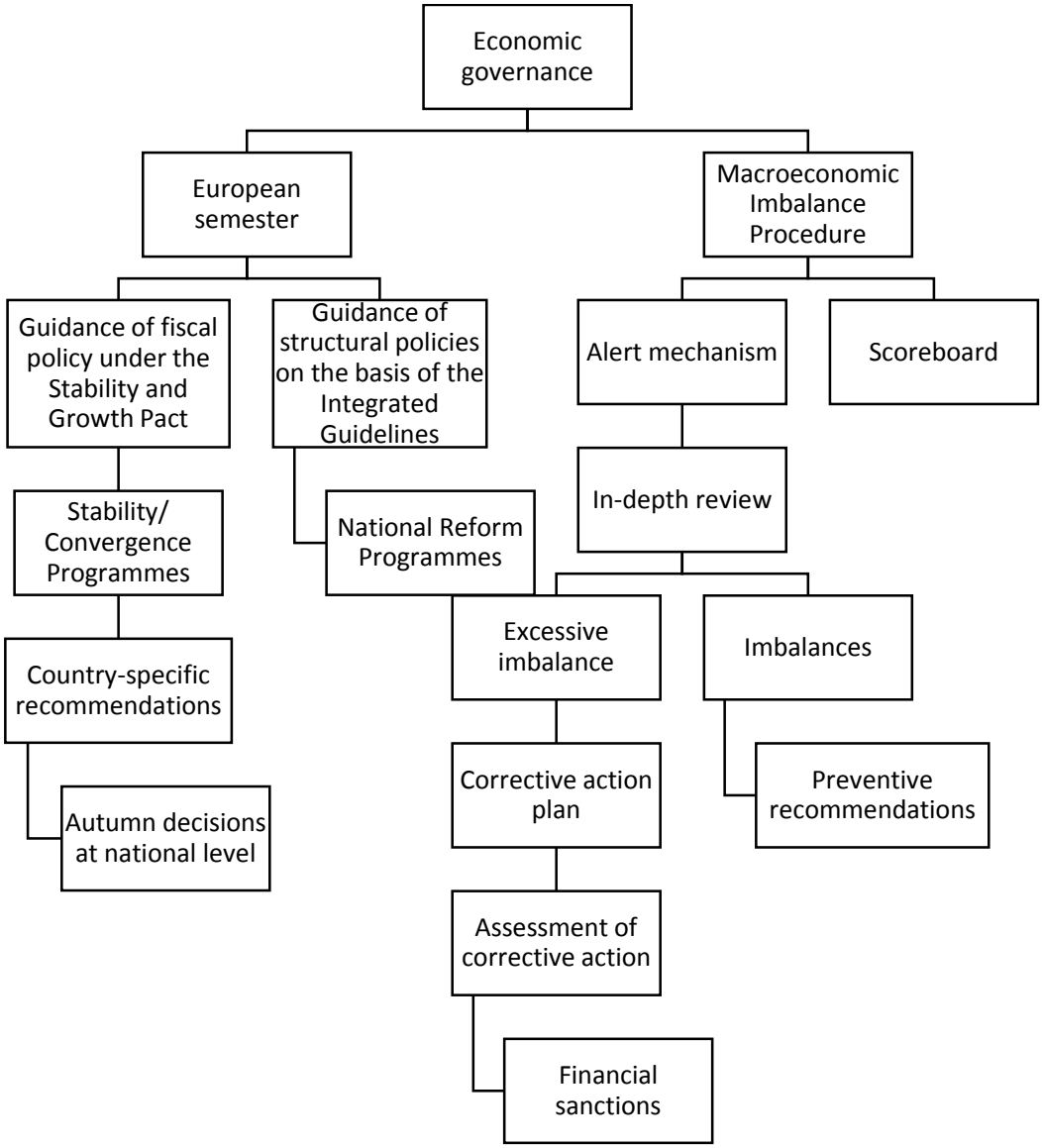

Figure 1. EU economic governance structure (Source: Bobeva, 2013, p. 71)

The procedure relies on an alert mechanism identifying Member States which show signs of potential emerging macroeconomic imbalances that require in-depth analysis. The alert mechanism consists of an indicator-based scoreboard complemented by an economic reading thereof presented in an annual Alert Mechanism Report (AMR). After discussions of the AMR conclusions by the Council and the Eurogroup, the Commission decides for which countries it will prepare country-specific in-depth reviews. If, on the basis of this analysis, the situation is considered unproblematic, the Commission will not propose any further steps. If the Commission however considers that macroeconomic imbalances exist, it will come forward with proposals for policy recommendations for the Member State(s) concerned. In the preventive arm these are part of the integrated package of recommendations under the European semester. If the Commission instead considers that there are severe or excessive imbalances that may jeopardise the proper functioning of the euro area, it may recommend to the Council to open an Excessive Imbalance Procedure (EIP) which falls under the corrective arm of the new procedure.

Then, and this is a key feature in this new procedure, the Member State is obliged to present a corrective action plan (CAP) setting up a roadmap to implement corrective policy actions. The CAP should be a detailed plan for corrective actions with specific policy measures and implementation

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timetable. After submission of the CAP by the Member State, the Council assesses the CAP with two possible outcomes. If the Council considers the CAP to be insufficient, the Council adopts a recommendation to the Member State to submit a new CAP. If the new CAP is still considered to be insufficient, a fine (0.1% of GDP) can be imposed. If the Council considers the CAP to be sufficient, it will endorse the CAP through a recommendation that lists the corrective actions and their implementation deadlines. Then, once a sufficient CAP is in place, the Council assesses whether or not the Member State concerned has taken the recommended actions according to the set deadlines. Again, two possible outcomes can be distinguished. If the actions of the Member State were insufficient the Council can impose an interesting-bearing deposit (0.1% of GDP) which can be converted into annual fine if the inability of the Member State to correct imbalances continues. If the Member State concerned has taken the recommended correction actions the EIP can be closed or placed in abeyance depending on whether the Member State is still experiencing excessive imbalances.

2.2 Scoreboard and findings of the Macroeconomic Imbalance Procedure

The early warning system draws on a scoreboard consisting of a set of 11 indicators. The choice of indicators in the scoreboard focuses on the most relevant dimensions of macroeconomic imbalances and competitiveness losses, with a particular focus on the smooth functioning of the euro area. For this reason, the scoreboard consists of indicators which can monitor external balances, competitiveness positions and internal imbalances, and encompasses variables where both the economic literature and recent experiences suggest associations with economic crises. The selection of indicators in the scoreboard took some time and was thoroughly discussed. Conceptually, it is not an easy task to choose the most relevant dimensions of macroeconomic imbalances and competitiveness losses. The procedure for macroeconomic imbalances started with 10 indicators and, in late 2012, another indicator was included which aims at detecting vulnerabilities of the financial sector.

Table 1 summarizes all the indicators along with ways how the data is transformed and the indicators are calculated. Table 2 also reports indicative thresholds for each indicator which specify the accepted range in which the indicator should be preferably found. The scoreboard includes both stock and flow indicators aiming at capturing the accumulation of imbalances over time as well as detecting short-term risks (Bobeva, 2013). The regulation which sets up the rules of the scoreboard envisages that the composition of the indicators may evolve over time. The EC underlines that while assessing the imbalances it also takes into account (although it is not clear how) other indicators – GDP growth, gross fixed capital formation, net lending/borrowing, FDI inflows, labour productivity, employment, etc.

The selection of indicators and thresholds has been subject of many discussions and is not free of ideological considerations. For example, the real effective exchange rate is computed against a basket of 35 industrial countries, and so, is by definition, mainly influenced by the euro's real exchange rate. Export market shares growth mirrors the weight of Europe in world trade or the integration of the country in the value added chain rather than a trend of the export performance. Thus, in 2010, in relation with the global crisis, even Germany did not abide by the threshold set by the Commission. Furthermore, some other indicators, like private sector credit flows or private and public indebtedness, are already accounted in the current account balance (Nayman et al., 2012). Moreover, the scoreboard limits the growth of labour unit costs to three per cent per year, which is barely higher than the official inflation target, but allows for a ten per cent unemployment rate.

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Table 1. Macroeconomic Imbalance Procedure scoreboard and indicators

Indicator	Measure	Accepted range
External imbalances and competitiveness		
Current account balance	3-year moving average, % of GDP	Between +6% and -4%
Net international investment position	% of GDP	> -35%
World export share	In current value, 5-year percentage change	> -6%
Real effective exchange rate	Vis-á-vis 35 industrial countries, based on consumer-price indices, 3-year percentage change	-/+ 5% (euro-area) and -/+ 11% (non euro-area)
Nominal unit labor costs	3-year percentage change	< 9% (euro-area) and < 12% (non-euro area)
Internal imbalances		
Private sector debt	% of GDP	< 160%
Private sector credit flow	% of GDP	< 15%
House prices relative to consumer prices	Year-on-year changes, in %	< 6%
General government debt	% of GDP	< 60%
Unemployment rate	3-year moving average, in %	< 10%
Financial sector liabilities	Year-on-year changes, in %	< 16.5%

Source: European Commission.

The MIP was triggered the first time with the publication of the AMR in February 2012. Based on the analysis in the report, the European Commission carried out in-depth reviews for 12 EU Member States. The analysis confirmed that these EU Member States faced macroeconomic imbalances of different nature. But none were considered excessive, therefore no EIP was launched. On 10 April 2013, the Commission published the in-depth reviews based on results of the AMR from November 2012 and concluded that excessive imbalances exist in Spain and Slovenia. Within the last round of AMR, the Commission concluded that imbalances experienced in Italy, Croatia and Slovenia were excessive (European Commission, 2013). Nevertheless, on 2 June 2014 the Commission announced that the national reform programmes of the concerned Member States have been found as appropriately addressing the main challenges and, hence, the EIP will not be launched (European Commission, 2014). We should have in mind that the MIP does not apply to the so-called Assistance Programme countries which are under enhanced economic surveillance of their economic situation and policies due to sever effects of the financial crisis on their economy. Table 2 shows the findings of the MIP for all EU Member States over the last three years.

Table 2. Findings of the Macroeconomic Imbalance Procedure

Year	No imbalance	Imbalance	Excessive imbalance	EIP	Assistance programme
2012	AT, CZ, EE, DE, LV, LT, LX, MT, NL, PL, SK	BE, BG, CY, DK, FI, FR, HU, IT, SI, ES, SE, UK	No	No	GR, IE, PT, RO
2013	AT, CZ, EE, DE, LV, LT, LX, PL, SK	BE, BG, DK, FI, FR, HU, IT, MT, NL, SE, UK	SI, ES	No	CY, GR, IE, PT, RO
2014	AT, CZ, DK, EE, LV, LT, LX, MT, PL, SK	BE, BG, FI, FR, DE, HU, IE, NL, ES, SE, UK	CR, IT, SI	No	CY, GR, PT, RO

Source: author's compilation based on information from the European Commission.

3 Macroeconomic Imbalance Procedure and the Visegrad countries

In order to evaluate economic situation in the Visegrad countries from the perspective of the MIP we selected four indicators from the MIP scoreboard. In particular, we analyse three indicators of external imbalances (current account balance, world export share and real effective exchange rate) and private sector credit flow from the group of internal imbalances. In this chapter, we first present evolution of

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these indicators over the period 2001-2012 and, then, we supplement absolute values of the indicators by their relative versions and compare size and seriousness of imbalances in the pre-crisis and post-crisis periods.

3.1 Evolution of selected Macroeconomic Imbalance Procedure indicators

One of the main indicators for assessing external imbalances in the MIP scoreboard is the current account deficit/surplus. It is calculated as a 3-year backward moving average of the current account balance as a % of GDP. The scoreboard envisages an asymmetrical threshold of 4% for the deficit and 6% for the surplus. This "intelligent symmetry" is not well justified although it allows recognizing both current account surpluses and deficits as imbalances that pose risks of negative spillover effects.

Fig. 2 depicts that the Visegrad countries have been facing permanent deficit of the current accounts. The improvement of the Hungary's current account balance in the most recent period was caused by a financial assistance of international organizations that helped Hungary to overcome severe effects of the financial crisis. Therefore, this improvement cannot be attributed to any structural reform or progress in the Hungarian economy. Even though the MIP current account balance indicator often dropped below official threshold of -4% of GDP it should be stated that the negative current account balance has been largely caused by a considerable cross-border outflow of incomes, principally in the form of profits and dividends, from the Visegrad countries. However, the graph also illustrates that the indicator has been demonstrating a positive trend during the last couple of years shifting the current account balance to the acceptable range.

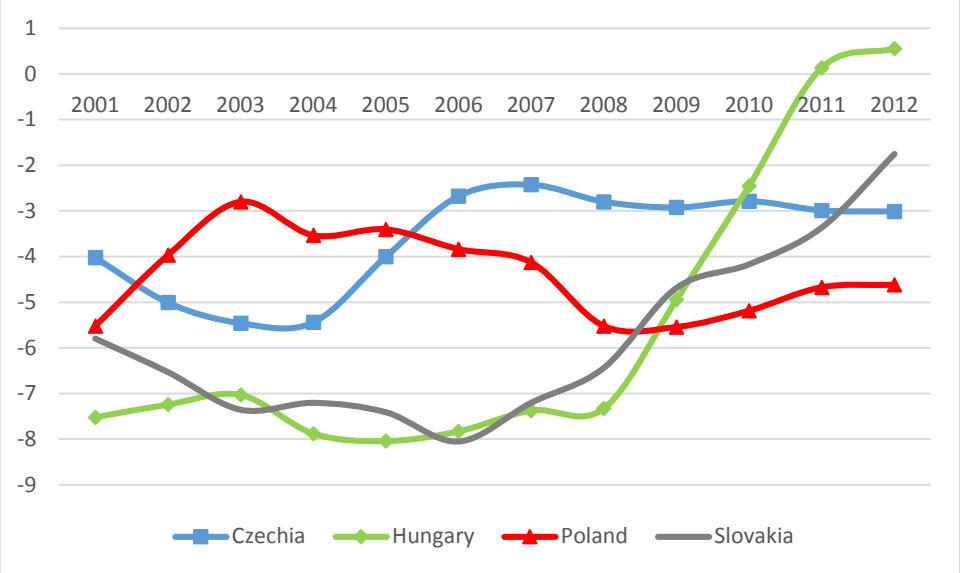

Figure 2. MIP indicator on current account balance in the Visegrad countries (% of GDP, 2001-2012)
(Source: European Commission)

The next indicator of the MIP scoreboard we apply in the paper is the export market share calculated as a 5-year percentage change of a national export as a per cent of the world export. The indicator aims at capturing structural losses in competitiveness. Negative changes in the share of the world export of goods and services points to important structural weaknesses in competitiveness. The threshold is set at -6%.

Fig. 3 provides evidence that the Visegrad countries' shares on world export were persistently rising before the crisis and the countries gained new markets. It can be understood that the international competitiveness of the Visegrad countries improved substantially and goods and services produced in the Visegrad countries found more customers on foreign markets. However, we

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can observe that the growth of export share slowed down considerably in all countries during the post-crisis period. The most recent data even shows that Hungary is losing the market share at a rate well exceeding the threshold and the indicator of Czechia is also negative and close to the acceptable margin. From the perspective of MIP, one can conclude that some external imbalance has already evolved (Hungary) or is just about to become evident in the Visegrad countries.

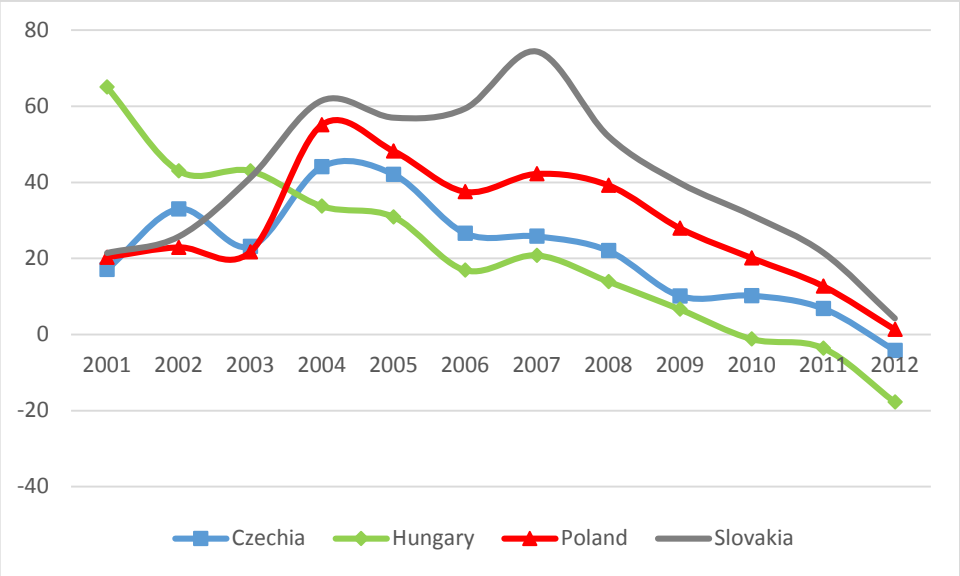

Figure 3. MIP indicator on world export share in the Visegrad countries (5-year change in %, 2001-2012) (Source: European Commission)

The last MIP indicator we apply to demonstrate potential external imbalances in the Visegrad countries is the evolution of real effective exchange rate (REER). This measure uses the exchange rate based on consumer price indices against 35 trading partners and is calculated as a 3-year change of REER in %. The thresholds set in the MIP are different for the euro area members and for the non-euro countries. While the acceptable range for the euro area Member States is +/- 5% the wider range of +/- 11 % is applied for the Member States outside the euro area. The REER is frequently used as another measure of international competitiveness. It usually assumed that real effective appreciation of national currency deteriorates the country competitiveness and vice versa. All the Visegrad countries are small or mid-size and very open economies and they are heavily involved in the international trade and capital flows and have international economic activities with many foreign countries. Therefore, exchange rate development should have significant impact on the whole economy and the REER captures the role of exchange rates in the economy most comprehensively and reliably (Stavárek, 2013).

Fig. 4 portrays relatively high volatility of the REER indicator in the Visegrad countries. It is evident that all the countries typically faced real appreciation of domestic currency. This characteristic feature changed, however, during the last two years. On the other hand, the last three years of the examined period brought relatively stable evolution of the REER indicator that remained within the given tolerable corridor for all Visegrad countries. Although all three reported indicators of external imbalances should be tightly related from the theoretical point of view Fig.2 – Fig. 4 present a different evidence. Decelerating of real appreciation or real depreciation was associated with losing of world export share and not a significant improvement in trade balance.

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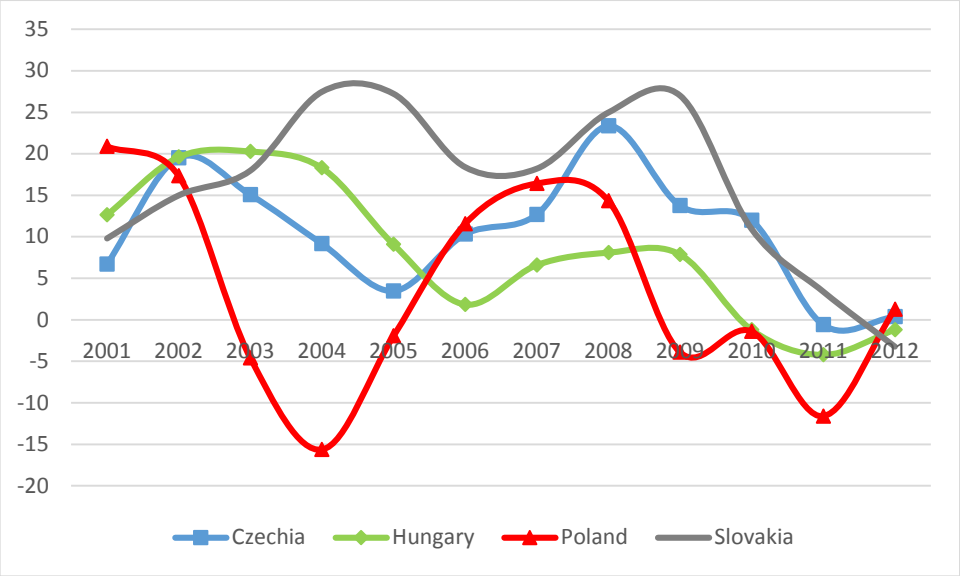

Figure 4. MIP indicator on real effective exchange rate in the Visegrad countries (3-year change in %, 2001-2012) (Source: European Commission)

The last indicator elaborated in the paper and the only one describing internal economic imbalance is the credit flow to the private sector of economy. It is measured as ratio of total credit disbursed to the private sector on GDP. The threshold is set at 15%, which means that higher credit inflow shall be considered as imbalance. It is well known that companies in the EU have had a tendency to fund themselves much more from banks than from markets, suggesting substantial 'bank dependency'. This is also the case of all Visegrad countries. If the credit growth rate reaches high values there is also a threat that funding provided to the private sector will not be used to support investments enhancing productivity but to finance consumption of to contribute to evolving of price bubbles.

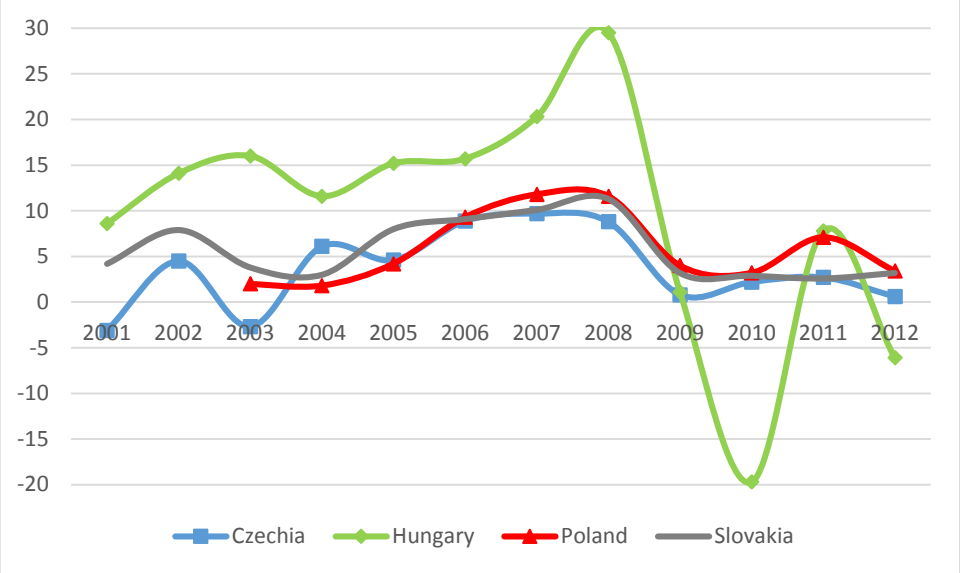

Figure 5. MIP indicator on credit flow to private sector (% of GDP, 2001-2012) (Source: European Commission)

The data depicted in Fig. 5 suggests that only Hungary faced an imbalance stemming from a massive growth of the credit provided to the private sector. The share of credit on GDP was above 30% in 2008 and doubled the allowed MIP threshold. After the outbreak of the financial crisis the disintermediation phenomenon occurred in many European credit and financial markets. In reaction

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to the new market conditions banks substantially tightened credit standards and non-financial companies were able to obtain less resources from banking sector and other financial intermediaries. This is apparent in the post-crisis period when all Visegrad countries report substantially lower or even negative growth rates in credit volume.

3.2 Evolution of selected Macroeconomic Imbalance Procedure indicators

As Gros and Giovannini (2014) point out a key point in the MIP and EIP is that it should warn of impending problems within the euro area and the whole EU. It is thus questionable whether one should use absolute indicators thresholds. For example, if all countries had a large external deficit, a sudden stop to capital inflows would affect all of them at the same time. And if most EU countries run external surpluses, a particularly large surplus in any one country should not be regarded necessarily as an "imbalance". Moreover, the loss of in export market share is common to all advanced economies due to structural change in international trade imposed by the rise of emergent countries. Therefore, the absolute change of the single Member State is not an effective indicator per-se. This consideration applies more in general to all indicators we apply in the paper.

Table 3. Absolute and relative version of the MIP scoreboard indicators

	2007				2012			
	Absolute	Relative to EU27	Relative to EA	Relative to V4	Absolute	Relative to EU27	Relative to EA	Relative to V4
	Current account balance							
Thr/Avg	<6,-4>	-4.54	-4.96	-4.57	<6,-4>	-2.14	-2.32	-3.26
Czechia	-2.42	0.53	0.49	0.53	-3.01	1.42	1.30	0.92
Hungary	-7.37	1.62	1.49	1.61	0.56	-0.26	-0.24	-0.17
Poland	-4.13	0.91	0.83	0.90	-4.62	2.17	1.99	1.42
Slovakia	-7.20	1.59	1.45	1.57	-1.75	0.82	0.75	0.54
	World export share							
Thr/Avg	> -6%	6.88	10.55	37.97	> -6%	-13.16	-13.07	-2.24
Czechia	25.80	3.75	2.44	0.68	-4.20	0.32	0.32	1.87
Hungary	20.80	3.02	1.97	0.55	-17.80	1.35	1.36	7.95
Poland	42.20	6.13	4.00	1.11	1.30	-0.10	-0.10	-0.58
Slovakia	74.40	10.82	7.05	1.96	4.20	-0.32	-0.32	-1.87
	Real effective exchange rate							
Thr/Avg	+/-11%	3.45	4.13	14.13	+/-11%	-2.73	-4.10	0.27
Czechia	12.68	3.68	3.07	0.90	0.36	-0.13	-0.09	1.34
Hungary	6.60	1.91	1.60	0.47	-1.20	0.44	0.29	-4.45
Poland	16.43	4.77	3.98	1.16	1.26	-0.46	-0.31	4.67
Slovakia	18.19	5.28	4.40	1.29	-3.24	1.19	0.79	-11.98
	Private sector credit flow							
Thr/Avg	< 15%	17.35	17.31	12.60	< 15%	-0.09	-0.99	1.46
Czechia	9.70	0.56	0.56	0.77	0.60	-6.43	-0.60	0.41
Hungary	20.30	1.17	1.17	1.61	-6.10	65.38	6.13	-4.18
Poland	11.80	0.68	0.68	0.94	3.40	-36.44	-3.42	2.33
Slovakia	10.10	0.58	0.58	0.80	3.20	-34.30	-3.22	2.19

Source: author's calculations based on information from the European Commission.
Note: Thr is threshold, and Avg denotes the weighted average.

Therefore, we calculated relative versions of all indicators for the time before the crisis represented by the year 2007 and for 2012 as the post-crisis period. The relative indicators are computed in relation to the whole EU, euro area and the group of Visegrad countries. We calculated the weighted average of each indicator for the respective group. The weights were determined according to national GDP of the involved countries. Then, we compared the absolute value of the indicator with the weighted average. The resulting indices are presented in Table 3. The imbalance is indicated if the

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relative indicator is above unity (below unity in case of world export share). All observations of absolute as well as relative imbalances are highlighted by a grey background.

Results in Table 3 confirm in several examples that an imbalance identified by the absolute MIP indicator does not have to be out of the general situation in the EU or the euro area and, hence, the relative version of the indicator does not point to macroeconomic imbalance. For instance, this is the case of Poland's current account deficit in 2007. On the other hand, fulfilment of the absolute indicator threshold cannot necessarily mean that the economic situation is balanced. For example, the Czechia's absolute indicator of the current account balance -3.01% in 2012 is within the acceptable range. However, it exceeded the weighted average of this indicator in the EU as well as the euro area by 42% and 30% respectively. Such a collision of absolute and relative indicators can be also found in Hungary's REER in 2007, Slovakia's REER in 2012, and Poland's and Slovakia's private sector credit flow in 2012.

4 Conclusion

The aim of the paper was to realize how useful can be the MIP in assessing vulnerabilities and imbalances in the analysed countries and whether the MIP can be a beneficial tool for the economic policy design. Based on evaluation of development of four selected MIP scoreboard indicators we came to conclusion that the Visegrad countries in average demonstrate a more stabilized economic situation than before the financial crisis and the risk of evolving of serious macroeconomic imbalance is also rather limited. However, the selected MIP scoreboard indicators show several potentially dangerous trends that should be taken into account by policy makers in setting up the economic policy. The most significant is the concurrent losing of share on world exports and decelerating real appreciation or even depreciation.

In order to evaluate reliability of the MIP scoreboard we constructed and computed relative indices of all indicators. The subsequent comparison of absolute and relative indicators revealed that they are in concordance only in the case of really serious and sizeable imbalances. In several examples the relative indicators warned about potential imbalance while the absolute indices did not signal any risk or threat. Moreover, particularly regarding current account imbalances one has to take into account that the MIP and its scoreboard are a preventive tool. Thus, the indicator should be forward, not backwards, looking. Concluding, as the MIP is envisaged to warn of future crisis within the EU and the euro area, it does not make sense to use absolute indicators or thresholds, especially if they are backwards looking. Threads to the "smooth" functioning of the EU and mainly the euro area come from countries which deviate from the average and the corresponding indicators should be forward looking as corrective policies cannot do anything about the past.

5 Acknowledgement

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EXCHANGE RATE VOLATILITY EXPOSURE ON CORPORATE CASH FLOWS AND STOCK PRICES: THE CASE OF CZECH REPUBLIC

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Abstract
Czech Republic is small open economy with eurozone countries as one of the most important trade partners, meaning a large number of transaction settlement is conducted in euro. The financial market is rather less liquid, which means that firms have limited access to currency derivatives. As a consequence, it can be expected that firms are more exposed to exchange rate risk which may affect the expected cash flows and thus the firm value as well. The paper aims to examine the exchange rate exposure of firms operating in Czech Republic on the basis of stock prices and corporate cash flows and presents results of the level of exchange rate exposure of a sample of publicly listed companies and more than 7,000 large, medium sized and small firms of 8 different industries from 2003 – 2012, resp. 2014 using panel regression and orthogonalized exposure regressions and market model. Results show that significant percentages of publicly listed firms and some small and medium sized groups of firms are exposed, thus the exchange rate risk measuring and hedging is crucial for reduction of the firms' uncertainty.

Keywords
Exchange Rate Exposure, Cash Flow, Corporate Finance, Stock Prices.

JEL Classification
G32, F31, C33.

1 Introduction

Managing and measuring exchange rate risk is crucial for reduction of the firms' uncertainty concerning exchange rate fluctuations, which could affect value of assets, cash flow and profit margins. Exchange rate movements affect corporate expected cash flows, and hence stock returns, by causing changes in the domestic currency denominated revenues and the terms of competition for firms operating in international market. Although there are financial instruments, such as exchange rate derivatives or foreign currency debt, which can prevent the changes in cash flows resulting from the currency volatility, smaller firms usually have limited resources to hedge. It implies that the firm's value is rather sensitive to exchange rate uncertainty (Bodnar and Marston, 2002).

The Czech Republic is bound to a commitment of adopting euro as a single currency which should bring reduction of exchange rate risk and encouragement of trade within European Union (EU); however, there is no consensus on the year of euro adoption yet and the Czech firms might be exposed to exchange rate volatility. When exports are invoiced in domestic currency, the exchange rate risk is transferred to the importer. Czech koruna as a currency is however not preferred as a settlement currency, since the vast of exports flow to euro area countries and settlement is conducted in euro.

This paper contributes to a gap of empirical findings of exchange rate volatility and its effects on firm value in the case of small open economy. Although some papers regard also emerging markets, there is a lack of the literature concerning Central and Eastern European countries. Other contribution of this paper relies in using internal cash flow data of 7,878 firms, since the unavailability of cash flow data makes the analysis of cash flow exposures generally difficult to obtain. Studies of foreign exchange rate exposures thus generally use stock returns to proxy for changes in cash flows. In this paper, we use both approaches due to a complex view. It allows us to understand the effect and measurement of exchange rate risk which is then essential for possible hedging strategies. The

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exposures of cash flows and stock prices are related via the present value. The stock prices are measure of corporate performance as the present value of cash flows; however, Czech stock market is rather less liquid, thus the cash flow exposure estimation is essential to complete the analysis.

The paper focuses on exposures to CZK/EUR exchange rate fluctuations of small, middle sized and large companies in the Czech Republic and aims to examine the exchange rate exposure on the basis of stock prices and corporate cash flows and presents results of the level of foreign exchange exposure of a sample of 11 publicly listed companies and 7,878 firms based on internal data. The exchange rate sensitivity of stock returns is estimated by for small, middle sized and large companies selected according to the industry using panel data approach.

The paper is organized as follows: the second section reviews the literature related to exchange rate volatility and its influence on a firm's and industries' level. The third section specifies model, data and the concepts of cash flows exposure and stock prices exposure are discussed. Empirical results of the analysis are presented in the fourth section. The paper is concluded by a summary of results.

2 Literature Review

The exchange rate exposure can be interpreted as the sensitivity of a firm's market value to a change in exchange rate. Before reviewing the relevant literature, we need to clarify the categories of exchange rate risk. In the literature, we can find the three types of exposure (Shapiro, 1996): economic, translation and transaction. While translation and transaction exposures are defined in terms of the book values of assets and liabilities, the economic exposure refers to the impact of exchange rate volatility on the value of the future cash flows.

Although there are empirical studies regarding the exchange rate exposure, some of them only show significant effects of exchange rate changes on firm profits. Other empirical studies present rather weak relationship between firms' stock prices and exchange rate volatility (Dominguez and Tesar, 2006; Griffin and Stulz, 2001). However, some studies show that the effect of exchange rate uncertainty on the firm value depends on variety of firm characteristics, including percentage of foreign sales (Jorion, 1990), firm size (Dukas et al. 1996) or industry concentration (Bartram and Karolyi, 2006). The mixed results are explained by using different methodology in the papers and also different proxy for foreign exchange rate movements. Some papers use a single currency, whereas others have employed weight indices of exchange rates (Bartov and Bodnar, 1994; Jorion, 1990). Recent studies have demonstrated that a significant number of companies face the exchange rate exposure. Most studies have used a sample of multinational companies to test the exposure and the mixed results have been attributed to the ability to efficiently hedge against exchange rate risk from the perspective of large multinationals.

The seminal work on exchange rate exposure is by Adler and Dumas (1984) who have presented a single factor model to estimate foreign exchange rate exposure by estimating the elasticity of firm stock returns to exchange rate changes. According to them, the market value of a firm is constructed as the present value of future cash flows, thus the exposure can be obtained using market data which simplifies the estimation. They argue that insignificant exposure can be explained by managing the foreign exchange risks. Jorion (1990) added a variable for market movements to the model and analyzed foreign exchange rate exposure of 287 U.S. multinationals over the period 1971 - 1987. Using OLS method and monthly basis data, he finds out that only 5.2 % of companies are significantly exposed. In the latter paper, Choi and Prasad (1995) use similar two-factor model, but they orthogonalize the exchange rates to the market factor. They find that 14.9 % (61 out of 409) of the individual firms in U.S. are significantly exposed at the 10 % level. Muller and Verschoor (2006) analyse the exposure of 817 European multinational firms using OLS to estimate two-factor model by Jorion (1990), with euro's bilateral exchange rate with alternatively the US dollar, UK pound and Japanese yen as explaining variables. Their results show that about 13 % of the multinational firms

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experienced significant exposure effects to the Japanese yen, 14 % to the US dollar and 22 % of firms to the UK pound.

Katechos (2011) employs a new approach which proposes that one global variable has an effect on exchange rates, with the relative interest rate level of a currency determining the sign of the relationship. The results show that value of currencies with higher interest rates is positively related with global stock market returns (proxy: FTSE All World Index).

Regarding emerging countries, many empirical studies have usually shown a significant exposure of firms. Kiymaz (2003) analyzed the exposure of Turkish firms traded in Istanbul Stock Exchange over the period 1991 – 1998 using monthly orthogonalized market return and a foreign exchange basket of US dollar and ECU. The results show that 61 % of firms were highly exposed to exchange rate risk, especially those operating in textile, machinery, chemical and financial industries. The study that focused on emerging markets is by Bartram and Bodnar (2012) who analyzed exposure of non-financial firms in 37 countries around the world; however, the countries of Central and Eastern Europe were not included. Their results suggest that 30 – 40 % of firms in open and emerging market countries are significantly exposed. Chue and Cook (2008) estimated the exchange rate exposure in 15 emerging economies using GMM-IV and OLS method, excluding transition economies from their analysis. They have found that depreciations had negative impact on emerging market stock returns during 1999 – 2002; however, this impact significantly faded during 2002-2006. By using OLS method, about 40 % of firms have shown significant exposure.

There are also studies concerning domestic firms that prove significant exposure as well for domestic companies. The seminal paper on this topic is by Aggarwal and Harper (2010) who argue that domestic companies are significantly exposed as multinational companies, analyzing 1,047 non-financial domestic firms over the period of 10 years.

Beyond the elasticity exposure estimation, there are papers regarding cross-sectional approach of the exposure estimates. Doige et al. (2002) constructed international database of over 17,000 non-financial firms over a 25-year period from 18 countries using portfolio approach. They found out that larger firms are more sensitive to currency fluctuations than smaller firms, and that the level of international sales and foreign assets are significantly negatively related to exchange rate exposure.

3 Exposures of stock prices and cash flows

Adler and Dumas (1984) define the exposure elasticity as the change in the market value of the firm resulting from a unit change in the exchange rate. Among other studies, the advantage of this approach relies in the ability to estimate elasticity of exposure from the coefficient on the exchange rate variable.

3.1 Methodology

Classical framework of the exposure to exchange rate risk employs regression analysis. Foreign exchange rate exposures have been frequently estimated by the following 2-factor model introduced by Jorion (1990):

$$R_{i,t} = \alpha_i + \beta_i RM_t + \delta_i R_{S,t} + \varepsilon_{i,t}, \tag{1}$$

where $R_{i,t}$ denotes the monthly stock return of a company i in period t, RM_t represents the monthly return on a market portfolio index in period t, and $R_{S,t}$ denotes the change of currency S in period t, δ_i represents the sensitivity of an *i-th* company's stock returns to exchange rate movements, α_i is a constant, $\varepsilon_{i,t}$ is the residual error term with zero mean and constant variance. Positive value of δ_i indicates that a depreciation of Czech koruna corresponds to an increase in the stock prices of a firm and vice versa for a negative coefficient. Equation (1) is however extended regression of the original model which controls for market movements used in empirical studies. The estimates of exposure

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coefficients could be biased due to omitted variables (Priestley and Odegaard, 2007), this problem thus motivated to include a stock market portfolio *RM* in the regression.

The market portfolio is an aggregation of the individual firms' stocks. If the individual firms' stocks are exposed, it can be assumed that the market stock will be exposed, too. This corresponds with a view that foreign exchange rate movements are more likely to influence stock market than vice versa. The evidence of this issue was provided in Dumas and Solnik (1995) who showed that cross-country aggregate stock returns are affected by currencies. However, possible multicollinearity problem can be eliminated by orthogonalizing the market returns. Following Priestley and Odegaard (2007), orthogonalization of the return of market portfolio on a set of exchange rates can be done by estimating the following regression:

$$RM_t = \alpha_i R_{S,t} + \upsilon_{m,t}, \tag{2}$$

where $\upsilon_{m,t}$ is an error term which is defined as the orthogonal market return which is not correlated with the exchange rate movements. Therefore this variable will be used in Eq. (1) as proxy for the market returns. This approach has an advantage in simpler interpretation of the exposure coefficient as total exposure.

As an alternative to the traditional approach, we also use a firm's cash flows measures. The availability of internal cash flow data of 7,878 firms over the period 2003 – 2012 allows us to conduct an exposure analysis using the following regression as suggested in Bartram (2007):

$$RCF_{i,t} = \alpha_i + \delta_i R_{S,t} + \varepsilon_{i,t}, \tag{3}$$

where *RCF* denotes changes in corporate cash flows of a company group *i* in period *t*, $_iR_{S,t}$ denotes the percentage change of currency *S* in period *t,* The regression coefficient δ captures the sensitivity of the respective cash flow to an exchange rate change and, thus, represent a measure of foreign exchange rate exposure of *i-th* group of firms.

Firms with positive and significant coefficients δ will indicate larger exposures. With regard to firm size, larger firms might be more exposed thanks to the possibility of operating on global international markets, but they also might have more resources to hedge against the exchange rate risk, thus the exposure coefficient might be either positive or negative. It is assumed that smaller firms will tend to be more positively exposed.

Cash flow and stock prices exposure are estimated with Eqs. (1) and (3). The advantage of cash flow regression consists of the fact that the estimated effects of the exchange rate risk on corporate cash flows are independent of the perception of market participants (Bartram, 2007). Another advantage relies in the fact, that only a fraction of Czech companies are publicly listed.

3.2 Data

If exposures of firms differ depending on their operations, then categorizing firms according to various attributes could potentially lead to more powerful and interesting results. Therefore, we estimate exchange rate exposure of large, medium-sized and small firms separately, also categorized by the operating industry because the exposure varies across industries. It is assumed that more exporting industry will be also more exposed to foreign currency volatility. While firms in retail business might act more on domestic market, transportation firms are more likely to operate worldwide. The sample comprises of 7,878 large, medium-sized and small Czech non-financial firms which represent 8 industries: agriculture, forestry and fishing; construction; electricity, gas, steam and air conditioning supply; information and communication; manufacturing; mining and quarrying; transportation and storage; wholesale and retail trade. The total number of 751 companies belongs to

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the large companies' group. Medium-sized group consists of 3,166 companies and small firms' data consist of 3,961 firms. More detailed specification is provided in tab. 1.

The stock prices data were obtained from Patria Finance on monthly basis (average of observations through period) from January 2003 – May 2014 and the sample includes 11 companies in total, all publicly listed in the Prague Stock Exchange. However, some companies entered the stock exchange later, thus the data for the earlier period is not available in some cases. As a proxy for market returns, we use returns of Prague Stock Exchange's PX index.

The proxy for exchange rate changes is represented by changes in CZK/EUR (direct quotation) nominal bilateral exchange rate (average of observations through period), since the majority of the transactions are settled in euro. Exchange rate data were obtained from European Central Bank's Statistical Warehouse database.

Corporate cash flow data were available on annual basis for the period from 2003 to 2012, obtained from Amadeus database. Unfortunately, the limitation lies in unavailability of longer period and other data such as ratio of foreign sales on total sales.

Equation (2) is used for regression of the changes in exchange rate against market portfolio returns and the estimated orthogonal market return. The returns of Prague Stock Exchange's PX index are used as proxy for market returns. The orthogonalized market returns are then used in Eq. (1) to estimate the firms' stock prices exposure coefficient. We estimate Eq. (1) and eq. (3) using Ordinary Least Squares (OLS) regressions, whereas cash flow exposure analysis comprises of panel data regressions with fixed effects.

Table 1. Panel data overview – number of firms

Industry	Large	Medium sized	Small
Agriculture, forestry and fishing	35	273	185
Construction	49	592	617
Electricity, gas, steam and air conditioning supply	23	41	31
Information and Communication	21	156	279
Manufacturing	370	1066	782
Mining and Quarrying	4	9	0
Transportation and storage	40	161	164
Wholesale and retail trade	209	868	1,903
Total	751	3,166	3,961

Source: own elaboration.

4 Estimation results

In the following sub-sections, we report the estimates of orthogonalized linear exposure and cash flow exposure to exchange rate fluctuations. The results differ across the industries and also groups of small, medium and large companies. Significantly different results are present in the case of stock prices exposure analysis, where about 50 % of the companies seem to be exposed at 10 % significance level.

4.1 Stock prices exchange rate exposures estimation

We estimate the individual company regressions beginning in January 2003 and ending in May 2014. Results of exchange rate exposure estimations are provided in table 2. It appears that exchange rate exposure for the firms in non-financial sector is significant at 5 % level in one case and significant at 10 % level for 5 companies. Apart from quite high level of exposure, results demonstrate that effects of exchange rate are mostly negative. Most of the companies show negative exposure coefficient, therefore depreciation of domestic currency corresponds with a decrease of firm's stock returns. Interestingly, only 2 companies show significant positive exposure coefficient, implying that their

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firm value increases with a depreciation of domestic currency. This situation is relevant when the assets denominated in foreign exchange outweigh the liabilities denominated in foreign exchange.

Table 2. Stock prices exposure estimations

Company	α	β	Exposure Coefficient δ	Durbin Watson stat.	R-squared
CETV	-0.0125	1.0381*	2.1271*	2.1999	0.1882
ČEZ	0.0101**	0.8818*	0.0104	1.9560	0.6590
FORTUNA	0.0066	0.8315*	-0.3092	1.8611	0.3770
NWR	-0.0297	1.7948*	-0.8971	1.8628	0.6302
O2	-0.0016	0.4656*	0.3314	1.9663	0.3208
ORCO	-0.0276*	1.4553*	-1.4730**	1.9989	0.3201
PEGAS NONWOVENS	0.0022	0.6914*	-0.5763**	2.0150	0.5037
PHILIP MORRIS ČR	-0.0015	0.2906*	-0.6349**	2.0010	0.1261
PRAŽSKÉ SLUŽBY	0.0028	-0.0270	-0.2423	1.9339	0.3845
UNIPETROL	0.0063	0.7105*	-0.6284**	1.8692	0.4099
VIG	0.0026	1.0133*	0.6286**	2.0622	0.6485

**denotes statistical significance at the 0.05 level*
***denotes statistical significance at the 0.10 level*

Source: author's calculations based on data from Patria Finance and ECB.

Company CETV shows highest statistically significant exposure coefficient, however, coefficient of determination R-squared is quite low. Most of remaining regressions report higher coefficients of R-squared. Among the significantly exposed companies, we can observe negative coefficient in case of companies ORCO, Pegas Nonwovens, Philip Morris ČR and Unipetrol.

Our results, 54 % of the sample being exposed, are consistent with other studies using orthogonalizated model. Some authors obtained better results, i.e. Kiymaz (2003), Priestley and Odegaard (2007) who analyzed exposure of firms in emerging market economies.

4.2 Cash Flow exchange rate exposures estimation

The estimation of cash flows exposure has resulted in 23 panel data regressions with fixed effects. Results from estimating the exposure to CZK/EUR fluctuations are reported in table 3. In the sample of 7,878 firms examined over the period 2003 to 2012, we find that the response of cash flows to exchange rate fluctuations is mostly positive. However, large companies' data in case of four industries show negative exposure coefficient. This is consistent with our expectations that the exposure coefficient might be either positive or negative for large companies due to international activities and better access to hedging instruments. It implies that these four industries would suffer from the depreciation of Czech koruna against euro; nevertheless, the large companies' panel data groups show insignificant coefficients of exposure. A positive exposure coefficient means that a depreciation of the domestic currency goes together with an increase of a firm's cash flow. For the significantly exposed firms with negative exposure coefficient it implies that depreciation of Czech koruna decreases a firm's cash flow. The exposure coefficients are positive and negative within the industries, implying heterogeneity across firms' exposure.

Considering the entire sample, medium-sized and small companies in only 5 industries show significant exchange rate exposure. The coefficient of determination R-squared is generally quite low; however, this is consistent with most of the studies using similar approach.

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Table 3. Cash Flow exposure estimations

Size	Industry	Intercept α	Prob.	Exposure coefficient δ	Prob.	R-squared
Large	Agriculture, forestry and fishing	0.3296	0.0674	0.0104	0.7596	0.1193
	Construction	0.8731	0.4133	-0.2465	0.3344	0.3240
	Electricity, gas, steam and air conditioning supply	0.5438	0.0294	-0.3062	0.2225	0.2151
	Information and communication	0.4703	0.0120	-0.0392	0.2778	0.5808
	Manufacturing	1.0713	0.1726	0.1653	0.4959	0.1252
	Mining and quarrying	0.1873	0.3323	-0.0644	0.1031	0.3464
	Transportation and storage	1.0773	0.0040	0.0208	0.8011	0.3989
	Wholesale and retail trade	1.0990	0.0063	0.0666	0.3912	0.1301
Medium	Agriculture, forestry and fishing	2.9676	0.0000	0.3636	0.0021	0.2880
	Construction	0.0167	0.8636	-0.0327	0.0604	0.1846
	Electricity, gas, steam and air conditioning supply	-6.9205	0.0000	-0.0567	0.5266	0.9981
	Information and communication	3.0871	0.0050	0.2707	0.3213	0.2690
	Manufacturing	2.4246	0.0014	0.1910	0.1674	0.1296
	Mining and quarrying	0.8020	0.4574	0.1440	0.5077	0.0479
	Transportation and storage	1.3035	0.0000	0.1249	0.0860	0.2473
	Wholesale and retail trade	0.9539	0.1318	0.0776	0.5902	0.1412
Small	Agriculture, forestry and fishing	0.7633	0.1012	-0.1064	0.4638	0.7615
	Construction	0.7385	0.0020	-0.0135	0.8188	0.2367
	Electricity, gas, steam and air conditioning supply	1.1165	0.2628	0.0843	0.6871	0.3148
	Information and communication	1.2115	0.0011	0.1007	0.1574	0.2261
	Manufacturing	0.9492	0.0134	0.0568	0.4444	0.2240
	Transportation and storage	1.3305	0.0003	0.1778	0.0129	0.2816
	Wholesale and retail trade	0.7309	0.0002	-0.0934	0.0884	0.4012

Source: author's calculations based on data from Amadeus and ECB.

The significant cash flow exposure to CZK/EUR volatility is present in groups of medium and small sized firms, particularly in agriculture and forestry and construction industries (medium sized) and transportation and storage industry and wholesale and retail trade industry in case of small companies. According to the results, medium sized firms operating in the agriculture, forestry and fishing industry are exposed the most, followed by small firms operating in the transportation and storage industry. These exposures are positive and significant, resulting in the situation when depreciation of Czech koruna leads to an increase in cash flows. The positive exposure is also present in case of medium sized firms in transportation and storage industry, significant at 10 % level. The transportation and storage industry is however significant for both, small and medium enterprises. The negative exposure is significant in case of medium sized firms operating in construction industry and small sized firms in wholesale and retail trade industry, both significant at 10 % level. In conclusion, we find that few industries in categories of small and medium sized firms have statistically significant exposure coefficients. However, we also observe insignificant exchange rate exposures. This fact might be explained by other factors determining the exposure of a firm. The percentage of foreign sales is also likely a further important factor that determines whether a firm has a big or small exposure. It would be also advantageous to obtain cash flow data on higher frequency due to possible higher robustness of results.

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5 Conclusion

We estimate the sensitivity of a firm value to fluctuations in exchange rate using a market model. An alternative approach is taken in this paper by estimating the foreign exchange rate exposure of a sample of 7,878 non-financial firms operating in the Czech Republic on the basis of corporate cash flows and also on the basis of stock returns of 11 publicly listed companies. We estimated the exposure by investigating the effect of changes in CZK/EUR exchange rate on cash flows/stock returns during the period 2003-2012, resp. January 2003 - May 2014. In the stock prices exposure analysis, we used orthogonalized market returns. Orthogonalized market returns provide in most cases better results which are consistent also with our findings that a significant number of publicly listed companies are exposed to exchange rate volatility, particularly 6 of 11 companies are significantly exposed and most of them negatively.

However, the stock market in the Czech Republic is rather less liquid and it is necessary to examine this matter further with application to smaller companies. Unfortunately, for this group, the cash flow data are at lower frequency. We estimated 23 panel regressions of firms' groups divided into groups by size and operating industry. Only medium and small sized companies operating in some industries showed significant exposure to exchange rate risk. Agriculture, forestry and fishing, transportation and storage and construction are industries where medium sized firms are most significantly exposed. In case of small firms, it is mostly wholesale and retail trade and transportation and storage industry. Theoretically, the number of statistically significant exposure coefficients is limited implying that either firms are successful in hedging activities or do not participate extensively in international trade and thus do not have significant exposure. However, for further analysis, it would be benefitting to obtain corporate cash flows data on higher frequency. The financial derivatives markets are not that easily accessible by medium sized and small firms which might lack resources to hedge, however, by the time of euro adoption, the hedging against exchange rate risk would result in more effective protection of the firm value.

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TRAINING PROGRAMMES PROGRAMMES OF A PROFESSIONAL CAREER AS A TOOL CAREER COACHING AT THE LABOUR MARKET

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Abstract
The aim of the essay is to examine training programmes of a professional career as a tool career coaching at the labour market. In the situation that the organizations decrease during the economic recession the numbers of workers, it means that the management of a professional career is a significant area for employees. A slender organization offer less possibilities for advancement and have limited resources for the development of employees. The planning of a career has therefore transferred towards an individually motivated approach. In the preface is explained to students the meaning of the training programmes to formation constructive habits in the professional career. The second chapter describes the methodology of case study and it clarifies career coaching as a professional competence of students to create training programmes. The third chapter analyses and interprets the results of a case study of view the living areas Knoblauch concept – family, field of study/job/profession, health, finance, friends, mental area, society and personality. The conclusion confirms validity of the career coaching as tool employment active policy.

Keywords
Training Program, Professional Career, Labour Market.

JEL Classification
J2, J240.

1 Introduction

The purpose of the article, as a case study, is to find out whether students when fulfilling the training programmes of a professional career ask themselves a question: *How strong is my motivation towards fulfilling the constructive habits in a professional career? What is the certainty, that on the labour market, I will do what I have set?* Which means that students probably would fulfil the targets of the training programmes, but they should ask: *What kind of help, support or information would I further need on the labour market?* Knoblauch (2013) in the book *"The targets in working and personal life"* formulates the factors of the constructive habits of the professional career that affect the practical implementation of the training programmes of students on the labour market. Among the key factors affecting the forming of the constructive habits of the professional career, Knoblauch puts as: *family, subject of study/job/profession, health, finance, friends, mental area, society* and *personality.* The cognitive target of the case study is to explore the key factors in the training programmes of the constructive habits of the professional career of students towards succeeding on the labour market, including their management. The research target aims not only towards understanding the object of the training programmes of the constructive habits of the professional career, but also towards explaining the motivation. It allows for increasing the effectiveness of the training program as a personal action plan for the student. It concerns the verification at which conditions the case study may work in education on the School of Business Administration in Karvina, the Silesian University in Opava (OPF SU). Simultaneously, the verification of the methodological procedure of the case study is concerned. From the cognitive target arises the application target, which is the content analysis of the training programmes of the constructive habits of the professional career, in the meaning of the tool of the employment policy of students, as future graduates of universities, on the labour market. As the cognitive sources, the case study uses the interactive lectures and tutorials in the subject *Psychology,* which the students attended in the eight *living areas of the professional career*.

The aim of *Psychology* is to introduce the students to its subject and applied psychological disciplines, mainly with economical psychology, personal psychology, the psychology of work and

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health. The lessons are designed as a base of the study of psychology for economists and managers. At the same time, it is aimed at contributing to self-knowledge, the development of personality and the opportunities of self-realization. The subject simultaneously makes the natural solution for other disciplines in the lessons at OPF SU focused on the issues of the labour market and the policies of employment, management, human resources and marketing (Tvrdoň, 2013). The interactive learning here worked as a motivation tool. It concerns the application of the motivation procedures among the full-time and part-time students towards the management of self-reflection. It was explained to the students that self-reflection would allow them to benefit from the positive strength of the constructive habits and therefore they would put the bad habits in the professional career beyond impact. The bad habits may in the future deprive the students of a quality professional career. The motivation of students consists of career coaching of self-reflection the way they make their professional career themselves. The aim is to teach the students to prepare for themselves the training programmes of the constructive habits of the professional career, which they will then develop. They would determine themselves, which new habits they are interested in formulating in the selected living areas of the professional career. They were reminded that a professional career on the job market is connected with their practical life.

2 Methodology of the Case Study

The initial part of the case study is focused on identifying the problematic living areas of students on the labour market. The case study is based on the assumption that it explores the practical realization of the training programmes of the constructive habits of the professional career of students in context with motivation and in conditions of the evaluation of principles and requirements in living areas. The research intention is focused towards the preparation of the *case study*. (Miovský, 2009) The case study offers specific research and methodological approaches. It allows implementing and evaluating the contribution of the training programmes of the constructive habits of the professional career as personal action plans of students using the motivation. In connection with the targets of the article, the research problem is formulated, *how the contribution of the training programmes of the constructive studies will be changed, if the teaching of Psychology change*, into questions: *Will the students fulfil the training programmes of the constructive habits of the professional career? What benefit for them is on the horizon?* The method for processing is the case study, which is a purpose-built document of a non-personal character. The empirical data in the case study are collected by the career coach as a researcher. The case study possesses the character of *casuistry* in means of methods for the use of the general norm, which sets the validity for the actual case. The case study retains the student simultaneously in two levels.

The first level is the processed training program of the constructive habits of the professional career in the interpretation of a personal action plan for the labour market. *The second* level is the evaluation of the training programme from the point of motivation, which is practised by the student. The processing of the case study originates from the *Knoblauch concept* towards asserting the principles and management of demands of the constructive habits of a professional career on the labour market. It continues with the content analysis of the training programmes focused on the description of factors forming the constructive habits of the future professional career of students. The description of factors forming the constructive habits of the professional career is followed by *synthesis*, which generalise the individual cases. Every training program represents the personal action plan of the student with the living areas, which must be identified for the practical realization of the constructive habits of the professional career. Into the training programmes the factors forming the constructive habits of professional career are implemented, that are important in the observed time period. The factors forming the constructive habits in training programmes make the complex and natural system of variables connected by the contexts, where the students on the labour market are associated. The case study is finished by the formation of a compact picture from the actual cases of the students. (Miovský, 2009) *Training programmes of the constructive habits of the professional career* of

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students are situated in the academic year 2013/14. A framework of the individual cases is constituted by the association of OPF in Karvina, SU in Opava, which the students attend. This way they take part within the contexts of the faculty, the working environment of the Silesian University and the motivation influencing the present students.

To be able to answer the questions: *Will the training programmes of the constructive habits be fulfilled by the students? What benefit for them is on the horizon?* The research focus must be oriented towards the results of students on the labour market:

1) What specifically will students do for the practical realization of the training programmes?
2) What will be their first step towards the practical realization of the training programmes?
3) What will follow next?
4) When will students fulfil the training programmes and how will they realize that their fulfilment was successful?

According to the evaluation of the training programmes, it may be assumed that the students have a strong motivation towards their practical realization. The students show the certainty that they will fulfil the planned activity and they are aware what help, support or information they will need on the labour market. The personal action plans allow the students to anchor on the labour market and be motivated for forming the constructive habits of a professional career in their own training programmes as tools of the policy of employment. According to Knoblauch (2013), for the management of the professional career on the labour market the concept of eight areas of practical life is important - family, subject of study/job/profession, health, finance, friends, mental area, society and personality. (Appendix) With reference to the compliance with the eight living areas, it may be stated that the constructive habits of a professional career are searching on the labour market for a practical concept for the application of their principles and management of demands. It can be therefore recommended to the students to apply the principles of Knoblauch's concept using the rhythm arising from personal motivation needs. The application of principles of the constructive habits of a professional career through motivation lies in the career coaching of the personnel and specialist qualification towards making personal action plans. The personal action plans lead towards positive changes and, according to Bohoňková (2010), towards an action direction. The action direction leads to specific steps, which are planned, realized and move the student realistically towards the set target. A student sets the personal action plan using career peer-coaching.

Career peer-coaching is understood here as collegial coaching of students in the roles of partners at the same level for the purpose of support and feedback. This coaching in the range of motivation that is creative. The traditional peer-coaching does not step over the borders set by personal motivation, personal values and assumptions. The career peer-coaching is oriented towards finding creative solutions beyond the set areas in the context of the labour market and employment policy. The setting of a personal action plan is preceded by an explanation and reminding of principles and the meaning of forming of the constructive habits of the professional career by the career coach. It is important that the student understands and accepts the idea of the constructive habits for the future professional career. The personal action plan is basically a promise and commitment, which they submit to. The fulfilling of such a promise is proof of the student's personal integrity. The content of the personal action plan becomes a base for individual consultation of the student with the career coach. The intention of the personal action plan is to strengthen the self-confidence of the student, self-control and a strong will. A strong will is given by the ability of a student, during the realization of a personal action plan, to meet in time the targets they decided. Seen as important is the part of the personal action plans where the students evaluate themselves as to which extent they take seriously the promises and realization of the targets they set. According to Suchý and Náhlovský (2007), work with the personal action plan is an individual test of students as to whether they understand the meaning of career coaching and if they take seriously the constructive habits of a professional career. The career coaching takes 3-4 hours and the career coach during individual consultation motivates the students towards accepting the personal action plans. The individual consultation will take place

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after 3-4 weeks between group consulting, when the career coach provides support for students. The career peer-coaching runs in the next month, when the action plans are evaluated by the students. Suchý and Náhlovský (2007) state that the personal action plans are a tool for transforming words into actual intentions, intentions into actual actions and actions into actual results. From the mentioned reason the personal action plans are a test of the motivation of students towards fulfilling the constructive habits of professional career.

3 The Results of the Case Study and its Interpretation

The case study may be, from the viewpoint of research, considered a *non-intentional source of information*. It is a finished record of real effects and processes that ran in the actual time, differently timewise distant from the moment when their interpretation is carried out. From the viewpoint of cognition, the case study is distinguished, according to the source of information, as *primary* and *secondary*. The primary case study consists of the direct records of facts, attitudes and thinking of respondents. The presented secondary case study is based on the primary documents. It contains the interpretation of the primary data from the training programmes of the constructive habits of the professional career of students. This is an individual and creative form of the personal action plans that were important for the students. The training programmes of the constructive habits of the professional career arose in the summer semester of the academic year 2013/2014. They come from the period their story captures, and they contain the data originating from the period before the formation of the secondary case study. From the viewpoint of cognition, it is desirable to see the presented secondary case study similarly as the method of observation (of the present). The key bindings are formed here between the observed effects and the observer and between the observer and the record. The fundamental difference starts in the time that affects the cognition. *How, therefore, the reliability and validity of observation done in the past would be proved?* Repeated observation is not applicable. In the presented case study, therefore, the binding between observation and its record plays a significant role. The presented secondary case study may be categorised among documents that arise from the personal records of students regarding the constructive habits of a professional career**.** (Miovský, 2009)

In the methodology of research, the *method of criticism of documents* was created, that is, a set of the cognitive actions and rules for proving the cognitive value of documents. The method of criticism of documents may be used for the criticism of the presented secondary case study because it contains the empiric data from the training programmes of the constructive habits of the professional career of students. The content analysis of the training programmes represents the method of systematic analysis of empiric data with the aim of interpreting the variables. The content analysis of the training programmes of the constructive habits of the professional career of students is the procedure and a tool of quantification of the text material. It requires a detailed analysis, finding and defining the key factors and putting them into a relation with the research intention. From the mentioned reason in the interpretation of the presented secondary case study, the collected training programmes of students must be quantified. The possibilities and purpose of their quantitative content analysis, according to Berelson, are set by their qualitative analysis. For the realization of the content analysis presented in the secondary case study as the career coach – researcher, I will do the following steps: (Ferjenčík, 2000)

The first step of the content analysis of the presented secondary case study is the specification of the research problem. The research problem is the change of benefit of the training programmes of the constructive habits of the professional career, if the style of teaching of Psychology changed. In the given connection we ask: Will the students fulfil the training programmes of the constructive habits of the professional career? What benefit for them is on the horizon? How strong is the motivation of the student towards the realization of the training program of the constructive habits of the professional career? What is the certainty that they will realise what they set? What kind of help, support or information will they further need?

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The second step of the content analysis of presented secondary case study is to evaluate the text of the training programmes and define their *universum*. The universum is the evaluation of the practical realization of the training programmes and it is based on the assumption that the practical realization of the constructive habits of the professional career of students cannot be explored otherwise than in accordance with the motivation and principles of the constructive habits of professional career.

The third step of the content analysis is the structuring of the universum of the training programmes of the constructive habits of the professional career into *categories*, according to which the data gathered by the content analysis are sorted. The categorizing is, according to Berelson, the direct reflection of the theory and the research problem and expresses the variables contained in the hypothesis. The Categorizing is made by operationalization of the given variables. Using the operational variables I determine according to which characters the elements of content of the training programmes are sorted and assigned to *categories*, which are the *family, subject of study/job/profession, health, finance, friends, mental area, society* and *personality.*

The fourth step of the content analysis of the presented secondary case study is the transformation of the qualitative information into an interpretable form. For such reason I use the *significance (qualitative) units* that are the elements assigned to a specific category. The elements determined into the specific category are set on a base of variables and their relation in the hypothesis. The assumption is that the students have a strong motivation towards the practical realization of the training programmes of the constructive habits of the professional career. The students are sure that they will fulfil the planned activities and are aware what help, support or information they will further need and that the personal action plans will lead towards results.

The main marks allow sorting the tested variable into the corresponding category using the content analysis of the training programmes of the constructive habits of the professional career of students on the labour market. The tested variables of the content analysis of training programmes of students are recognised according to the living areas, which the family, subject of study/job/profession, health, finance, friends, mental area, society and personality.

Family

Full-time students: supporting a family in the professional career, helping with home training of siblings, consulting about demanding living situations with the family, listening to family problems, having the family as the main living value, listening to parents' advice as professional models, keeping contacts with family both in person and at a distance (communication by e-mail and telephone), preventing family conflicts, helping parents, being polite and helping the family, helping with homework, keeping good family relations, regularly meeting up with family, helping grandparents, keeping family rituals at the celebration of family holidays and anniversaries, having an on-going interest in the family.

Part-time students: giving attention to children and minding them, doing regular shopping, visiting parents from both family sides regularly, implementing common activities for strengthening family relations, giving space for collective moments with the family, keeping emotional harmony in the family, strengthening good partner relations, establishing own family in the future, preparing for the management of the common household, forming inter-generation solidarity, helping to build the family cottage, openly communicating with the family about problems, delegating the house work to family members, keeping the privacy and safety of the family, improving the relationships with siblings, mutually bringing up the family members together, meeting at weekends on family trips, keeping together, resisting taking work home.

Subject of Study/Job/Profession

Full-time students: being interested in the subject of study, preparing personal documentation for job interviews, effectively arranging study activities, continuously learning foreign languages, keeping self-study, writing seminar work, arranging suitable professional practice in the subject of study and

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preparing bachelor work, studying regularly, resisting leaving study duty to the last moment, reading the technical literature of the subject of study, regularly elaborating the questions of state exams and successfully finishing the bachelor study at OPF in Karvina, actively taking part in seminars, managing continuously the knowledge tests in term, temporarily working and gathering practical knowledge.

Part-time students: dealing with working orders in work, regularly studying during employment, implementing additional pedagogic study, deepening and updating own qualifications, managing own professional growth, effectively re-qualifying, effectively organizing working activities in work, keeping the set study regime, completing the management academy, realizing own entrepreneurial activity, watching the behaviour of employment organizations on the labour market, managing the state bachelor exams, completing the language courses, watching news of the subject of study, gathering new experiences, travelling abroad, intensively preparing for the test period, continuing in subsequent masters studying.

Health

Full-time students: being the manager of their own health *"health cannot be bought for money"*, consolidating regular eating habits and eating healthy food, reducing sitting work and eliminating it by physical activity, not underestimating health problems, having a regular regime of physical activity with sporting activities, keeping regular resting, keeping a balanced psycho-physical condition, implementing an active life style, preventively protecting the state of health.

Part-time students: keeping regular sleeping, using preventive vaccinations, keeping a suitable drinking regime, eliminating unhealthy food, improving physical condition by walking and visiting the fitness centre *"trying to be fit"*, strengthening the psychological condition *"being open to new things"*, keeping a suitable lifestyle, passing preventive medical examinations, rehabilitation after injuries, practicing yoga and massage, strengthening own immunity by hardening.

Finance

Full-time students: effectively managing pocket money from parents, acquiring a merit scholarship, saving money for future own living, finding a summer job that could be combined with university studying, acquiring remuneration according to work performance "*the money will be and we will be not"*, doing as best work as possible, acquiring a stable salary, paying for accommodation in time, diversifying own costs, saving money preventively, finding a suitable job with a regular salary, using financial counselling, spending less money for unusable things, saving money in a savings account, paying university study independently.

Part-time students: concluding pension insurance, concluding a retirement and building saving programme, saving regularly finances in a savings account, introducing home accountancy, financially investing into education of children, observing the tax laws, reducing spontaneous shopping and implementing bargain shopping, avoiding thoughtless spending of money, making a monthly budget for family costs, striving for a salary increase at work, finding a suitable working position, making own financial reserves, increasing financial literacy, keeping overviews of spending and control the level of own account, saving for an active holiday, saving for the time after study, resisting arranging needless loans, getting a part-time job, investing into participation certificates, making a family budget for the financial securing of the family.

Friends

Full-time students: helping friends in difficult situations, keeping important dates, distinguishing among *"friends, comrades and acquaintances"*, keeping regular contact with friends, effectively spending free time with friends and not neglecting meetings with friends, keeping a social life with friends, making new contacts and meeting new people.

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Part-time students: using the advice of friends, keeping quality friends, enlarging the circle of new friends, helping friends with learning, communicating with friends on social networks, creating an effective relationship network, keeping with friends with a positive influence, cooperating collectively, keeping long-time friendly relationships.

Mental Area

Full-time students: "feeling to happy and having a peace in mind ", practicing assertive behaviour, managing stressful situations, increasing and *"recharging"* life energy, reading literature, keeping mental well-being, learning regularly, keeping a *"cool head"* during management of conflicts, practising meditation and relaxation techniques, keeping positive, using cleaning cures.

Part-time students: being able to relax and *"switch off"*, practising positive thinking, finding inner peace, sorting own thinking, using the possibility to travel, managing the deviation of own moods, reducing stressful situations, practicing yoga, acting rationally and balanced in every situation, gaining higher self-confidence, keeping a mental balance.

Society

Full-time students: using new social information, actively taking part in elections, not being afraid to show expression, integrating into study groups, protecting a healthy environment, visiting culture-social events, trying to inspire others, helping seniors, connecting to development activities for people from the third world, regularly financially contributing to funds of some non-profit organizations, keeping a general culture-social overview.

Part-time students: making a public commitment *"material security will not always make society happier"*, practicing service to citizens, improving public performance, connecting actively to the social and cultural activities in the place of living, enhancing own social behaviour, watching important social events, cultivating a togetherness with nature and appreciating life, being sociable and enhancing own ethical habits, becoming a voluntary blood donor, strengthening sustainable development *"separate waste"*.

Personality

Full-time students: strengthening decision techniques, reducing personal stubbornness, strengthening own self-confidence, keeping purposeful, working on personal development, strengthening the good and eliminating bad personal characteristics, learning from own mistakes, practising self-knowledge, strengthening strong personal points and eliminating the weak ones, keeping adequately modest, resisting judging by the first impression, increasing own communication, strengthening own psyche and self-control, not forgetting self-realization.

Part-time students: keeping disciplined and adequately self-critical, attending a course for dealing with people, regularly reviewing the working day, being active, developing own mental capabilities, personal abilities, talent and intellect, develop own mental area, realizing personal targets, keep being authentic and oneself, practicing a positive personal philosophy, developing own creativity, training the overview of oneself, increasing personal responsibility and endurance, practising personal life planning, exhibiting personal opinions.

We are researching the practical implementation of the training programmes on the labour market in accordance with the motivation of students and the content analysis of the constructive habits of the professional career. The students chose a strategy of development of the internal potential for defending the positions on the labour market. The internal potential and positions on the labour market are changing according to the situation. But the students have the situation under control. The control is an *"analysis"* with a reference to the way of their understanding of the practical life. A practical life can be understood by students in different ways. The example is an overview of the

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practical life in the *cube*, where point A, equally as point B, are the life outputs. Both outputs are equivalent. But the students may imagine point A as an output with an *advantage* but point B as an output with a *risk*. Seeing practical life from one time perspective may result in *success*, but another view may lead towards *failure*. But when the students understand the principles of a practical life, they will understand the professional career more objectively. The relationship between the practical life and the results of a professional career in the future would motivate students towards a higher consistency.

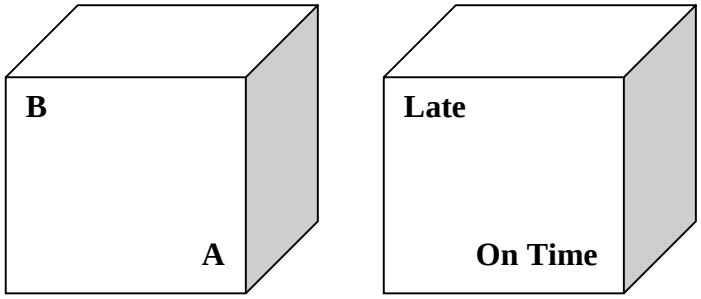

Figure 1. Practical Life in a Block (Source: Zimbardo and Boyd, pp. 13-14).

Ornstein states that the perception of time is a cognitive process. (Zimbardo, 2008) The more practical knowledge the students gain during professional training in the university, the more objectively they evaluate the achieved results. They evaluate the past time period and expect that the future period of professional career may change. The students do not mind the orientation of change of the professional career on the labour market, because the range of the change controls its result. But in a future professional career they would meet the living areas that will be more complex than the observed examples. In the personal action plan of the full-time and part-time students, the living views on the professional career differ *The full-time students convert from pushing to pulling* and *the part-time students convert from directive management to self-organizing*. Using the principles of forming the constructive habits of a professional career, we are supporting the motivation of both types of students towards self-reflection, self-management and *career coaching*.

4 Conclusion

Lippitová (2014) points out the increase of *career coaching* due to the interest of clients to reveal and keep key talents. In the situation that the organizations decrease during the economic recession the numbers of workers, they want to attract new talents and keep the existing ones; it means that the management of a professional career is a significant area for employees (Verner and Chudárková, 2013). The demand for career coaching increases if the organizations need to keep the talented workers and strive for new talents. The other employees in the organization await career advancement and a possibility of further education. A slender organization offer less possibilities for advancement and have limited resources for the development of employees. The planning of a career has therefore transferred towards an *individually motivated approach*. An individually motivated approach requires an individual determination of target and the preparation of planned career advancement. The career coaches lead the clients towards individual thinking about different possibilities of career advancement. Advancement is one of ways for the development of a professional career. The career coach and the coached client must decide together which life periods they will engage and estimate how to combine best these life ambitions, required competences and anticipated duties. After harmonization, a training programme is created as a *personal action plan* containing also the steps towards reaching the chosen working position. The personal action plan sets the key competences, methods for management of new proficiencies, a draft time schedule and materials for discussions with superiors. In career coaching, the procedures of *performance oriented* and *individual life* coaching may be combined with the ability to distinguish career procedures. Among career

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procedures belongs the recognizing of opportunities; assumptions of needed resources, the making of a timetable, support of the willingness of the client to adequately risk, making the main milestones and the record of the steps reached.

The aim of *performance oriented* coaching is to enable the clients to reach a new level of results. The new level of results might reach the client, whether they are a "*rough diamond"* that needs to be polished, an individual acquiring new skills or a professional that needs a guide to overcome the obstacles. Performance oriented coaching aims towards a change of behaviour, improvement of skills and increasing activity. The performance coach leads the client using feedback, analysis of competences, solving of problems and contract skills toward making a plan for the increase of performance. The coaching itself consists of three steps:

1) Determination of the required level of performance
2) Evaluation of the present performance
3) Preparation of the personal action plan, whose parts are the tactics for overcoming the differences between the present and required performance.

The personal action plan contains exactly set expectancies, time schedules and criteria for evaluation of the success rate. From the mentioned it arises that the key skills of the client for performance coaching are the evaluation tools, interference, planning and management of conflicts, learning and development.

The target of *individual life coaching* is the quality of life and the self-realization. The base of the issue is the realization of self, communication skills, social intelligence, a healthy life-style, harmonization of working and private life, including self-realization. Individual life coaching is focused on gaining self-confidence, the support of self-ego, clarification of values and interests, and marking the way towards the harmonization of working and private life. Among the procedures of *life coaching* belong the clarification of personal targets and values, thinking of level of self-satisfaction, exploring techniques for surpassing problems, evaluation of stress, setting of key interests and self-reflection of ways in which to reach satisfaction in the practical life. Life coaching uses knowledge of psychology, the labour market and employment policy, sociology, management, human resources, marketing and health-care. Individual life coaching helps the client to realize the ways in which to find in a professional career a better self- realization.

5 Acknowledgement

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[10] Research - *Content Analysis of Training Programmes of the Constructive Habits of a Professional Career*.

Appendix

Pay attention so that in every living area *(family, study/job/profession, health, finance, friends, mental area, society* and *personality)* you develop at least one constructive habit for a professional career. You will profit from the positive strength of the habit and deprive the bad and damaging habits their power, which may in the future deprive you of a quality professional career. This is a personal professional career, so form it yourself. Make your own training programme for the constructive habits of the professional career. Determine which new constructive habits you want to anchor in the living areas of a professional career and do not forget that a professional career is connected with practical life and the labour market.

Table 1. Training programme of the constructive habits of a professional career (Personal action plan)

Living areas	Constructive habit	Rhythm
family		
study/job/profession		
health		
finance		
friends		
mental area		
society		
personality		

Source: author.

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TESTING LINK BETWEEN FISCAL DECENTRALIZATION AND ECONOMIC DEVELOPMENT IN THE EUROPEAN UNION

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Abstract
This paper examines the importance of fiscal decentralization for a long term economic development. The aim of the paper is to test impact of fiscal decentralization on output in the European Union in a period 1995-2012. The empirical evidence is performed on a panel which contains 21 countries. The analysis uses data taken from OECD Fiscal Decentralisation Database and OECD. Since fiscal decentralization has many dimensions, the following indicators are used in the empirical analysis: expenditure decentralization, revenue decentralization and tax revenue decentralization. The empirical tests relating decentralization and economic performance are based on cross correlation and linear regression. Across the analyzed countries, decentralization appears to be positively associated with GDP per capita levels but negatively associated with GDP growth. The relationship is stronger for revenue decentralization than for expenditure decentralization.

Keywords
Fiscal Decentralization, Fiscal Federalism, Economic Development, Expenditure Decentralization, Revenue Decentralization.

JEL Classification
E62, H71, H72, H77.

1 Introduction

Scope of fiscal decentralization and intergovernmental fiscal frameworks usually reflect fundamental societal choices and history and are not foremost geared towards achieving economic policy objectives. Yet, like most institutional arrangements, fiscal relations affect the behaviour of firms, households and governments and thereby economic activity. Firms' investment decisions are affected by the productivity of the public sector, and differences between costs and benefits of service provision across jurisdictions may induce them to change their location. Similarly, labour supply decisions by households will be affected by differences in taxation across jurisdictions, and households may migrate if they consider the ratio of services received in relation to taxes paid superior elsewhere. The combined actions of households and firms may in turn lead to policy reactions at both the national and sub-national level, triggering reforms to intergovernmental fiscal relations (OECD, 2013).

Fiscal decentralization, which involves the devolution of government fiscal responsibilities to lower (subcentral) governments, has been discussed in many countries. A reason for this interest is the theoretical prediction that fiscal decentralization enhances the efficiency of government and promotes economic development (Oates, 1993).

The aim of the paper is to test impact of fiscal decentralization on output in the European Union in a period 1995-2012. The empirical evidence will be performed on a panel which contains 21 countries. Since fiscal decentralization has many dimensions, the following indicators will be used in the empirical analysis: expenditure decentralization, revenue decentralization and tax revenue decentralization.

2 Literature review and theoretical background

Fiscal decentralization is often discussed as a political issue in many countries, but the term is not sufficiently clear even in the fields of political science or public administration. Generally, fiscal decentralization is linked to sharing of fiscal responsibilities and power among central, state and local governments. Akai and Sakata (2002) define fiscal decentralization as devolution of the authority

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associated with decision making to a lower-level government. To measure fiscal decentralization, we have to know the degree of devolution or the level of authority of the lower-level government. Authority associated with decisionmaking has been allocated on the basis of legal relationships between higherand lower-levels government. However, it is difficult to measure quantitatively the allocation of authority. According to Thiessen (2003) point of view, fiscal decentralization considers a transfer of responsibility associated with accountability to sub-national governments. He maintains that fiscal decentralization is considered as the potential of sub-national governments to increase tax revenues, and make decision on how to allocate their monetary resources on various projects within the legal boundary. Bird and Wallich (1993) note that fiscal decentralization is observed as a portion of reform package for improving public sector efficiency, to raise competition among lower level government in supplying public goods and to accelerate economic growth.

As OECD (2013) points out, there are numerous channels through which fiscal decentralization and an intergovernmental set-up affects an economy. Figure 1 illustrates some of the ways in which fiscal decentralization can affect economic activity and development. In a macroeconomic production function, output is determined by physical and human capital and by their productivity, known as total factor productivity. Productivity in the private and public sector is, in turn, affected by institutional and policy settings like the extent of decentralisation. Since firms and households rely on public sector services, corporate productivity and household well-being may depend on how and where governments spend money. Fiscal frameworks might, for example, shape the extent to which governments – both national and sub-national – invest in infrastructure or education.Finally, fiscal decentralisation may directly affect a particular public sector (e.g. education system) whose performance can affect human capital formation.

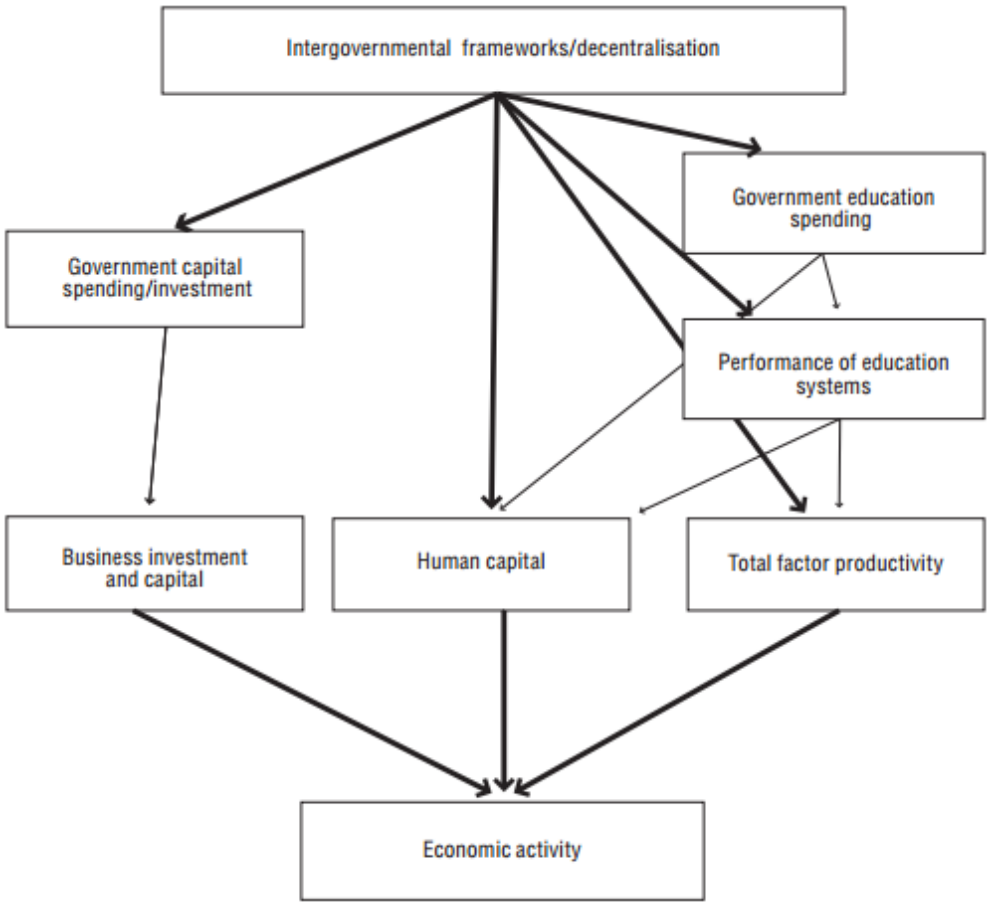

Figure 1. Channels from decentralization to economic activity (Source: OECD, 2013)

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Thornton (2007) highlights that the relationship between fiscal decentralization and long-run economic growth is ambiguous as is apparent from the results of empirical studies. Several economists have made the case for fiscal decentralization as a means of promoting long-run economic growth based on the view that it leads to better resource allocation and a more productive, and possibly smaller, public sector. This might be because locally determined policies are better able to take account of regional and local conditions in the provision of public goods, such as infrastructure and education (Oates, 1999), or that competition among different levels of government promotes lower tax rates and the efficient production of public goods under revenue constraints (Brennan and Buchanan, 1980). Vazquez and McNab (2003) conclude that it provides incentives for local governments to innovate in the production and supply of public goods and services. Contrary, Tanzi (1995) argues that fiscal decentralization can create for macroeconomic policy coordination generally, and for implementing stabilization policies in particular.

Empirical studies focused on the relationship between fiscal decentralization and economic growth provide mixed results. Most empirical studies are focused on the share of subnational government revenue or expenditure in consolidated (national and subnational) government revenue or expenditure as the measure of fiscal decentralization. Studies that have reported a positive and statistically significant impact using these measures include, among others, Iimi (2005), who reportes a significant and positive impact of expenditure decentralization on per capita GDP growth in a panel of 51 developed and developing countries covering 1997–2001.

Akai and Sakata (2002) find that the ratios of local government revenue and expenditure to combined state and local government revenue and expenditure have a positive and statistically significant impact on state GDP in a panel study of US states covering 1992–1996.

Also Thiessen (2003) describes a positive relation between decentralization and growth when decentralization is increasing from low levels, but that as decentralization increased, the relation eventually turned negative in a cross section of high-income OECD economies using annual data for a period 1973–1998.

There is a group of studies that have found no statistically significant relation between growth and fiscal decentralization. For instance, Thornton (2007) notes that recent studies examining the relation between fiscal decentralization and economic growth have failed to take account of the extent of the independent taxing powers available to sub-national governments and thus have substantially overstated the degree of effective decentralization. Results from a his cross section study of 19 OECD member countries suggest that when the measure of fiscal decentralization is limited to the revenues over which sub-national governments have full autonomy, its impact on economic growth is not statistically significant. Davoodi and Zou (1998) have similar conclusions and present negative but not statistically significant effect of expenditure decentralization on economic growth for developing countries and no clear relationship for developed countries using panel data for 46 developed and developing countries covering the period 1970–1989.

Contrary to the majority view, it is possible to find many emprical studies with proven a negative impact of fiscal decentralization on economic growth. Zhang and Zou (1998) demonstrate how the allocation of fiscal resources between the central and local governments has affected economic growth in China since reforms began in the late 1970s. They find that a higher degree of fiscal decentralization of government spending is associated with lower provincial economic growth over the past fifteen years.

As well Rodríguez-Pose and Krøijer (2009) examine, using a panel data approach with dynamic effects, the relationship between the level of fiscal decentralization and economic growth rates across 16 Central and Eastern European countries over the 1990-2004 period. Their findings suggest that there is a significant negative relationship between two out of three fiscal decentralization indicators included in the analysis and economic growth. However, the use of different time lags allows them to nuance this negative view and show that long term effects vary depending on the type of decentralization undertaken in each of the countries considered. While expenditure at and transfers

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to subnational tiers of government are negatively correlated with economic growth, tax es assigned at the subnational level evolve from having a significantly negative to a significantly positive correlation with the national growth rate. This supports the view that subnational governments with their own revenue source respond better to local demands and promote greater economic efficiency.

Next Rodríguez-Pose and Ezcurra (2011) analyse the relationship between decentralization and economic growth in 21 OECD countries during the period between 1990 and 2005 and controlling not only for fiscal decentralization, but also for political and administrative decentralization. The results point towards a negative and significant association between fiscal decentralization and economic growth in the sample countries, a relationship which is robust to the inclusion of a series of control variables and to differences in expenditure preferences by subnational governments. The impact of political and administrative decentralization on economic growth is weaker and sensitive to the definition and measurement of political decentralization.

Gemmell et al. (2013) investigate whether the efficiency gains accompanying fiscal decentralization generate higher growth in more decentralized economies, applying pooled-mean group techniques to a panel dataset of 23 OECD countries, 1972–2005. They find that spending decentralization tends to be associated with lower economic growth while revenue decentralization are associated with higher growth. Since OECD countries are substantially more spending than revenue decentralized, this is consistent with Oates' (1993) hypothesis that maximum efficiency gains require a close match between spending and revenue decentralization. It suggests reducing expenditure decentralization, and simultaneously increasing the fraction financed locally, would be growth-enhancing.

Also Baskaran and Feld (2013) examine the effect of fiscal decentralization on economic growth for twenty-three OECD countries from 1975 to 2008. In order to proxy fiscal decentralization, they use both traditional Government Finance Statistics (GFS)–style measures and new measures that account for the degree of subnational tax autonomy. The regressions with GFS–style measures indicate that fiscal decentralization has a negative but statistically insignificant effect on growth. Regressions with the new measures also result in negative coefficient estimates. However, they are larger in absolute terms and statistically significant. For the empirical literature on fiscal federalism, these results imply that measures of fiscal decentralization that account for subnational tax autonomy should be preferred to traditional GFS-style measures. From a policy perspective, they conclude that policy makers should be aware of the economic trade-offs when pursuing reforms toward more fiscal decentralization.

3 Data and methodology

The aim of the paper is to test impact of fiscal decentralization on output in the European Union in a period 1995-2012. The results of above empirical studies are rather heterogeneous, i.e. different papers report different relationship and impact of fiscal decentralization on economic development. This may be due to differences in used econometric models, country samples, observation periods and considered variables.

This empirical evidence is performed for 21 EU member states, namely Austria (AT), Belgium (BE), Czech Republic (CZ), Denmark (DK), Estonia (ES), Finland (FI), France (FR), Germany (GE), Greece (GR), Hungary (HU), Ireland (IR), Italy (IT), Luxembourg (LU), Netherlands (NL), Poland (PO), Portugal (PT), Slovak Republic (SK), Slovenia (SV), Spain (SP), Sweden (SWE) and United Kingdom (UK). The analysis uses data taken from OECD Fiscal Decentralisation Database and OECD.

Since fiscal decentralization has many dimensions, the following indicators are used in the empirical analysis: expenditure decentralization, revenue decentralization and tax revenue decentralization. The variables are specified in following form:

• Expenditure decentralization (EXPD) is the ratio of subcentral to total general government spending;

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• Revenue decentralization (REVD) means the ratio of subcentral own revenue to total general government revenue;

• Tax revenue decentralization (TAXD) expressing the ratio of subcentral tax revenue to total general government tax revenue.

Economic development is assessed using the GDP growth rate (RGDP) and nominal GDP per capita (GDP) expressed in Purchasing Power Standard per inhabitant. Table 1 presents basic descriptive statistics of variables.

Table 1. Descriptive statistics

	RGDP_	GDP_	EXPD_	REVD_	TAXD_
Mean	5.32	22344.18	28.50	17.30	13.43
Median	4.94	21400.00	28.91	14.87	9.05
Maximum	20.00	68400.00	64.13	42.60	48.22
Minimum	-13.95	5300.00	4.05	2.43	0.76
Std. Dev.	4.43	9800.25	12.79	9.45	12.35
Skewness	-0.24	1.74	0.38	0.72	1.04
Kurtosis	4.69	8.78	3.18	2.51	2.97
Jarque-Bera	48.14	717.12	9.39	35.66	68.45
Probability	0.00	0.00	0.01	0.00	0.00
Sum	1983.95	8446100.	10774.69	6451.10	5076.22
Sum Sq. Dev.	7301.83	3.62E+10	61625.33	33211.53	57485.36
Observations	373	378	378	378	378

Source: based on data from OECD.

It is necessary to test the stationary time series before starting analysis. First, GDP per capita values were transformed into natural logarithms. Unit root tests identified that all time series are stationary at the first differences (RGDP and EXPD also at level data). Explanatory variables are chosen in accordance to Blöchliger (2013). The empirical tests relating decentralization and economic performance are based on cross correlation and linear regression.

Cross correlation assesses how one reference time series correlates with another time series, or several other series, as a function of time shift (lag). Cross correlation does not yield a single correlation coefficient but rather a whole series of correlation values. Like all correlations, cross correlation only shows statistical associations not causation. Consider two financial series x_t and y_t, then the cross-correlation at lag (lead) *k* is defined as follows:

$$\rho(y_{t+k}, x_t) = \frac{T \sum_{t=k-1}^{T} (y_{t+k} - m_y)(x_t - m_x)}{(T+k)\sqrt{\sum_{t=k}^{T} (y_{t+k} - m_y)^2} \sqrt{\sum_{t=k}^{T} (x_t - m_x)^2}} \quad (1)$$

where ρ is the correlation coefficient and m_x and m_y are the means of corresponding series. The series can be related in three possible ways: (i) y_t can lead x_t ($\rho(y_{t-k}, x_t) \neq 0$), (ii) y_t can lag x_t ($\rho(y_{t+k}, x_t) \neq 0$), (iii) series can be contemporaneously related ($\rho(y_t, x_t) \neq 0$).

4 Empirical results and discussion

The sample of examined countries covers 4 federal countries (Austria, Belgium, Germany and Spain) with central, state and local governments, other 17 countries are unitary with central and local

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governments. The degree of decentralization varies widely across sample countries but has changed little over the analyzed period, with a few notable exceptions. As Figure 2 shows, there are significant diffrences among scope of fiscal decentralization in coutries and variables.

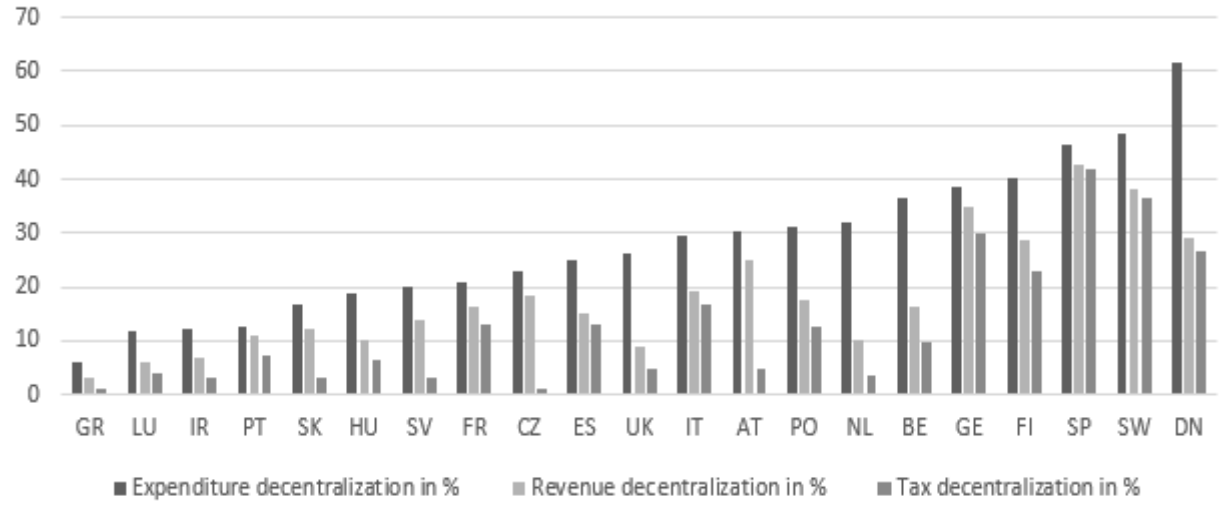

Figure 2. Fiscal decentralizatin in 2012 (Source: based on data from OECD)

Subcentral expenditures (spendings) share averaged around 28% in 2012, with values ranging between 61% for Denmark and 12% for Ireland, while the revenue decentralization share is at around 18%, with values between 38% for Sweeden and 3% for the Greece. Tax revenue decentralization varies from 1% in Greece and the Czech Republic to 47% in Austria, with average value 14%. Spendings are clearly more decentralized than revenues, with a considerable part of subcentral expenditure covered by intergovernmental grants. Constitutional provisions explain only a part of the differences in subcentral autonomy as various federal countries appear more centralized than some unitary ones. While both revenue and expenditure became more decentralized over the past 20 years, expenditure decentralization outpaced revenue decentralization, resulting in a higher vertical fiscal imbalance and growing intergovernmental grants (for details look at Halásková and Halásková, 2014 or OECD, 2013). Only a few countries – in particular Spain and Italy that embarked on a secular decentralization process and a few Eastern European economies such as Estonia and Poland – underwent considerable changes in subcentral spending and taxation powers. Decentralization appears to converge towards an intermediate level, with a few highly decentralized countries recentralizing and several highly centralized countries devolving fiscal powers to lower government levels (Szarowská, 2014).

Reforms to intergovernmental fiscal frameworks can explain a part of the evolution of decentralization indicators over the past 20 years. The most common fiscal federalism reforms include: the devolution of new responsibilities for public services to the subcentral level, especially in the area of economic affairs and social welfare; the upgrading and amendment of equalisation and other intergovernmental grant systems, particularly a move from earmarked to non-earmarked grants; the introduction or tightening of subcentral fiscal rules; a move from grants to tax sharing; and sub-central tax reforms, mostly entailing a stronger harmonization of central and subcentral tax bases (Blöchliger, 2013).

Figures 3-5 plot the average growth rate of real gross domestic product (RGDP) and nominal GDP per capita in PPP over the examined period on the average values of the three measures of fiscal decentralization considered and give an initial assessment of the main research question driving the article. The simple linear association between all three phenomena seems to show the existence of a negative relationship between the degree of fiscal decentralization and the economic growth in selected countries between 1995 and 2012.

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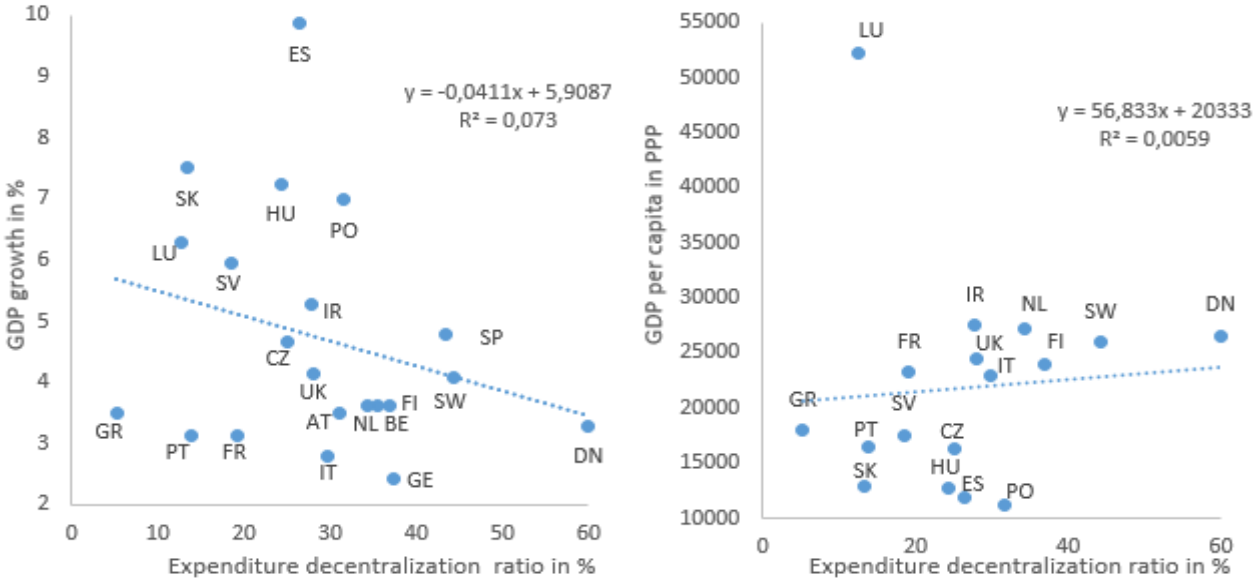

Figure 3. Expenditure decentralization and economic performance (1995-2012) (Source: based on data from OECD)

The expenditure decentralization indicator (EXPD) is defined for each state as the ratio of local and state government expenditure to global total general expenditure at general government level plus the total inter-governmental property expenditure. The addition is made because the latter represents payments by one level of government for a service provided by another government level and it essentially avoids consolidation of property expenditure at general government level. This indicator corresponds to the most approximate measure of the allocation of authority when a subnational government has authority associated with its expenditure implicitly considering that all inter-governmental grants are non-matching or lump-sum grants.

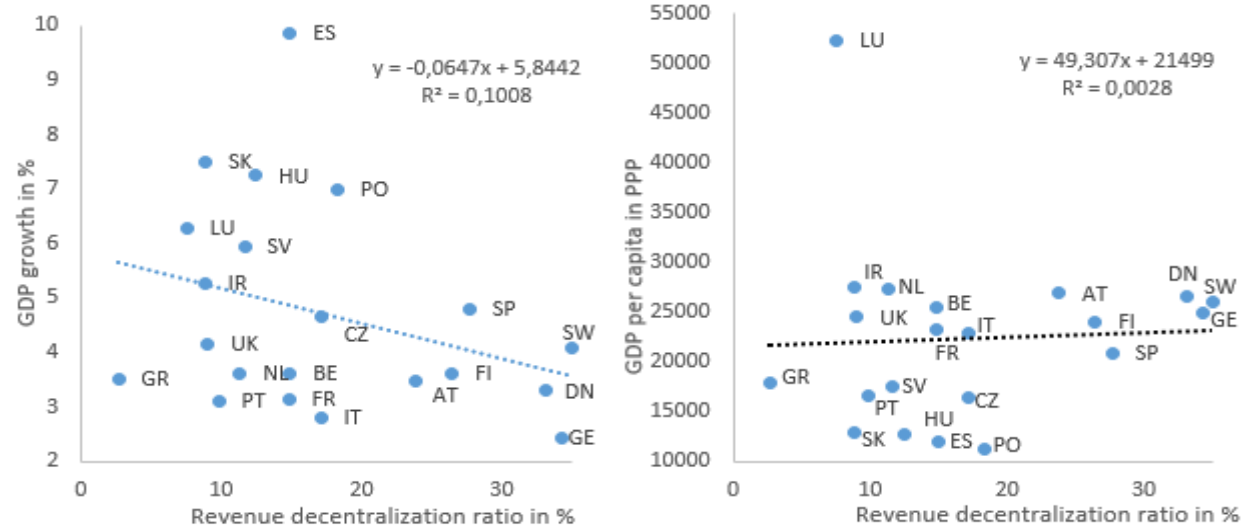

Figure 4. Revenue decentralization and economic performance (1995-2012) (Source: based on data from OECD)

The revenue decentralization indicator (REVD) is defined for each state as the ratio of own local and state government revenue (total revenue minus the intergovernmental transfer revenue of that government level) to total general government revenue. Finally, tax revenue decentralization (TAXD) is the ratio expressing share of subcentral tax revenue to total general government tax revenue. Consolidated total general government revenue is defined has been calculated as global total revenue at general government level plus the total inter-governmental property income. The addition is made because the latter represents payments by one level of government for a service provided by another

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government level and it essentially avoids consolidation of property income at general government level.

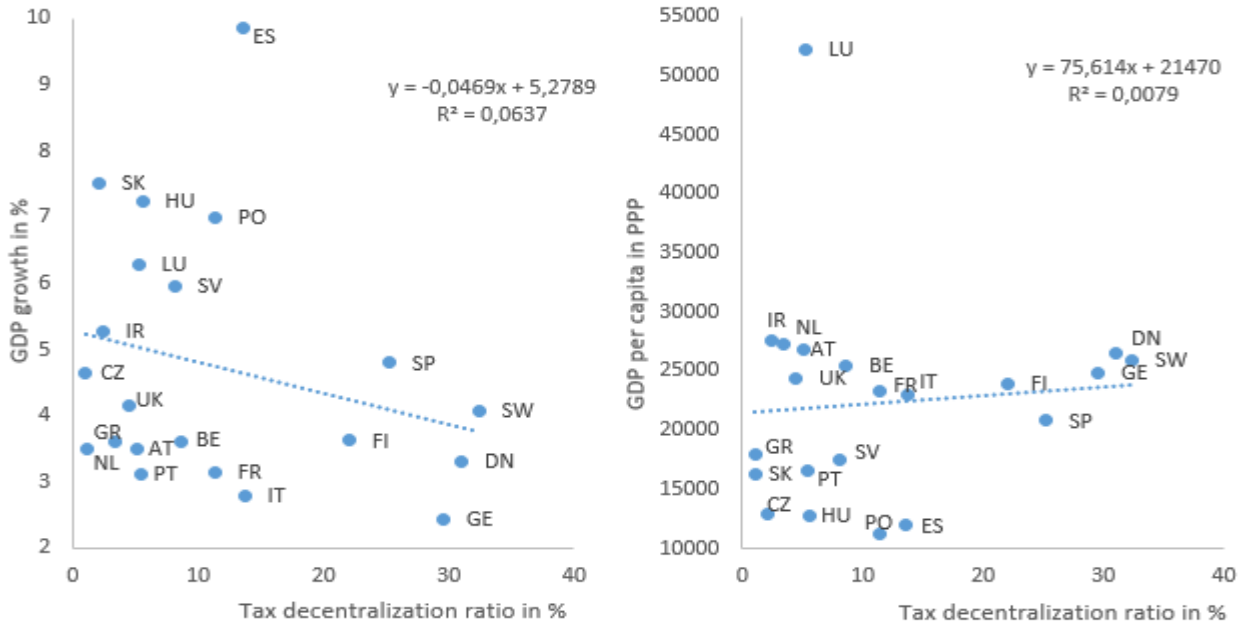

Figure 5. Tax revenue decentralization and economic performance (1995-2012) (Source: based on data from OECD)

These revenue indicators corresponds to the most common argument of the allocation of authority when the government that collects revenue has authority associated with its own revenue or the tax to be collected (Oates, 1993).

Across the analyzed countries, decentralization appears to be positively associated with GDP per capita levels but negatively associated with GDP growth (see Figures 3-5), this fact confirm also results of correlation analysis in Table 2.

Table 2. Correlation coefficients

	RGDP_	GDP_	EXPD_	REVD_	TAXD_
RGD___	1	-0.29	-0.12	-0.21	-0.21
GDP_	-0.29	1	0.07	0.08	0.14
EXPD_			1	0.80	0.64
REVD_				1	0.86
TAXD_					1

Source: based on data from OECD

The relationship is stronger for revenue decentralization (-0.21) than for expenditure decentralization (-0.12), suggesting that a budget's revenue side is a better gauge for the link between fiscal frameworks and economic performance than the spending side. The information provided by Figures 3-5 should, in any case, be interpreted with caution, as economic growth does not depend exclusively on the degree of fiscal decentralization of a country (coefficients of determination are very low). The same conclusion is possible to find in Davoodi and Zou (1998), Akai and Sakata (2002), Iimi (2005) or Thornton (2007). The potential influence of the degree of fiscal decentralization on economic performance may be affected by country differences in political and administrative decentralization (Rodríguez-Pose and Ezcurra, 2011). In terms of subnational expenditure and revenues, the results are in line with the findings of other empirical studies on fiscal decentralization and economic growth, such as Akai and Sakata (2002), Thiessen (2003), Iimi (2005) or Rodríguez-Pose and Krøijer (2009), but opposite as Zhang and Zou (1998), Rodden (2002) or

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Rodríguez-Pose and Ezcurra (2011). The variety is generated due to differences in used econometric models, country samples, observation periods and considered variables.

5 Conclusion

This paper examines the importance of fiscal decentralization for a long term economic development. The aim of the paper was to test impact of fiscal decentralization on output in the European Union in a period 1995-2012. The empirical evidence was performed on panel data for 21 EU countries. The empirical evidence is performed on a panel which contains 21 countries. The analysis used data taken from OECD Fiscal Decentralisation Database and OECD. Since fiscal decentralization has many dimensions, the following indicators were used in the empirical analysis: expenditure decentralization, revenue decentralization and tax revenue decentralization. The empirical tests relating decentralization and economic performance were based on cross correlation and linear regression analysis.

Results suggest that the degree of decentralization varies widely across sample countries but has changed only fractionally over the analyzed period. Subcentral expenditure share averaged around 28%, with values ranging between 61% for Denmark and 12% for Ireland, while the revenue decentralization shares at around 17%, with values between 38% for Sweeden and 3% for the Greece in 2012. Tax revenue decentralization varies from 1% in Greece and the Czech Republic to 47% in Austria, with average value 13%. Expenditure side is more decentralized than revenues, with a considerable part of subcentral expenditure covered by intergovernmental grants.

Correlation analysis showed that decentralization appears to be positively associated with GDP per capita levels but negatively associated with GDP growth, the relationship is stronger for revenue decentralization than for expenditure decentralization across the analyzed countries.

Based on the empirical results, study suggests that state and local governments should be given more autonomy and authority in fiscal expenditure matters. Generally, decentralization is often associated with increased degrees of policy innovation, greater transparency, and better capacity of governments to adapt policies to local needs. On the other hand, the evidence did not confirm revenue decentralization expectation about the ability of local governments to generate their own revenues and promoting fiscal responsibility and incentivize them.

6 Acknowledgement

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THE DEVELOPMENT OF THE LEGISLATIVE BACKGROUND AND CURRENT ORGANISATIONAL FRAMEWORK OF SOCIAL SERVICES IN SLOVAKIA

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Abstract
Every society tries to cope with the situation when some of its members find themselves in an unfavourable situation. Social (and care) services are therefore an essential part of modern societies. Social services in Slovakia are far from being able to meet the needs of the population and have been facing an uneven distribution and shortage of financial resources for a long time. With constant adjustments in legislation, government changes, restructuring in the professional and political institutions and promoting the interests of various lobbies, the conditions of their existence and operation also change. This article focuses on outlining the regulatory and organizational context of the provision of social services in Slovakia and tries to introduce its readers a brief description of the development of legislation in the field of social services in Slovakia, while it informs about the ongoing processes of transformation and deinstitutionalization and their possible future effects on social service provision.

Keywords
Social Services, Care Services, Transformation, Deinstitutionalisation.

JEL Classification
A13, H55.

1 Introduction

The provision of social and care services has a long history in Slovakia. The main objective of this paper is to outline the regulatory and organizational context of the provision of social and care services and to give the readers a short introduction to the legislative development and ongoing reform processes of transformation in the field of social and care services. To this end, first a short timeline is provided about the major legislative means since the introduction of the first social legislation in order to monitor the regulatory trajectory of the country. A significant objective of this process is to feature the main professional and political developments in the regulation of social and care services so as to be able to identify the novel concepts and priorities underlying the current transformation process of the social and care service provision in Slovakia.

One of the main concepts is deinstitutionalisation, i.e. the substitution of institutional care with home care and other community level support mechanisms, which has not been thoroughly implemented in spite of the stated priorities of the government. By looking into the current numbers of the organisational framework of social and care services in Slovakia, we aim to draw a conclusion about the future possibilities of deinstitutionalisation.

2 The regulatory trajectory of the welfare state in social and care services

The first part of the paper intends to take a brief overview of the history of social services in Slovakia. An independent retrospective analysis is made more complex because Slovakia gained independence in 1993 and before that date, the country had been part of greater territorial units (Czechoslovakia, Austro-Hungarian Monarchy).

Since the development of social services and the welfare state regime in Slovakia differs in many respects from that of in Western Europe, since the country was previously part of the Soviet Union's

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influence zone, we start with a brief overview of the most important social changes that took place since the early stages of welfare state development. Such a broader introduction will be helpful for better understanding the developments in the area of social and care services, the current challenges and possible future trends of the sector.

2.1 At the turn of the 20th century: Enhancing democratic development in Czechoslovakia

The history of social services started in Slovakia on the basis of Bismarckian traditions. Bismarck's social security legislation dates back to 1881 in Germany and the Austria-Hungarian Monarchy soon followed the trend; the first legislation on compulsory social insurance scheme for sick people, which was also applied in the current Slovakia, was introduced in 1891, while the first scheme for injured people in 1907. These can be called 'Bismarckian' in the sense that the insurance schemes were mainly financed by individual payments and different categories of workers enjoyed different conditions in the system (Tomka, 2009).

In 1919 after Czechoslovakia gained independence, the Bismarckian healthcare system inherited from the Monarchy was expanded and better defined (Kinkorová and Topolčan, 2012). The progressive Act no. 221/1924 Coll. of Laws and Regulations on Sickness, Disability and Pension Insurance for Employees followed in 1924. This law brought the first legal regulation introducing workers´ disability and old-age insurance for every worker (with the exception of part-time workers), which was consolidated under one single institution, the newly established Central Social Insurance Company. With respect to future political developments in the neighbouring countries, it proved very farsighted and stable and became one of the most important parts of Czechoslovak legislation in the social sphere during interwar period. (Czech Social Security Administration, 2004).

Between the years of 1930 and 1934 the economic recession affected also sickness insurance companies and restrictive measures had to be applied, resulting in the adoption of amendment no. 112 of Act no. 221/1924 Coll. in 1934. However, all these regulations remained in effect until September 30th 1948 and were complemented on December 1st 1945 by child benefits. A renewed concept of national insurance was implemented into Act no. 99/1948 Coll. on National Insurance, replacing previous regulations in this field (Czech Social Security Administration, 2004).

2.2 Main features of social policy during the Communist regime (1948-1989)

After the World War II, Czechoslovakia became a part of the Soviet influence sphere which resulted in negative impacts in the healthcare system with the introduction of a soviet centralised integrated state system known as Semashko model of unified healthcare system in 1952 (Kinkorova, 2012). The centralization meant that according to Act no. 102/1951 Coll., sickness insurance was newly administered by the Revolutionary Trade Unions (until 1990 - national insurance commissions) and performed by employers. For political reasons, the system of universal coverage was abandoned in the 50s disadvantaging the self-employed without any sickness insurance to restrain the private (mainly agricultural) sector. The sickness insurance scheme was also changed due to political reasons by the adoption of Act no. 54/1956 Coll. on Sickness Insurance of Employees, by which provisions of no substantive relevance aimed at preventing fluctuation and absenteeism, were introduced.

The modified Semashko's healthcare system reached a turning point in the 1960s and as too centralised and rigid in many aspects, it proved unable to respond flexibly to new health problems arising from life style changes and environmental factors. (Kinkorova, 2012). In 1968, Act 53/1968 Coll. on Transformation of Organisation and Functioning of Central Bodies established the Ministry of Labour and Social Affairs, which was established to implement activities in the field of social security administered by the State Social Security Office until this date.

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2.3 Early stages of 'construction' of the new welfare model - Development of social and care services after 1989

Transformation of social services system in Czechoslovakia started after so-called `Velvet revolution` in 1989 and its first transition was connected with the period 1989 – 2002. In 1990 and 1991, during the democratisation process, a dramatic liberalisation of the healthcare system took place. Basically, the principle of free choice of healthcare facility was introduced. In 1991, new laws were approved, in particular the General Health Insurance Act (No. 550/1991 Coll.), and the Act on the General Health Insurance Fund (No. 551/1991 Coll.) should be mentioned.

Since 1991, the healthcare system has moved towards a compulsory health insurance model, with a number of insurers financing healthcare providers on the basis of contracts. On January 1, 1993 Czechoslovakia separated into two completely independent countries: the Czech Republic and the Slovak Republic. The main goal of transformation in both countries was a change from a passive approach of a traditional institutional (residential) care model to a system of community - based care services based on active individual approach. Another milestone was in this process when Act. 195/1998 on social assistance was adopted in 1998. The Act specified social services as as specific activities to address the issue of material or social distress of citizens. As a further clarification, social services were divided into institutional (ambulatory, weekly and long term stay) and home care. According to the legislation, recipients of social assistance were entitled to social counselling, social and legal protection, the provision of social services, social assistance benefits or cash benefits for compensation. However, in spite of the introduced changes, the experts claimed that the Act contained no initiatives for a qualitative change in the system of social services.

2.4 Recent developments, new concepts and future visions

In order to introduce much-needed qualitative changes in the social service system, a decentralisation process started in Slovakia in 2002 as part of a bigger reform package of public administration, with social services being transferred from the state (national) level to the scope of self-governments (higher territorial units and municipalities. The basic principles such as decentralisation, principle of subsidiarity, adequacy, a multiplicity of forms, plurality of sources and professionalization were set. Fiscal decentralisation, which consisted of building mechanisms ensuring sources of finance for newly delegated responsibilities, followed in 2005.

From 2002 to 2005, professional and fiscal decentralisation of social services was implemented as a result. Following the reform, nationwide strategic priorities of social services development (stated below, according to INESS study, 2013) have been determined:

- *decentralisation* (aimed at moving competencies and responsibilities to local government so decision-making is closer to the citizen);
- *deinstitutionalisation* (substitutes institutional care with community level support mechanisms and enables users to stay in their local communities);
- *diversification* (introduces non-state actors such as NGOs into the provision of social services);

In order to modernise social services for enabling them to better respond to changing needs, societal challenges and financing constraints, national authorities are trying to diversify the ways in which these services are organised, provided and financed. The diversification is supported by the recently adopted Act No. 448/2008 Coll. on Social Services and by the amendment of Act No. 455/1991 Coll. on Trade Licensing (the Trade Licensing Act), as amended (hereinafter referred to as the Social Services Act).

Simultaneously with introducing the concept of deinstitutionalisation, decentralisation and diversification, the Social Services Act introduced the concept of multi-level community planning, according to which the planning of social services on municipal level should correspond to local needs and specifics of natural persons and to be based on an analysis of the state of the art of social

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services provision (MoLSAF, 2009), while the social services policy of higher territorial levels should be based on the National priorities for the development of social services and community plans of municipalities in its territorial jurisdiction (MoLSAF, 2013).

Based on these concepts, the national priorities for the development of social services of the Slovak Republic include:

- support for the client to remain in their natural environment by developing outreach social services;
- development of ambulatory social services and residential social services at weekly-stay facilities;
- increasing the quality and humanisation of social services by means of reconstruction, expansion, modernisation and building social services facilities;
- training of employees in the field of social services.

Nevertheless, it shall be added that the Social Services Act provides for conditions of the process of deinstitutionalisation, but these by themselves are not enough to transform the largely institutional way of providing social services. According to the Strategy on Deinstitutionalisation of the Social Services System and Foster Care in the Slovak Republic adopted in 2011 (hereinafter referred to as DI Strategy), there are no direct legislative documents dealing with transformation and deinstitutionalisation of the social services system. In this context, the National Action Plan for the Transition from Institutional to Community-based Care in the Social Services System for 2012 – 2015 (hereinafter referred to as DI Action Plan) recommends adoption of several legislative changes to facilitate the DI process, e.g.:

- ban registration of large-scale social service facilities;
- definition of community-type services and activities missing in the current law (early care centres, supported homes, individual planning);
- identification of social services quality standards at the national level;
- lifelong learning system for social service personnel;
- support families whose child was born with disabilities since the child‘s birth;
- prevention of placing recipients of social services into institutions;
- strengthen supported decision-making as part of the Civil Code (in cooperation with the Ministry of Justice on the issue).

Last, we would like to mention amendments to the Social Services Act from March 1, 2011 and from March 1, 2012 (Act No. 551/2010 Coll. and Act No. 50/2012 Coll.) which aimed mainly at:

- revision of certain provisions causing problems in practice and facilitation their implementation in practice,
- ensuring the enforceability of the right of a natural person to choose their social services provider,
- addressing persistent problems in financing of social services and eliminating the risk of a collapse of existing social services facilities, which would have jeopardised the fundamental human rights and freedoms of beneficiaries of social services.

After this short summary of the legislative history of social service provision in Slovakia, the next chapter aims to provide a statistical overview of the current organisational framework of social and care services.

3 The current organisational framework of social and care services in Slovakia

As mentioned in the previous chapter, social services have been provided under the Social Services Act in Slovakia since 2009, which governs the legal relations and conditions for the provision of social services, with two main aims: a) to support the social inclusion of citizens and b) to satisfy the social needs of people in an adverse social situation.

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The Social Services Act divides social services into several groups, depending on the nature of the adverse social situation or target group, and which are defined as:

- social services for ensuring essential conditions for satisfying basic living needs;
- social services for supporting families with children;
- social services for addressing an adverse social situation due to severe disability, ill health or due to reaching pension age;
- social services using telecommunication technologies;
- support activities.

Social services are services in the public interest and are generally provided without profit. Professional activities can be provided in the form of social advice and social rehabilitation or separately, under conditions laid down by the act. The financing of non-public providers is regulated in a separate part of the act, under condition of meeting statutory conditions. In terms of financing, non-public providers are differentiated as regards whether they are of a non-profit nature or businesses (MoLSAF, 2013).

For better imagination we detail the development of the number of social and care services in Slovakia between the years 2003-2012 in Tab. 1. below; then further state the recent statistical data and indicators in the area of social services regarding their division by regions, number of places and overview of incomes and expenses in 2012.

Table 1. Number of social and care services between 2003-2012

Indicator	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total number	680	730	775	797	824	873	955	1060	1135	1249
including:										
Senior homes[1)]	175	186	194	201	206	208	222	236	243	271
Boarding-houses for seniors	20	16	14	13	15	16	-	-	-	-
Social service homes for adults	125	118	142	164	186	212	265	306	326	359
Specialized facilities	-	-	-	-	-	-	7	21	44	55
Day centres	-	-	-	-	-	-	6	11	13	29
Social service homes for children	68	73	65	58	56	56	59	55	51	49
Children's homes	86	91	91	92	86	87	90	89	91	89
Attendance service stations	7	5	6	6	5	5	8	9	4	4
Foster care facilities (previously)	16	20	23	21	18	20	14	13	28	32
Supported housing facilities	6	8	11	11	12	17	18	31	26	38
Emergency housing facilities	20	22	23	25	26	26	33	39	44	47
Shelters	32	53	59	65	69	72	64	68	70	72
Crisis centres	14	17	20	19	21	26	26	28	29	27
Re-socialisation centres	19	19	19	19	21	20	22	19	18	17
Rehabilitation centres	8	14	17	13	15	16	14	14	17	17
Attendance service facilities	84	88	91	90	88	92	96	88	89	97
Reception centres	-	-	-	-	-	-	10	23	27	30
Half-way homes	-	-	-	-	-	-	1	10	15	16

Source: Statistical Office of the Slovak Republic.

According to the data from the Slovak Statistical Office there were 5 410 836 inhabitants and 1 249 social facilities in the Slovak Republic as of 31 December 2012 (Table 2.) which provided their services to 44 920 persons (0.08%). The majority of the inhabitants live in senior's homes covering 271 facilities with 11 895 places in 2012. From the total number (44 920), there were 30 900 places in 685 institutional facilities (68.8%). There were 103 institutional facilities on average per a region.

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Table 2. Facilities according to regions in Slovakia in 2012

Region	Facilities		of which institutional facilities					
			Number			Places		
	Number	Places	Total	Adults	Children	Total	Adults	Children
Together	1249	44920	823	685	138	33773	30900	5873
Bratislava	161	5685	82	68	14	3544	3544	532
Trnava	108	4917	77	67	10	3949	3949	436
Trenčín	132	5178	101	82	19	3818	3818	559
Nitra	159	6803	118	101	17	5187	5187	651
Žilina	160	5227	107	92	15	3436	3436	686
Banská Bystrica	205	5890	139	115	24	3931	3931	928
Prešov	184	5756	118	99	19	3869	3869	835
Košice	140	5464	81	61	20	4412	3166	1246

Source: Statistical Office of the Slovak Republic.

Table 3 and Table 4 below indicate that there were 337 facilities with 16 880 places, where a self-governmental region was the founder, 65 facilities with 3 929 places, where the Centre of Labour, Social Affairs and Family (hereinafter referred to as CoLSAF) was the founder, 124 facilities with 7 109 places, where a municipality was the founder, 81 church facilities with 1 929 places, 165 facilities with 4 421 places, where other legal persons were the founder and 51 facilities with 1 505 places founded by natural persons.

Table 3. Institutional facilities for adults by founder in Slovakia in 2012

Type of facility	Together	Self-governing Region	Municipality	Church legal persons	Other legal persons	Natural persons
Together (facilities/places)	685 / 30900	307 / 17197	123 / 7 098	69 / 1512	139 / 3753	47 / 1340
Senior's homes	271	79	84	31	58	19
Social services homes for adults with:						
physical handicap	36	15	8	4	3	6
combination of handicaps	253	124	29	29	56	15
mental or manners failure	70	59	1	1	7	2
specialized facilities	55	30	1	4	15	5

Source: Statistical Office of the Slovak Republic.

As we can see, from 685 institutional facilities for adults in 2012, 307 facilities (44.8%) were founded by self-governmental regions, 123 facilities (18.0%) were founded by municipalities, 69 facilities (10.1%) by church legal persons, 139 facilities (20.3%) by other legal persons and 47 facilities (6.9%) were founded by natural persons.

Table 4. Institutional facilities for children by founder in Slovakia in 2012

Type of facility	Together	Self-governing Region	Centre oLSAF	Municipality	Church legal persons	Other legal persons	Natural persons
Together (facilities/places)	138 / 5873	30 / 683	65 / 3929	1 / 11	12 / 417	26 / 668	4 / 165
Children's homes	89	1	65	-	10	12	1
Social services homes for children with:							
physical handicap	4	2	-	-	-	1	1
physical handicap and mental or manners failure	39	21	-	1	2	13	2
mental or manners failure	6	6	-	-	-	-	-

Source: Statistical Office of the Slovak Republic.

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From 138 institutional facilities for children in 2012, 30 facilities (21.7%) with 683 places were founded by self-governmental regions, 65 facilities (47.1%) with 3 929 places were founded by CoLSAF, 1 facility (0.7%) with 11 places were founded by municipality, 12 facilities (8.7%) with 417 places were founded by church legal persons, 26 facilities (18.8%) with 668 places were founded by other legal persons and 4 facilities (2.9%) with 165 places was founded by natural persons.

Table 5. Inhabitants of facilities according to regions (end of 2012)

Region	Number of population	Number of pensioners	Number of inhabitants in facilities	Number of pensioners in facilities	Proportion of pensioners in % of population / inhabitants of facilities
Together	5 410 836	1 312 205	45 720	24 061	24.3 / 52.6
Bratislava	612 682	150 881	5 377	3 082	24.6 / 57.3
Trnava	556 577	138 583	5249	2 903	24.9 / 55.3
Trenčín	593 159	156 596	4 978	3 376	26.4 / 67.8
Nitra	688 400	180 927	6 855	3 655	26.3 / 53.3
Žilina	690 121	162 744	6 277	2 885	23.6 / 46.0
Banská Bystrica	658 490	163 956	5 850	2 987	24.9 / 51.1
Prešov	817 382	179 015	5 614	2 673	21.9 / 47.6
Košice	794 025	179 503	5 520	2 500	22.6 / 45.3

Source: Statistical Office of the Slovak Republic.

There were in total 45 720 inhabitants in facilities at the end of 2012. According to the latest Social trends in the Slovak Republic publication (Statistical Office of the Slovak Republic, 2012) during 2012 there were 21 647 persons admitted to the facilities, 23 328 persons were released from the facility and 6 583 inhabitants died. As shown in the Table 5. facilities provided services to 24 061 old-age pensioners equalling more than a half (52,6%) out of all inhabitants in facilities.

Table 6. Incomes, expenditures and staff of facilities according to regions in 2012

Region	Number of facilities	Total incomes (EUR)	Total expenses (EUR)	Wages costs (EUR)	Average number of employees converted into full-time	Average wage (EUR)
Total	1249	362 973 219	364 318 004	158 817 302	23 674	559.0
Bratislava	161	48 162 947	48 104 499	21 054 394	2804	625.7
Trnava	108	42 210 272	42 811 918	18 604 478	2599	596.5
Trenčín	132	42 084 556	42 081 723	16 244 184	2476	546.7
Nitra	159	49 792 872	48 968 916	21 581 855	3362	535
Žilina	160	43 988 759	44 072 743	19 321 131	3028	531.7
Banská Bystrica	205	42 953 731	43 336 948	20 223 914	3016	558.8
Prešov	184	47 073 416	48 122 687	20 626 719	3242	530.2
Košice	140	46 706 666	46 818 570	21 160 627	3147	560.3

Source: Statistical Office of the Slovak Republic.

Table 6 highlights that the total incomes of facilities reached EUR 363M, of which incomes from state budget in the form of non-investment subsidy comprised EUR 93M (25.6%), subventions for procurement of long-term tangible assets comprised EUR 13.5M (3.7%).

According to the MoLSAF (2013) Report on the social situation of the population total expenses of facilities comprised EUR 372.7M, of which expenses of consumables and services reached EUR 131.4M (35.3%), EUR 162.1M (43.5%) was spent on wages, EUR 55.3M (14.8%) on compulsory

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social insurance, EUR 17.2M (4.6%) on procurement of long-term tangible assets. The lowest item of the expenses was indicated by expenses of health care by EUR 0.4M (0.1%).

4 Conclusion: deinstitutionalisation - a way forward

In an effort to ensure the continuity and efficiency of social services and at the same time in an effort to support people reliant on assistance remaining for as long as possible in their natural family environment, MoLSAF currently focuses on the process of deinstitutionalising social services. This change of model is one of the objectives of the current European Union policy in the field of social inclusion and disability, and is a part of the Slovak Republic's commitment in the international rights agenda, e.g. the Convention on the Rights of the Child and the UN Convention on the Rights of Persons with Disabilities (MoLSAF, 2013).

The objective of deinstitutionalisation in Slovakia is to create and ensure the conditions for the independent and free life of all citizens reliant on society's help, in the natural social environment while social services are delivered to their homes. As we can see from the tables of Chapter 3, the number of social service homes and other facilities and the people in residential care has not decreased in spite of the targeted objectives of deinstitutionalisation for more than a decade now. For this end, professional and financial decentralisation and diversification has already progressed but this resulted in a mixed efforts and result of deinstitutionalisation.

The authors argue that the percentage of institution-based social services to community-based services provided in people's natural environment will gradually change in favour of the latter. However, in order to move into this direction, i.e. a successful and efficient implementation of the deinstitutionalisation process in social services, several obstacles should be overcome, based on the positive and negative internal and external properties of the social and care service provision in Slovakia (see Tab. 7. below on the SWOT-analysis of the Slovak deinstitutionalisation process).

Table 7. SWOT analysis of the Slovak deinstitutionalisation process

Strengths	**Weaknesses**
Continuously increasing overall funding level	Low level (per % of GDP) of funding on long-term care
Political commitment to carry out transformation	Weak integration of health and social services
Already running pilot projects	No domestic example for transformation process
Increasing cooperation between stakeholders at national and regional level	Relatively underdeveloped formal home care services
Societal support for introducing changes(preference for home care services)	Inefficient social service provisions
Financing system transformed to support individual client needs instead of institutions	Not enough funding (in particular, during the time of dual financing when old and new institutions exist in parallel)
Decentralisation of fund allocation	Nature of service provision is not changed
Increased long-term orientation of cost planning	Available funding does not remain in the system of social services
Better evaluation of existing needs, resources, costs	Not enough trained personnel to carry out individualised care services
Evolution of a more efficient and sustainable long-term care	Change in the way of thinking is difficult
Opportunities	**Threats**

Source: authors' own compilation.

If the changes are introduced properly, these will have profound impacts on the life of local communities and the Slovak society itself (Kováčová, et al., 2014). The authors emphasize the utter importance of changing the way of thinking about social and care services, which also entails that local communities and non-profit organisations should join forces and take over responsibility for developing networks of social fieldworkers in order to tackle unfavourable social situation at the point of its origin and recruit co-workers to help materialize proposed solutions.

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THE STABILITY ANALYSIS OF REGIONAL INPUT-OUTPUT MULTIPLIERS: THE CASE STUDY OF MORAVIAN-SILESIAN REGION IN THE CZECH REPUBLIC BETWEEN 2007-2012

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Abstract
One of the tools that Economic Policy has for impact evaluation of changes is static input-output analysis. We can detect the impact of changes on final demand in economics by using direct and indirect multipliers from I-O tables. Basic prerequisite for using I-O analysis is long-term stability of economic structure. It is important to know estimations of impacts not only on national but also on regional level to formulate effective national Economic practice. Regional I-O tables are not usually available and they have to be derived from national tables by using mathematical and statistical methods.
The aim of this contribution is to analyze potential of I-O multipliers on regional level for creating long-term Economic Policy. This goal will be achieved by using case study of multipliers stability on the level of Moravian-Silesian Region between years 2007-2012 in the context of Czech Republic multipliers. Dynamics of each sector's multipliers will be analyzed with correction component of regional model. This model will be established on local employment rate according to district employment agencies.

Keywords
Regional Input-Output, Sector's Multipliers, Economic Policy, Case Study.

JEL Classification
R15, C67, D57.

1 Introduction

The goal of this paper is to discuss and analyze regional Input-Output multipliers in Moravian-Silesian Region, and its stability stemming from regionalization on the basis of employment rate. This paper is built on open Input-Output model of national economy, in sorting on sectors (CZ-NACE) and on regionalization based on local and national employment rate via localization coefficients CILQ. Regional I-O table is designed on sorting on 18 basic sectors.

Multipliers of static I-O analysis represent an instrument of economical praxis especially in the long term context, when we try to quantify the results of changes on the structure of national economy. Several authors (Wokoun, et al., 2010) consider as very important to focus on the analysis of regional or suburban and urban effects and to focus the economical policy on it. Regionalization of I-O analysis allows us to nail down these relations, thus gives us the instrument to analyze individual sectors in separate sections of economy. That is why it is important to also focus on stability examination of these models.

In the next part I will present to the reader basic Input-Output framework. The essence of regionalization of Input-Output coefficients and basic breakdown of localization coefficients will follow. In data & analysis part I deal mainly with variability of structure of localization coefficients, and my outcomes will be supported by the calculation of individual multipliers throughout the years 2007-2012.

2 Input-Output model

The basics of Input-Output models and tables in its current form were established by especially Wassily W. Leontief on the concept of General Equilibrium by León Walras and on the principle of Economical table (Tableau économique) by François Quesnay, a French economist (Miller and Blair, 2009).

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2.1 I-O framework

By default, the Input-Output table (eventually intersectral relations balance) statistically nails down the production flows for a specific territory and time, expressed in money. It is possible for Czech republic to get the Input-Output tables for sorting by the dominant product (CZ-CPA) and by national economic sectors (CZ-NACE) for one calendar year via the Czech Statistical Office.

Input-Output table is divided into four quadrants. First quadrant is a intersectral relations matrix. This matrix expresses the production flow between individual sectors/products of national economy in accordance with processing inputs. Diagonal components of this matrix convey the consumption of own production - activation of own production. Second quadrant represents individual components of final consumption (consumption of households, state, non-profit institutions), gross capital production and export. Third quadrant of Input-Output table describes the added value (wages, surpluses, taxes, capital consumption), pure wage and import. Fourth quadrant will not be taken into account in this paper, but standardly shows additional data about capital consumption, wages, surpluses etc. Whole Input-Output table can be formulated like this:

Industry to industry input/output table									
From \ To		Intermediate demand				Total	Final Demand	Exports	Total Supply
		Mining	Manufacturing	Construction	Services		Public and private		
Intermediate Inputs	Mining								
	Manufacturing	Intermediate usage					Final demand		
	Construction		Q1				Q2		
	Services								
Primary Inputs	Wages & Salaries								
	Gross operating surplus	Primary inputs to production					Primary inputs to final demand		
	Taxes		Q3				Q4		
	Imports								
Australian Production									

Figure 1. Basic Table (Source: National Institute of Economic and Industry Research, 2014)

Its components are x_{ij} expressing production flow from sector i to sector j (Q1), b_{ij} - expresses the amount of added value according to structuring on overall production (Q2). Components of c_{ij} matrix represent Final demand (Q3).

Base balancing I-O equation can be expressed like this:

$$\sum_{j}^{n} x_{ij} + y_i = x_i \tag{1}$$

Input-Output analysis stems from these basic equations (eq. 1) expressed in I-O tables and further analyzes them. I-O models are built generally on conditions simplifying reality, so it can be analyzed by mathematic-statistical apparatus. Most important condition is constant ratio of inputs in production

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phase, where we assume that the input ratio on one unit of production is steady and constant. Therefore we can say that individual inputs are Leontief complements - perfects complements for each other. Leontiefs production function (Goga, 2009) can be expressed like this:

$$x_{ij} = a_{ij} * x_j \tag{2}$$

thus:

$$Matrix: A = \left(a_{ij}\right)_{nn} \ where: a_{ij} = \frac{x_{ij}}{x_j}, \tag{3}$$

furthermore we can define:

$$Matrix: B = \left(b_{ij}\right)_{ln} \ where: b_{ij} = \frac{z_{ij}}{x_j} \tag{4}$$

$$\sum_{i=1}^{l} b_{ij} + \sum_{i=1}^{n} a_{ij} = 1 \tag{5}$$

aij represents technological coefficients, which express how large amount of production from sector i is needed for production of one unit j.

bij, represents the amount of added value on one unit produced in sector j

for both coefficients applies that: $1 \geq a_{ij} \geq 0; 1 \geq b_{ij} \geq 0$.

Input-Output analysis of markets and companies in individual sectors considers them as limitely indefinitely large amount of subjects producing limitely low amount of production. Therefore we cannot analyze here when individual subjects enter and exit the market. Basic analytic equation (given the existence of inversion matrix) can be written in matrix-vector formulation like this:

$$x = (I - A)^{-1} * y \tag{6}$$

where:

$$L = (I - A)^{-1}, L = \left(l_{ij}\right)_{nn} \tag{7}$$

$$M_l = (m_j)_n \ where \sum_{i=1}^{n} l_{ij} = m_j \quad i, j = 1,2 \dots \dots n \tag{8}$$

for individual components L applies that $l_{ij} \geq a_{ij}$

Matrix L represents Leontiefs inversion matrix and m represents line sum of matrix L, which expresses the multiplier of production of individual sectors (both direct and indirect effects). Component mj of vector m can be interpreted as "by which amount changes the whole production if the demand for unit in j sector rises". If we were interested in analysis of a particular multiplier of p sector, we can analyze this situation through Leontiefs inversion matrix like this:

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$$h = (h_i), for\ each\ h_i \begin{cases} h_j = 0 \\ h_i = 1 \end{cases} \tag{9}$$

Resulting structural impact:

$$dm_p = L * h \tag{10}$$

Components of vector dm_p express the analysis of multiplier of p sector, and individual mj can be interpreted as a change of production in j sector resulting from an increase in demand of a unit in p sector. Matrix L itself is an imaginary central point between multipliers, because via this matrix the derivative multipliers are calculated, for instance the multiplier added value - for this reason it will be the core of this paper.

2.2 Regionalisation

Considering the data and structural heftiness of Input-Output tables, there is not a regional table allowing quantitative analysis of regional effects available for the needs economical analysis. Because of this reason it is necessary to disaggregate (localise) the table from the national table without proper survey. Non-survey methods can be divided into groups. Basic methods can be divided into localisation coefficients and Hybrid models (GRID I-III, PRID, TDA, RAS etc.). In this work I will use mainly localisation coefficients.

Location quotients are built on the condition that regional production function has the same form as national production function. Thus:

$$f^N(x) = f^R(x) \tag{11}$$

then we can say that:

$$a_{ij}^R = a_{ij}^N * lq_{ij} \tag{12}$$

generally applies that:

$$a_{ij} = \begin{cases} a_{ij}^N & if\ lq_{ij} > 1 \\ a_{ij}^N * lq_{ij} & if\ lq_{ij} \leq 1 \end{cases} \tag{13}$$

Most known models are SLQ, PLQ, cLQ, WLQ, CILQ, SCILQ, RLQ, FLQ models of locational coefficients. Considering the data entries of locational coefficients we will only deal with those intended for data from employment rate or employment rate production replacement (Miller and Blair, 2009; Bonfiglio, 2005)

Simple Location Quotient(SLQ) represents one of the first locational coefficients, however according to several authors these coefficients lead to overestimating of the regional table estimates. (Miller and Blair, 1985). Nevertheless thanks to its use in hybrid models we can consider it as an important conversion coefficient. Vector SLQ can be easily rebuilt for employment rate (E) and specific region (R) on national table (N) like this:

$$SQL_i = \frac{\frac{E_i^R}{E^R}}{\frac{E_i^N}{E^N}}, \qquad for\ i = 1,2,\dots\ \dots, n \tag{14}$$

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If SLQi>1, it means that that sector is localised in that certain sector more than in national economy, if SLQ<1, then it means that it is localised less.

To the previous coefficient connects CILQij Locational coefficient(Flegg and Webber, 2000) is defined as a ratio of employment rate in a certain sector on regional level to employment rate on republic level, and all this to the ratio of all employed in the region to the whole republic. Locational matrix can be defined from components:

$$CILQ_{ij} = {SQL_i}/{SQL_j} = \frac{\frac{E_i^R}{E_i^N}}{\frac{E_j^R}{E_j^N}}, for\ i,j = 1,2,\ldots\ldots,n \tag{15}$$

CILQ can be interpreted as when CILQ<1, the regional ratio of supplies from i sector to j sector is small and doesn't satisfy the regional demand. If CILQ>1, we assume that the size of i sector is sufficient for satisfying the needs of j sector's demand. By combining SLQ and CILQ most known exponents of RLQ(Morrison and Smith, 1974) and FLQ (Flegg and Webber, 2000) can be shown:

$$RLQ_{ij} = \frac{SLQ_i}{log_2(1 + SLQ_j)} \tag{16}$$

$$FLQ_{ij} = \left[\frac{\frac{E_i^R}{E_j^R}}{\frac{E_i^N}{E_j^N}}\right] * \left[log_2(1 + {E^R}/{E^N})\right]^{\emptyset} \tag{17}$$

The basic assumption according to the literature is $\emptyset = 0.3$.(Flegg and Webber, 1977) Complete review of localization coefficients can be found in Bonfiglio(2005).

3 Data & analysis

Data analysis stems from selective analysis of working force (SAWF), and thus is an approximation of local economy based on the estimate of structure of regional employment rate from SAWF. Locational coefficients originally stem from regional production, however it is not always available so we can replace it with regional employment rate. (Miller and Blair, 2009) In the first part I will focus on the influence of employment rate on the structure of regional economy and its dynamics, in the second on regional multipliers themselves.

Following picture (Picture 1.) shows the heat map of variation coefficients matrix of individual locational coefficients between years 2007-2012 according to CILQ. Here we assume a long term constancy of technological coefficients. In I-O models this assumption creates a vital central point of analyses, thus we can via this graph discuss the stability or instability of local technological coefficients. We cannot see the local technological coefficients directly, but they are directly proportional by multiplying the locational coefficient with national technological coefficient (via eq. 12)

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
A	0	6	10	23	21	12	5	5	9	19	19	20	10	20	9	6	5	21	10
B	6	0	12	22	21	12	6	8	13	19	20	14	10	18	10	10	6	22	11
C	9	12	0	23	19	18	13	9	9	19	9	24	15	14	5	10	12	24	11
D	18	20	18	0	25	16	18	14	19	15	23	31	22	26	15	18	16	19	15
E	21	19	21	28	0	16	18	20	18	33	26	19	25	17	18	16	19	16	13
F	12	12	18	16	19	0	8	11	16	21	26	20	17	24	14	12	8	12	10
G	5	6	13	21	20	8	0	6	11	19	22	18	11	21	10	7	2	18	9
H	5	9	9	18	20	11	6	0	8	16	18	23	11	20	6	6	5	18	8
I	9	14	8	25	17	16	11	8	0	22	15	27	14	18	7	5	12	19	9
J	17	19	18	14	33	22	19	16	21	0	24	32	17	30	17	21	18	29	21
K	17	19	9	28	24	26	20	17	16	22	0	30	21	15	13	18	20	30	19
L	17	13	19	28	19	18	16	18	20	29	24	0	20	16	17	17	16	26	16
M	10	10	18	22	29	14	10	11	16	17	28	22	0	29	15	14	9	25	16
N	16	15	13	32	19	24	18	18	18	28	13	16	21	0	15	17	19	30	18
O	8	11	5	19	17	14	10	6	7	18	14	24	13	16	0	7	9	19	7
P	6	10	9	24	16	13	7	6	5	22	17	21	13	17	7	0	8	18	8
Q	5	6	13	19	21	8	2	5	12	17	22	19	10	22	10	8	0	18	9
R	21	22	23	17	15	12	18	19	21	28	27	28	27	25	19	18	18	0	15
S	11	11	11	18	13	10	9	8	9	21	20	21	15	17	7	7	9	14	0

Figure 2. Matrix of Coefficient of variation of location coefficient (Source: Czech selective analysis of working force (SAWF) & author's calculations.)

Greatest variation was attained by coefficient $CILQ_{je}$, lowest variation result was attained by coefficient (aside from main diagonal) $CILQ_{qg}$. If we did linear averages of variational matrix, we would find out that in average, highest variations were attained by locational coefficients of sectors L, D, J, lowest by H,Q,A.

It is important to realise how can the variability emerge. For example, if we would consider the growth of employment rate in i sector, and either the employment rate growth would happen in that sector for the whole national territory (E_i^N growth) or the employment rate growth for the whole national territory, eventually employment rate decline in j sector in regional economy, then the locational coefficient would not change. However, if a real change in the structure of regional economy (exit or entry of companies just into this region) would happen, which would be expressed by either employment rate growth or decline (which would happen just in this region), then the locational coefficient will see it and will change the final regional technological CILQ coefficient. However if we would consider the influence of economical cycle on the structure of regional coefficients, these should not be changed if the influence would be equally distributed, because a change in both national and regional structure on unemployment rate will occur.

From the variational coefficients matrix we can deduce also that human resources demanding sectors, where a low rate of substitution of the work by capital, a lower volatility of variational coefficients probably happens. It concerns especially sectors such as Transportation and storage (H), Human health and social work activities (Q), Agriculture, forestry and fishing(A). However, affirmation of this hypothesis would require a wider range of work and is beyond the scope of this study.

Regional multipliers counted on the assumption of long term permanence of national coefficients for years 2007-2012 based on coefficients from Input-Outpu table from year 2005 (this table was chosen primarily because the table in CZ-NACE sorting exists only for year 2009, which is heavily burdened with crisis).

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Table 1. Regional multipliers

CZ - NACE / Year		2007	2008	2009	2010	2011	2012	Mean	std.dev
A	*Agriculture, forestry and fishing*	0.64	0.71	0.72	0.77	0.76	0.70	0.72	0.04
B	*Mining and quarrying*	0.05	0.06	0.05	0.06	0.05	0.05	0.05	0.00
C	*Manufacturing*	0.58	0.56	0.55	0.52	0.53	0.52	0.54	0.02
D	*Electricity, gas, steam and air conditioning supply*	0.75	0.67	0.75	0.63	0.74	0.97	0.75	0.11
E	*Water supply; sewerage, waste man. and other.*	0.68	0.49	0.45	0.60	0.66	0.54	0.57	0.08
F	*Construction*	0.69	0.66	0.69	0.78	0.85	0.83	0.75	0.07
G	*Wholesale, retail trade; repair of motors*	0.45	0.48	0.48	0.54	0.55	0.49	0.50	0.04
H	*Transportation and storage*	0.49	0.52	0.52	0.52	0.55	0.52	0.52	0.02
I	*Accommodation and food service activities*	0.58	0.60	0.54	0.52	0.65	0.53	0.57	0.05
J	*Information and communication*	0.41	0.47	0.50	0.42	0.41	0.54	0.46	0.05
K	*Financial and insurance activities*	0.55	0.46	0.49	0.43	0.43	0.42	0.46	0.05
L	*Real estate activities*	1.49	1.37	1.22	2.17	1.37	1.33	1.49	0.31
M	*Professional, scientific and technical activities*	0.67	0.91	0.78	0.84	0.81	0.80	0.80	0.07
N	*Administrative and support service activities*	0.70	0.52	0.52	0.63	0.48	0.47	0.55	0.08
O	*Public administration, defence; social security*	0.37	0.36	0.33	0.33	0.34	0.32	0.34	0.02
P	*Education*	0.23	0.23	0.22	0.24	0.26	0.20	0.23	0.02
Q	*Human health and social work activities*	0.23	0.26	0.26	0.30	0.29	0.28	0.27	0.02
R	*Arts, entertainment and recreation*	0.45	0.35	0.38	0.41	0.57	0.48	0.44	0.07
S	*Other service activities*	0.48	0.46	0.41	0.48	0.51	0.48	0.47	0.03

Source: Annual National Accounts(CZSO), Czech selective analysis of working force (SAWF) & author's calculations.

Lowest output multipliers are reached by sectors B, P and Q on average, highest multiplicational effect reach sectors L, M, D. Simultaneously, standard aberrance is reached by sectors L, D, N, lowest multipliers variability is reached by B, H, O.

4 Conclusion

The goal of this work was to point out possible drawbacks and especially a certain bias in regional multipliers based on local employment rate calculation. Even though the paper didn't concern itself with calculating the hybrid models (which are widespread), it examined its basic component - employment rate and its effect on one of the most important localization coefficients CILQ.

The variability of localization coefficients throughout the years 2007-2012 was shown on variation coefficients, and from the outputs we can deduce i.e. that specific sectors reach constantly higher variability of localization coefficients in its whole production function and during the forming of economical policy (especially when expecting a crisis) those disturbances should be expected.

With regard to the multiplication of national coefficients with localization coefficients CILQ during the calculation of multipliers, the production multipliers do not copy the exact variability structure (it's partially erased) as shown by variational matrix of localization coefficients. The only outstanding shock observed was the Real estate activities sector where temporarily rose (most likely as an effect of the crisis) the production multiplier from 1.22 to 2.17. Even though the production multipliers behave constantly with moderate variability, we can prove via variational coefficients CILQ significant effect of variability on regional technological coefficients.

Author sees the spread of future localization coefficients especially with relation with more accurate identification of individual sectors in a longer time frame, which will result in more precise results of the model. Furthermore in the quantification of the substitutional effects in production function, meaning in confirming whether there happens a significant violation of basic conditions of the model in a long period, because if it would happen, it would be more suitable to use multipliers calculated on the basis of dynamic I-O model.

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EFFECTS OF EXCHANGE-RATE UNCERTAINTY ON FOREIGN DIRECT INVESTMENT IN THE CZECH REPUBLIC

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Abstract
Theoretical predictions for the effect of exchange-rate uncertainty on foreign direct investment are not clear. On the one hand, some studies explain a negative relationship between exchange-rate uncertainty and foreign direct investment. On the other hand, there are studies that point to positive effect of exchange-rate uncertainty on foreign direct investment. The aim of this paper is to examine relationship between exchange-rate uncertainty and foreign direct investment. Estimation of effect of exchange-rate uncertainty on foreign direct investment is performed for the Czech Republic in period from 1999 to 2013. For this purpose is applied the Johansen cointegration analysis on quarterly data. The results suggest that the hypothesis on positive influence of exchange-rate uncertainty on foreign direct investment in the Czech Republic is confirmed.

Keywords
Exchange-rate Uncertainty, Foreign Direct Investment, Linear Regression Analysis, Czech Republic.

JEL Classification
F21, F23, F31.

1 Introduction

Limited domestic resources in economy create an environment where the potential benefits of foreign direct investment are beneficial. This fact is especially valid for transition economies. It is widely recognized that technology transfer through foreign direct investment has played an important role in transforming the formerly centrally planned economies of Central and Eastern Europe. The transition process of these countries has been conditioned upon attracting inward foreign direct investment. In fact, the countries of Central and Eastern Europe encouraged an impressive number of foreign investors to locate their capital in privatized enterprises, as well as in greenfield projects (Brzozowski, 2006).

Furthermore, transition economies are well suited to benefit from inflow of technology and knowledge associated with foreign direct investment; they are relatively developed and have highly educated labour force. As a result, attracting foreign direct investment has become a prominent goal of the policy agenda, especially in transition economies, and research on the determinants of foreign direct investment has been expanding rapidly (Furceri and Borelli, 2008).

Theoretical and empirical studies focuses on many determinants of foreign direct investment, such as economic size and growth, participation in international trade, inflation, technological level, monetary policy, tax policy, political situation, corruption and many others. One of the important factors is exchange rate and its volatility. According to Foad (2005), the existing literature has been split on this issue, with some studies finding a positive effect of exchange rate volatility on foreign direct investment, and others finding a negative effect. A positive effect can be justified with the view that foreign direct investment is export substituting. Increases in exchange rate volatility between the headquarters and the host country induce a multinational to serve the host country via a local production facility rather than exports, thereby insulating against currency risk. On the other hand the negative effect can be explained by the fact that exchange rate volatility causes more risky stream of profits.

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The aim of this paper is to examine relationship between exchange-rate uncertainty and foreign direct investment. Estimation of effect of exchange rate volatility on foreign direct investment is performed for the Czech Republic in period from 1999 to 2013. For this purpose is applied the Johansen cointegration analysis on quarterly data. Time series covers period after most turbulent part of economic transformation. From research is excluded period after foreign exchange intervention of the Czech National Bank. The article is divided into five chapters. First chapter is the introduction. The second chapter is aimed at the relevant literature overview. Third part pays attention to model specification and data. Fourth part deals with the results of Johansen cointegration analysis. The last part is the conclusion.

2 Literature overview

There is a series of empirical studies examining effects of exchange-rate uncertainty on foreign direct investment. The effects are examined by different approaches. The results of individual studies depend on the data processed, period selected, other variables included in the model or econometrics methods used. The results of selected relevant studies are included in this part.

Schmidt and Broll (2009) tested the impact of real exchange-rate risk, the real exchange-rate level and its expected future change on outward FDI flows in nine industries from the US to six partner countries for the period 1983-2004. They applied two different measures of exchange-rate uncertainty. Using first a benchmark definition of real exchange-rate risk, measured by the standard deviation of annual percentage changes, the empirical analysis showed a statistically significant negative effect on US outward FDI flows for the majority of industries. Authors pointed to the fact that applying an alternative measure of real exchange-rate risk, defined as the unexplained part of real exchange-rate volatility, results exhibit a clustered characteristic among industries. While manufacturing industries revealed a negative effect of real exchange-rate risk on US FDI outflows, the relationship was positive for nonmanufacturing sectors.

Renani and Mirfatah (2012) evaluated determinants of inward foreign direct investment particularly volatility of exchange rate in Iran by using the Johansen and Juselius´s cointegration system approach covering the period Q1 1980 – Q3 2006. Moving average standard deviation was used for calculation volatility of exchange rate. Conclusions showed that volatility of exchange rate has negative impact on the flow of inward FDI in Iran.

Osinubi and Amaghionyeodiwe (2009) investigated the empirical evidence on the effect of exchange rate volatility on foreign direct investment in Nigeria. They used data from 1970 to 2004. They utilized the error correction model as well as OLS method of estimation. In the study they conclude that there is positive relationship between real inward FDI and exchange rate.

Udomkerdmongkol et al. (2006) investigated the impact of exchange rate on US foreign direct investment inflows to a sample of 16 emerging market countries using panel data for the period 1990 – 2002. The results suggest that there is a negative relationship between the expectation of local currency depreciation and FDI inflows. They pointed to the fact that cheaper local currency attracts foreign direct investment while volatile exchange rates discourage foreign direct investment.

Arratibel et al. (2008) analysed the relation between nominal exchange rate volatility and several macroeconomic variables, namely foreign direct investment, real output growth, excess credit and the current account balance in the Central and Eastern European EU member states. They used panel estimation for the period between 1995 and 2008. The authors state at the end of the research that lower exchange rate volatility is associated with higher stocks of foreign direct investment.

Furceri and Borelli (2008) analysed the role of exchange rate volatility in explaining the evolution of FDI flows in the EMU neighbourhood countries. For this purpose researcher used a cross country panel data model. They used panel data set comprising 35 EMU neighbourhood countries from 1995 to 2004. The results of the paper showed that while there is not a linear relation between exchange rate volatility and FDI, the effect of exchange rate volatility crucially depends on

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the level of openness. In the fact, while for relatively closed economies (with relatively low FDI flows) the effect of exchange rate volatility is negligible, for relatively high open economies (with greater potential to attract FDI and more subject to external shocks) higher exchange rate stability favours FDI inflows.

Chowdhury and Wheeler (2008) tested impact of shocks to exchange rate uncertainty (volatility) on foreign direct investment in Canada, the United Kingdom, and the United States. The analysis was conducted using vector autoregressive models. They pointed to the fact that in Canada, Japan and the United States, innovation to exchange rate uncertainty explain significant portions of the forecast error variance in FDI at longer time horizons. The impulse response functions indicate that, to the extent that shocks to exchange rate volatility have an impact on FDI, the impact is positive and takes place with a lag.

Brzozowski (2006) analysed the likely impact of the reduction in exchange rate uncertainty, due to European Monetary Union accession, on the intensity of foreign direct investment inflow into candidate countries. Author investigated the relation between foreign direct investment and nominal exchange rate uncertainty and volatility for 19 emerging market and 13 transition countries during the 1990s. For this purpose he used two methods pertinent to the data set with time-series and cross-section dimensions: fixed effects ordinary least squares and GMM Arellano-Bond models. The results suggest that exchange rate uncertainty and volatility-and nominal exchange rate uncertainty in particular-may negatively influence the decision to locate investment in transition and accession countries. Author pointed to the fact that Euro adoption is likely to positively influence FDI inflows in accession countries.

3 Model specification and data

To analyze effects of exchange rate uncertainty on foreign direct investment in the Czech Republic we employ model adopted from Renani and Mirfatah (2012). Effects of exchange rate uncertainty on foreign direct investment shall be examined by VAR autoregressive model in the following form:

$$FDI = f(GDP_d, OP, E, VE) \tag{1}$$

where *FDI* represents foreign direct investment condition in country, GDP_d is measure of country´s income, *OP* means openness of economy, *E* is the real effective exchange rate and *VE* is its volatility. Model is tested on quarterly data for the period Q4 1999 – Q3 2013. Time series of *FDI* was obtained from the Czech National Bank database in million of Czech Koruna. Gross domestic product of the Czech Republic was obtained from OECD statistical database. Gross domestic product was calculated by expenditure approach in current prices in million of Czech Koruna.

Openness of economy is expressed as ratio of total merchandise trade over the gross domestic product. Export and import were used from the Czech Statistical Office. Export and import are used according to cross-border concept. This approach understands international trading flows as physical crossing of goods across Czech borders.

Real effective exchange rate was obtained from EUROSTAT and was calculated by deflator. There were used consumer price indices of 37 major trading partners of the Czech Republic. To measure the exchange rate volatility in this paper is used GARCH model in following form:

$$\sigma_t^2 = \omega + \vartheta(L)\sigma_{t-k}^2 + \tau(L)\eta_t^2 \tag{2}$$

where σ_t^2 is the conditional variance, $\vartheta(L)$ and $\tau(L)$ are polynomials of the lag operators, and $\eta_t^2 = Y_t - \mu$ is known as the innovation (Campbell et al., 1997). So it models the variance of the

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disturbance term for each period as a function of the errors in the previous periods. There were used monthly data for the period M10 1999 – M9 2013 for modelling. Data were subsequently transformed into quarterly base.

The time series used in the analysis are adjusted by a logarithmic transformation. This helps us reduce skewness and heteroscedasticity and to stabilize variability. Time series calculated by logarithm are marked with capital letter "L" before the each time series´ title.

3.1 Unit root test

In order to perform cointegration that shall be used to test the long-term causal relations between selected variables it is necessary for the logarithmized time series being stationary on the first difference I(1) and nonstationary on its own values. Stationarity test is performed by Augmented Dickey-Fuller test (ADF test). Lag length of time series in the ADF test was based on the Schwarz criterion. According to the development of logarithm data, a test stationary equation included an intercept in case FDI, GDP_d, OP, E, VE. This is demonstrated by the following equation:

$$\Delta X_t = \delta_0 + \delta_1 t + \delta_2 X_{t-1} + \sum_{i=1}^{k} \alpha_i \Delta X_{t-i} + u_t \quad (3)$$

ADF test is used to determine a unit root X_t on the level of each variable calculated by logarithm in time t . Variable ΔX_{t-i} determines the first difference with lag length and u_t suggests the autocorrelation of the error. Coefficients $\delta_0, \delta_1, \delta_2$ a α_i are estimated. Null and alternative hypothesis for the existence of unit root in variable X_t is:

$$H_0: \delta_2 = 0 \ , H_a: \delta_2 < 0 \quad (4)$$

(Dickey and Fuller, 1979).

Results of ADF test are shown in the Table 1. On the left side we can find the data determining time series which are not stationary in level value. On the right side there are data determining stationarity of time series with the first difference. On the level of significance, an index "a" means 1% significance. The assumption for further test and research of long term relationships between selected variables is met since the time series stationarity was proved in the first differences I(1). Test results are significant at 1% level (a) and 5% level (b).

Table 1. ADF Unit root tests

	levels		1st differences	
Variables	Lagged	Test statistic ADF	Lagged	Test statistic ADF
LFDI	10	-1.1356	10	-5.3517[a]
$LGDP_d$	10	1.5516	10	-1.9589[b]
LOP	10	-1.2415	10	-4.4443[a]
LE	10	-1.7749	10	-5.7076[a]
LVE	10	-3.1871	10	-8.8196[a]

Source: authors´ calculations

3.2 Johansen cointegration test

Stationarity of time series at the first differentiation is met prerequisite for the realization of cointegration. Cointegration can be defined as a long-term equilibrium relationship between economic variables. Each time series, though non-stationary, have common long-term cointegration movement towards equilibrium, for example, due to various market forces. Even though it is possible that in short periods of time there is a tilt of such long-term balance (Cipra, 2008).

Johansen test for cointegration was used to test long term relationships between foreign direct investment, gross domestic product, openness of Czech economy, exchange rate level and exchange

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rate volatility. It is necessary to define appropriate time lag length within this test. Here, an Akaike criterion was used while determining the appropriate lag length, which was applied for the non-differentiated VAR model estimation. Four periods with appropriate lag length were proved in the Czech Republic.

Relationship between examined variables was performed on the basis of the following equation:

$$LFDI_t = \alpha + \beta LGDP_{d,t} + \gamma LOP_t + \delta LE_t + \theta LVE_t + \varepsilon_t \quad (5)$$

Gross domestic product is to be used as the best one for representing the size and scale of the economy and is expected that the economy with greater size, can provide better situation for foreign direct investment. Therefore, estimation of coefficient β is expected to be positive. Openness of economy indicates the national economies intensity of participation in the world economy. This index determines the total volume of trading into the gross domestic product and show the extent to which the host economy is open toward the entry and exit of goods. The higher ratio of openness is supposed to increase foreign direct investment, otherwise estimation of γ is expected to be positive. Depreciation of the host country currency against the home currency increases the relative wealth of foreigners thereby increasing the attractiveness of the host country for FDI as firms are able to acquire assets in the host country relatively cheaply. Thus a depreciation of the host currency should increase FDI into the host country, and conversely an appreciation of the host currency should decrease FDI (Osinubi and Amaghionyeodiwe, 2009).

According to Osinubi and Amaghionyeodiwe (2009) the theoretical arguments linking volatility to FDI have been divided between production flexibility arguments and risk aversion arguments. According to production flexibility arguments, exchange rate volatility increases foreign investment because firms can adjust the use of one of their variable factors following the realization of nominal or real shocks. The production flexibility argument relies on the assumption that firms can adjust variable factors, for the argument would not hold if factors were fixed. According to the risk aversion theory, FDI decreases as exchange rate volatility increases. This is because higher volatility in the exchange rate lowers the certainty equivalent expected exchange rate. Certainty equivalent levels are used in the expected profit functions of firms that make investment decisions today in order to realize profits in future periods (Goldberg and Kolstad, 1995).

4 Discussion and results

This section reports estimated results of long term relationship between foreign direct investment, gross domestic product, openness of economy, real effective exchange rate and volatility of exchange rate. Based on used equation these variables were found to be cointegrated in the sample period. Johansen cointegration test is examined on the basis of two tests, and that is a Trace test and Max-eigenvalue test. Johansen cointegration test results are shown in Table 2.

Table 2. Johansen cointegration test: Variables LFDI, $LGDP_d$, LOP, LE, LVE

Null	Trace Statistic	Critical Values 0.05
r = 0	103.6452	69.81889
r <= 1	59.42738	47.85613
r <= 2	30.34046	29.79707
r <= 3	5.567275	15.49471
Null	Max-Eigen Statistic	Critical Values 0.05
r = 0	44.21781	33.87687
r <= 1	29.08692	27.58434
r <= 2	24.77319	21.13162
r <= 3	2.843648	14.26460

Source: authors' calculations.

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We argue that the existence of long-term relationship was established between the variables and cointegration link was found. The estimated parameters of model can be seen in following equation (6):

$$LFDI = 4.213701 LGDP_d + 2.198552 LOP - 3.179311 LE + 0.321954 LVE \quad (6)$$

(0.53794) (0.39593) (0.97951) (0.14732)

The estimated result of the foreign direct investment function shows that based on the theoretical basis, the gross domestic product, openness of economy and currency depreciation have positive effect. Growth of gross domestic product has positive effect on foreign direct investment inflow. The estimated parameter of openness of the Czech Republic is in accordance with economic theory. That means that higher ratio of openness causes higher inflow of foreign direct investment. We revealed supposed indirect relationship between real effective exchange rate and foreign direct investment. Otherwise, depreciation of Czech Koruna is followed by significant increase in inflow of foreign direct investment.

From theoretical point of view there can be confirmed negative or positive effects of exchange rate volatility. In this study there was examined positive direct relationship. The above equation (6) shows that if the country´s exchange rate volatility increases by 1%, there is an increase in foreign direct investment of 0.32 %. In spite of the fact that estimated coefficient is statistical significant, in comparison to other determinants included in equation, its effect is relatively small. One of the possible reasons of this result is discussed by Payaslioglu and Polat (2013). They argue that if the purpose of foreign investors is not to export abroad or bring production back to home country rather to create diversification of production location and to have the option of production flexibility, a direct relationship between exchange rate volatility and foreign direct investment inwards can be expected. The main assumption in production flexibility argument is that producers have the flexibility to adjust variable factors following the price variability as a result of movements in exchange rate so that they are encouraged to invest more in host country as the volatility in exchange rate of host country rise.

5 Conclusion

The paper employed with effect of exchange rate volatility on foreign direct investment in the Czech Republic for the period 1999 – 2013. For this purpose was used Johansen cointegration analysis. The empirical analysis showed that all time series are stationary up to its first difference. This result enabled a continuance with further research and after finding the time lag the cointegration Johansen test was carried. There was revealed long term equilibrium between tested variables. The estimated result of the foreign direct investment function showed that the gross domestic product, openness of economy and currency depreciation have positive effect, what is in accordance with economic theory. In this study there was examined small positive statistical significant relationship between foreign direct investment and exchange rate volatility.

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CJEU AND THE SOCIAL MARKET ECONOMY GOAL OF THE EU

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Abstract
From the entry into force of the Lisbon Treaty the EU has among its constitutional objectives the goal of achieving a highly competitive social market economy. It is for the first time in the history of integration, that the concept of social market economy found its way into the Treaty objectives. At the same time, however, the EU has not been given any specific powers to actively develop social policies. The social market economy objective is therefore largely seen as a requirement for a more balanced approach in situations where liberalizing logic of the internal market and its economic freedoms collides with social rights and security systems, which are traditionally strong in many EU countries. Such understanding of the social market economy objective increases the role of European Court of Justice (CJEU), as the Member States, in their capacity of legislators, have not shown so far any willingness to modify by legislative acts the relationship between economic freedoms and social rights. In the pre-Lisbon period the CJEU disappointed the left side of the EU´s political spectrum by several of its judgments in which the judges gave priority to economic freedoms over social rights. It is therefore interesting to put on review whether the CJEU has accepted the signal brought about by changes in the primary law of the EU and whether it has approached differently the balance between economic freedoms and social rights in the name of achieving the EU´s objective of social market economy.

Keywords
European Union, Lisbon Treaty, Court of Justice, Social Market Economy, Economic Freedoms, Social Rights.

JEL Classification
F15, I38.

1 Introduction

Since the Lisbon Treaty entered into force in December 2009 the European Union has had to pursue for the first time in its history the official objective of "…*a highly competitive social market economy, aiming at full employment and social progress.*…". This goal, comprised in Art 3(3) of the EU Treaty (TEU), is of a constitutional importance and its impact is further strengthened by the newly inserted "horizontal social clause" of Article 9 of the Treaty on Functioning of EU (TFEU) and also by the Charter of Fundamental Rights of the EU (comprising Title IV "Solidarity") that became legally binding. It would be, however, a very hasty judgment to rush to a conclusion that following such a goal the EU is heading towards a "Social Europe". Surely, the term "social" is repeated 167-times in the text of TEU and TFEU which certainly offers certain potential. (Špidla, 2009) Nevertheless, there are two obvious difficulties the EU must cope with if it wants to pursue the objective of social market economy. The first difficulty is expressed in the question of what exactly is meant by the social market economy in today´s EU. The second difficulty stems from the uncertainty about powers that the EU has and can use to go through with such a project.

2 CJEU as a Social-market Economy´s Agent

Although it may sound counterintuitive the solution to both of the aforementioned difficulties directs one´s attention towards the EU´s Court of Justice (CJEU) as the main institutional addressee of Art 3(3) TEU. The reasons for such an assertion, that are the same as the reasons for focusing this paper on the role of CJEU, are as follows.

Outside the Art 3(3) the Lisbon treaty never uses the term "social market economy" thus does not provide any definition explaining its meaning for Europe of the 21st century. This goal was transposed into TEU from the draft Constitutional Treaty (CT) of 2004 without any noteworthy discussion. At the time of CT drafting, it was obvious that without emphasizing the social aspect of the EU the new Treaty would be unacceptable for voters scared by the impact of EU enlargement and

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of global competition. As the CT´s Working Group XI - Social Europe had been unable to agree on strengthening the EU powers in social field, it had introduced the social market economy (SME) as a generally acceptable compromise. (Final report of Working Group XI, 2003, Craig, 2013) A subsequent lack of any interpretation of this concept by the legislature has been quite unsurprisingly compensated for by commentators and scholars. (Scharpf, 2010; Schömann, 2010; O´Gorman, 2011; Costamagna, 2011; Devoluy and Koenig, 2011; Barnard and Deakin, 2012; Dagylite, 2012; Damjanovic, 2013; Weiss, 2013)

Several of these authors have not failed to stress that from the perspective of history and also of theory the SME has never been substantively the same as the social-democratic welfare state. Due to its ordoliberal roots it has always had a liberal core asserting that the open market economy with free competition is the basis of freedom for both individuals and society. To maintain the order of a free society requires among others an active compensation for socially unjust consequences of market interactions. From this point the SME clearly contrasts with the social-democratic concept of welfare state with its list of fundamental social rights materially guaranteed by massive State interventions into economic developments. (Erhard, 2010; Devoluy and Koenig, 2011) No wonder that the SME, sometimes called "the German model", has used to be referred to as "the third way" due to its balancing between the opposite ends of laissez-faire and state-controlled capitalisms (Trybus and Rubini, 2012). The reference to SME can thus hardly mean an open gate to "Social Europe".

It is not only the exploration of historical roots of the SME concept but also its current interpretation provided by contemporary German authors that testifies for the second difficulty. (Franke and Gregozs, 2013) The SME equals quite more a strategic approach to economic and social developments that an objective to attain, as for instance within the Art 3(3) TEU the goals of a balanced economic growth, price stability, full employment, social justice etc. If the SME should be interpreted as a goal, then it would consist in the continuous rebalancing of and the compensation for outcomes of spontaneous market developments in the name of freedom and social peace. (Joerges and Rödl, 2004). In reality, some commentators argue that the whole Art 3(3) TEU is an appeal to balance between disparate concepts, goals and values. (Costamagna, 2011; Blancke and Mangiameli, 2013) From this angle the article as such could really offer a somewhat breakneck definition of the EU´s social market economy (classifying itself as one of its components) whose core would be the EU´s internal market standing on two equally important legs. The first is the economic growth based on competitiveness and price stability, the second is the EU's efforts to social peace and justice that mitigate negative impact of markets on the well-being and cohesion of Europeans.

Here comes the CJEU as the chief balancing body, summoned by Art 3(3) TEU to be neither too liberal nor too social and to keep the EU in a constant balance between economic freedoms and social rights. The reason for is that the principle *ius ad finem dat ius ad media* does not apply to the Treaty goals as they do not automatically imply corresponding EU competencies. The sought-after economic-social balance can thus hardly be achieved by EU legislative bodies as the EU can issue harmonizing legislation only if the Treaty provides for a corresponding competence in a particular area (Joerges and Rödl, 2004; Blancke and Mangiameli, 2013). And it has to be stressed that the Lisbon Treaty despite its „social potential" compensates for the EU´s social deficit at a symbolic level only, because the EU did not receive in 2009 any new substantial competences in social field. (Jacobs, 2009)

It is to be born in mind that the European integration had been directed from the outset to the unification of national markets, namely to the elimination of barriers to free movement and to the protection of free competition, as the main ways to create a truly levelled playing field for economic operators. (Devoluy and Koenig, 2011) The so-called positive integration was limited to those areas where it was deemed necessary for success of the EU internal market. Its smooth functioning required, for example, the coordination of social security for migrant workers, or the unification of products´ or safety and health at the workplace standards. (Lenaerts and Van Nuffel, 2011) The task to mitigate social impact of free markets and to ensure social consensus was intentionally left by "founding

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fathers" within the national realm and each Member State has built up its own system of social security and of industrial relations. (Bücker and Warneck, 2010)

Even though the "social dimension" has been a growing issue for the EU since the Maastricht Treaty (1992), until now the EU following the Art 153(1) TFEU can only "support and complement" social measures taken by its Member States. Any provision adopted by the EU may not affect fundamental principles and the financial equilibrium of national social security systems (art 153(4) TFEU) and the key social and labour issues such as pay, right to association, right to strike and to impose lock-outs are explicitly excluded from harmonization (Art 153(5) TFEU). The combating of social exclusion and the modernisation of social protection systems cannot be dealt with by means of EU Directives and the unanimity in the Council of Ministers is still required in order to legislate in several important fields of social protection and employment conditions. The EU budget steadily represents around 1% of EU GDP, while OECD countries spend about 25% of their GDP on social purposes only. (OECD, 2009) It is a good illustration of how at the EU level a limited conferral of powers is mirrored by an insufficient allocation of means.

In the green years of integration this split of competences was supported by the then shared believe that a higher efficiency and a faster growth generated by integrated markets will generate more or less automatically a sufficient well-being of workers (Benlolo-Carabot, 2012; Devoluy and Koening, 2011). In reality, since the 80s of the 20th century the EU policies of liberalization and deregulation that had been gradually completing the freedoms of movement and an undistorted competition within the internal market begun to interfere with the national social systems, which had historically been based on a national or local solidarity rooted in prevailing homogeneity and closeness (Trybus and Rubini, 2012). An inevitable conflict occurred between the embedded tradition to distribute public tenders or subsidies on grounds of local social consensus and the EU law requirement to open public tenders and services of general interest to competitors from the whole EU. (Trybus and Rubini, 2012) The freedom of cross-border provision of services (including the ability to post workers for their execution) and the freedom of establishment for business purposes (allowing companies to escape from countries with high wages) turned out to be similarly destructive for the social systems that had been regulated through local agreements between social partners. (Devoluy and Koenig, 2011)

The people´s pressure for more social EU has been undoubtedly an expression of revulsion against such effects of integration on social rights and security systems, especially in the western part of the continental Europe and in Scandinavia. (Jacobs, 2009) Nevertheless, the SME in the Lisbon Treaty cannot mean the appeal to EU legislators to compensate for the existing social deficit by adopting EU social legislation. The meaning of Art 3(3) TEU and the scope of EU competences in the social field outlined above inevitably lead to the conclusion that the SME objective is a clause of a defensive nature. (Costamagna, 2011; Trybus and Rubini, 2012) Its practical relevance at the EU level appears to be an appeal to the CJEU to look for balance between different EU values and goals, i.e. namely between the functioning of the internal market, its free movements and free competition on the one hand and the social and labour rights on the other. (Schömann, 2010; Devoluy and Koening, 2011) It has to be noted that the CJEU, contrary to the EU legislative bodies, quite often steps into areas outside the EU powers because the Member States even if they are acting within their exclusive competences may not counteract EU Treaty rules and principles. (Azoulai, 2008; Bücker and Warneck, 2010) It is therefore interesting to examine the post-Lisbon case law of the CJEU to find out whether and how has this Court reflected in its argumentation the SME goal and other social novelties of the Lisbon Treaty.

3 CJEU – an Enemy of Social Europe?

Building on the conclusion made above that the SME goal does not push the EU towards positive integration measures as its commandment is to avoid extremes and to seek a consensus between "labour and capital", it should be emphasized that the CJEU (as well as the whole EU within its remit) had been trying to act in that manner even before Lisbon. (Piris, 2010) It partly explains why the EU

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finds little champions either at the neoliberal right, for which it is too socialist, or at the social democratic left, for which it is too focused on deregulation and free competition.

The CJEU has nowadays a bad reputation on the left side of European political spectrum being seen there as an executor of a technocratic liberal program of the internal market. (Khalfa, 2008; Devoluy and Koenig, 2011; Barnard and Deakin, 2012) Although such a criticism could be tracked back to the 90s it is nowadays escalated by popular aversion towards four judgments taken in the period between signing and entry into force of the Lisbon Treaty. (Jacobs, 2009) These are well-known known CJEU´s decisions in *Viking*[1], *Laval*[2], *Rüffert*[3] and *Commission v. Luxembourg*[4] cases which won to the CJEU the reputation of destructor of trade union rights and social dialogue. Since comments and opinions on these judgments are abundant[5] the further analysis will be narrowed down to the issue of how the CJEU did cope with the balance of economic freedoms and social rights.

All four judgments had in common the conflict between the fundamental freedoms of the internal market (freedom of establishment for business purposes in accordance with Art 49 TFEU or the freedom to provide services under Art 56 TFEU, in particular the posting of workers to provide services in another Member State under Directive 96/71/EC) and the collective rights of employees in host Member States (with labour and wage conditions laid down by collective bargaining and defended by collective action or by public policy if they were converted into statutory requirements for instance into public procurement rules). From the CJEU perspective there was a clash of values belonging to the constitutional core of the EU law. Since the 70s CJEU acknowledged fundamental (human) rights as an integral part of the general principles of EU law. These rights, however, "*should if necessary, be subject to certain limits justified by the overall objectives pursued by the Community on condition that the substance of these rights is left untouched*".[6] The CJEU interpreting "*the overall objectives pursued by the Community*" established that freedoms of movement within the internal market were the "*fundamental principles of the Treaty*". They of course could also be exceptionally limited if the derogation were justified by the general interest and proved to be the least burdening, narrowed to a strict necessity and handled without discrimination.[7] This approach, however, could lead to a paradoxical situation where negative integration, ensuring the free exercise of economic cross-border activities, gets into superior position in relation to nation-specific conditions of the exercise of social rights, i.e. the rights which are based on local-made social consensus and which often enjoy constitutional protection. (Azoulai, 2008; Scharpf, 2010; Voogsgeerd, 2012)

In the judgments at issue the CJEU recognized on the one hand that social rights, notably the right to associate and to take collective action, belonged to the fundamental rights recognized by the EU, and in the Laval Judgment (paras 104-105) expressly stated that "*Community thus has not economic but also a social purpose, the rights under the provisions of the EC Treaty on the free movement of goods, persons, services and capital must be balanced against the objectives pursued by social policy...*". On the other hand, these fundamental rights of workers were treated by the CJEU in the same spirit as any obstacle placed in the path of freedom of movement by a Member State. This meant that not only the CJEU required that these rights were exercised in the least burdening way for the economic freedoms (so-called proportionality test) but at the same time that they were objectively justified, i.e. that had not they been protected the existing jobs and labour conditions would have been under serious threat. (Azoulai, 2008; De Vries, 2013)

[1] C-438/05 Judgment of 11/12/2007, *The International Transport Workers' Federation and The Finnish Seamen's Union* (Rec.2007,p.I-10779).
[2] C-341/05 Judgment of 18/12/2007, *Laval un Partneri* (Rec.2007, p.I-11767).
[3] C-346/06 Judgment of 03/04/2008, *Rüffert* (Rec.2008,p.I-1989).
[4] C-319/06 Judgment of 19/06/2008, *Commission v. Luxembourg* (Rec.2008, p.I-4323).
[5] Google search displays more than 82,000 matches for "Viking case" and more than 25,000 for "Laval case" [cit. 02/06/2014].
[6] 4/73 Judgment of 14/05/1974, *Nold KG v. Commission* (Rec.1974, p.491), paras 13, 14.
[7] 220/83 Judgment of 04/12/1986, *Commission v. France* (Rec.1986, p.3663), para 17.

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From the perspective of national a constitutional law and international human rights documents, the CJEU somewhat surprisingly focused there on an objective justification of an exceptional derogation from internal market freedoms and not on a justification of an exceptional derogation from fundamental rights (which normally can only be justified if these derogations are necessary in a democratic society in the interest of national security or public safety or for the protection of the rights and freedoms of others[8]). (Schiek, 2013) While in the eyes of the CJEU the right to enjoy a freedom of movement does not necessitate any justification as the motivation of economically active migrants is irrelevant, the exercise of social rights does not receive the same respect because the CJEU makes their legitimating dependent on an objective public interest.

Impartial scholars that do not defend positions of any of interest groups have conceded that the CJEU ruled wisely and in accordance with EU law. (Blanpain, 2013) It can be said that the Court chose the lesser of the two evils and gave way to restriction of a fundamental social right the exercise of which bore traces of collective protectionism and negated thus to a large extent the free exercise of one of the fundamental freedoms of the internal market. If the European integration has a specific mission of its own, then it is the integration itself (of the internal market first of all) while as far as the social status of workers is concerned the Member States are still reserving this task for themselves. Thus the decisions at stake were not incompatible with the spirit and the mission of the EU. At the same time, however, it must be acknowledged that the respect expressed by the CJEU in these judgments for the EU's social objectives and social rights could be seen as a mere rhetoric by affected workers in Sweden, Finland or Germany. The CJEU´s rulings are forcing them to reform their historically established models of industrial relations and social-labour rights protection that used to be based on the consensus between social partners. (Brunn et al., 2012) And there is, of course, not a legal but a political question about an impact of these judgments and of the subsequent campaign on the social support for further European integration. Employees in rich countries of Western Europe must ask themselves whether the freedom of movement in the sense it is understood and promoted by the CJEU does not constitute a Trojan horse of less social future of Europe. (ETUC, 2010; Devoluy and Koenig, 2011)

4 CJEU and the Socio-economic Balance in the Post-Lisbon Period

If in the period preceding the Lisbon Treaty the CJEU fell under suspicion that it valued social rights less than economic freedoms, there was an expectation that this would change after the Treaty and the Charter of Fundamental Rights became legally binding. As De Vries expressed it *"The Court should thus proceed, more than it has done so far, to consider fundamental rights as self-standing justification grounds, which similar to the Treaty exceptions of e.g. Art 36 and 52 TFEU, may allow for the adoption of national discriminatory measures if deemed necessary"* (De Vries, 2013, p. 188). It was thus supposed that the CJEU would rather operate a standard constitutional balancing of clashing fundamental rights and freedoms without any questioning whether the defence of social rights pursuits any specific valuable goal. (Brunn et al., 2012)

There must be no doubt that the CJEU has proved by many of its decisions that it is not anti-social per se. Especially in cases where non-discrimination, equal treatment or individual social-employment rights (paid annual leave, rights of family members of migrating workers) or harmonized EU standards (posting of workers and their social security entitlements) have been at stake, its rulings have always prevented any serious encroachment upon them. (Scharpf, 2010; Voogsgeerd, 2012; Schiek, 2013) Nevertheless, several of the CJEU´s post-Lisbon judgments have made its left-wing critics shout out that it has been just continuing its „dark series" of anti-social decision-making. In *Commission v. Germany*[9] the CJEU ruled against the exemption from EU directives on public

[8] See the conditions for a derogation as laid down by Art 11 of *Convention for the Protection of Human Rights and Fundamental Freedoms* (EHCR) and by Art 31 of *European Social Charter*.

[9] C-271/08 Judgment of 15/07/ 2010, *European Commission v Federal Republic of Germany* (Reports of Cases

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procurement of social partners´ agreements on the choice of providers of pensions´ insurance services and repeatedly referred to its Viking case law. Then in *Gisela Rosenbladt* and *Prigge*[10] the CJEU subjected collective agreements fixing the age of retirement, permitted by the Anti-discrimination Directive 2000/78, not only to a non-discrimination test but also to objective justification, necessity and proportionality tests which considerably limited the autonomy of social partners. Later on in *Commission v. Belgium*[11] the CJEU ignored the immunity provided by the Temporary Agency Work Directive 2008/14 to the sovereignty of Member States in defining their national requirements on temporary work agencies and gave priority to the freedom of establishment inferred directly from Art 56 TFEU. (Dorsemont, 2011) Very recently, *in Association de médiation sociale*[12] the CJEU held that even a wrong implementation of Informing and Consulting Employees Directive 2002/14 did not allow to invoke directly either the Directive´s provisions or the corresponding EU Charter of Fundamental Rights' article in an employee-employer dispute.

Even more discouraging is the track record of the CJEU´s handling with the SME target. So far in all its judgments delivered in the post-Lisbon period the Court of Justice has never used this term. Even though the General Advocate (GA), Cruz Villalón, in *Santos Palhota*[13] openly invited the Court to do so. Again, the case involved the Posting of Workers Directive 96/71 and the request of a Member State (Belgium) for a preliminary agreement with the posting of workers and for a maintaining of a set of documents related to the posting available in the country of performance. Although the GA did not suggest to justify all the requirements of the Member State, he urged the CJEU to take into account that the Lisbon Treaty changed dramatically the accents in favour of social rights, including that *"the construction of the internal market is to be realised by means of policies based on a highly competitive social market economy, aiming at full employment and social progress."* (para 51)

The most interesting was the part of GA´s opinion in which he invited the CJEU to rethink the way it assessed the conflict between economic freedoms and social rights (para 53):

"As a result of the entry into force of the Treaty of Lisbon, when working conditions constitute an overriding reason relating to the public interest justifying a derogation from the freedom to provide services, they must no longer be interpreted strictly. In so far as the protection of workers is a matter which warrants protection under the Treaties themselves, it is not a simple derogation from a freedom, still less an unwritten exception inferred from case-law. To the extent that the new primary law framework provides for a mandatory high level of social protection, it authorises the Member States, for the purpose of safeguarding a certain level of social protection, to restrict a freedom, and to do so without European Union law's regarding it as something exceptional and, therefore, as warranting a strict interpretation. That view, which is founded on the new provisions of the Treaties cited above, is expressed in practical terms by applying the principle of proportionality."

The GA did not suggest abandoning the proportionality test, which requires an assessment of whether there is not another way of maintaining social rights which would be less restrictive for the exercise of fundamental freedoms. He proposed that the CJEU should be, in light of changes in EU primary law, *"particularly sensitive to the social protection of workers"*. (para 55) Should the CJEU have accepted such an argument the equality between economic freedoms and fundamental social rights would be clearly established for the future. The CJEU, however, in its decision delivered in October 2010, followed only the conclusions of the GA, but not his reasoning. The judges left aside

2010 I-07091).

[10] C-45/09 Judgment of 12/10/ 2010, *Gisela Rosenbladt v Oellerking Gebäudereinigungsges.mbH* (Reports of Cases 2010 I-0939) and C-447/09 Judgment of 13/09/ 2011, *Reinhard Prigge and Others v Deutsche Lufthansa AG* (Reports of Cases 2011 I-0800).

[11] C-397/10 Judgment of 30/06/2011, *Commission v. Kingdom of Belgium* (OJ C 301, 6/11/2010).

[12] C-176/12 Judgment of 15/01/2014, *Association de médiation sociale* (not yet reported).

[13] C-515/08 Opinion of 05/05/2010, Judgment of 7/10/2010, *Criminal proceedings against Víctor Manuel dos Santos Palhota and Others* (Reports of Cases 2010 I-09133).

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the changes of accents brought about by the Lisbon Treaty and stayed strictly factual and technocratic. They applied the standard "breach-justification-proportionality" test, i.e. the test commonly used by them to judge on the obstacles to the exercise of basic freedoms of movement. (Dagilyte, 2012) The Lisbon Treaty, its Art 3(3) or the goal of social market economy were not mentioned at all in this Court decision!

Then in July 2012, the General Court invoked the provision of Art 3 (3) TEU in the case *Corsica Ferries.*[14] The judges had to decide there on the compatibility of a State aid granted to a state-controlled company. They referred to the comparison with the "reasonable private investor" within the social market economy:

"… in a social market economy, a reasonable private investor would not disregard, first its responsibility towards all the stakeholders in the company and, second, the development of the social, economic and environmental context in which it continues to develop" (para 82) and *„for that purpose, the payment by a private investor of additional redundancy payment is, in principle, capable of constituting a legitimate and appropriate practice."* (para 83)

In the end, however, the General Court (GC) did not adhere to the social-friendly solution of the case and stressed that the social or political goals cannot stand alone and cannot exclusively prevail over the economic logic. A mere fact that a State measure pursues social aims was thus not, according to the GC, sufficient for it to avoid being classified as a State aid. The GC annulled the Commission's decision that had been in general much more favourable to the aid granted. The judges thus emphasized that in their eyes the SME was not the same as social Europe. The Lisbon Treaty may well urge the EU to take account of other than purely economic considerations but in any case it does not push for a primacy of social considerations over the free market principles. And this was so far the only case in which the GC invoked in its reasoning the SME goal.

5 Conclusion

To sum this development up, it is almost spectacular how the CJEU has been avoiding the arguments based on the new "spirit" of the Treaty and its new objective of the social market economy. The Court has not distanced itself from its pre-Lisbon case law on how the social rights and the economic freedoms should be balanced. On the contrary, it has been referring to its pre-Lisbon judgments as to precedents in these matters. Neither has it modified the test applied in cases of conflict between the social and collective labour rights on the one side and the economic freedoms on the other. Fundamental social rights remain in such situations an exception, which may be recognized if it is justified by an objective interest that is promoted in a necessary and proportionate way. Social provisions of the Charter of Fundamental Rights have been as a rule treated by the CJEU as mere principles, thus not as directly *justiciable* rights but as requirements to be observed by competent policy makers and legislators.

According to some commentators, a tendency can be discerned in the CJEU decisions to conflate the economic freedoms and the prohibition of discrimination into a general "fundamental" freedom to conduct one's business or to be economically active at large in the internal market whilst the cross-border element in such cases could be only hypothetical. (Schiek, 2013) All that means that up to now the CJEU has neither taken advantage of the new situation and the new opportunities that the Lisbon Treaty has opened up for strengthening of the EU's social dimension nor has recognized the Member States' and their social partners' full sovereignty in areas excluded from the EU harmonization. (Grimmel, 2013)

[14] T-565/98 Judgment 11/09/2012, *Corsica Ferries France SAS v European Commission* (not yet reported). Appeal Case before the Court of Justice C-533/12 P still pending.

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A question comes to mind whether the CJEU´s resistance against a re-interpretation of the long established standards of EU law according to a changed "spirit" of the Treaty, its refusal to base its legal reasoning on such an elusive objective as the SME, is not a signal to political leaders that the EU judiciary could not and would not do their job. It is quite obvious that the highly competitive social market economy goal was adopted by the Treaty framers as a catch-all expression that is to be used politically in defence of a greater efficiency and a free competition, as well as of an increased weight of social rights and justice. Scholars have already pointed out this practice when political representations agree on a vague compromise in the hope that sooner or later the EU judiciary would add to it some practical meaning. (Grimmel, 2013) The present analysis has also showed that the CJEU would likely be the main institutional addressee of the new "social market" goal of the EU. The ratio of economic freedoms and fundamental social rights within the European integration, however, is much more a political than a legal question and the CJEU rightly refuses to become the authority who resolves it in a decisive manner. It must be a political agreement on an ambitious solution that only can lead the EU out of the dilemma of whether to give priority to economic freedoms and bear the risk that millions of voters in "old" EU countries turn away from Brussels, or whether, on the contrary, it would prioritize social rights even at the cost of decomposing its internal market. Alternatively, the same leaders can also try to lay foundations of a genuine social protection at the EU level.

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THE PROCESS OF EGOVERNMENT IMPLEMENTATION IN THE CZECH REPUBLIC: A 2014 EVALUATION

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Abstract
The aim of this paper is to introduce and evaluate the process of EGovernment implementation in Czech Republic in 2014. Based on the evaluation some proposals will be declared, which might help to improve the performance of EGovernment. Firstly, some of the basics of EGovernment services will be introduced. Secondly, the structure of EGovernment framework will be presented (Smart administration, eGON, Czech POINT, data boxes, etc.). The core of the paper will be emphasized to the actual data concerning the EGovernment placement of the Czech Republic in the global scale, the development and use of information and communication technology in government in generally, and the research of government organizations web pages. All these aspects influence the complex performance of EGovernment. Czech Republic takes the upper places in the evaluation of some projects (e.g., data boxes), but on the other hand there are many issues (web pages, on-line services provided by the municipal offices), which push the overall result of EGovernment down. In concluding part of the paper some proposals will be placed. To sum up, EGovernment takes an important place in the government execution and should be a productive tool to enlarge the state budget.

Keywords
Public Services, EGovernment, Czech POINT, Electronic Communication, Smart Administration.

JEL Classification
M15, H83.

1 Introduction

The term EGovernment (Criado, 2012) indicates the possibility to communicate with state and public institutions in electronic form. That involves all the communication processes and other issues like the development of legislation and the migration of offices towards the electronic form of the agenda maintenance. EGovernment in Czech Republic is fully under the responsibility and jurisdiction of Home Office. The main goal of EGovernment is principally to make the public contact with offices easier (mainly from the time point of view). This goes for the citizens as well as for the companies. It should also ensure more effectiveness and save money, which should be paid to the offices employees (theoretically). More savings should be made through the need to keep the documents only in electronic form. The whole process of making the government more electronic is related to the improvement, simplification and effectiveness of ongoing processes. This process is divided into four steps: the government communication infrastructure, the law act of EGovernment (mainly the law act No. 300/2008 Sb., about electronic operations and authorized conversion of documents), Czech POINT, and basic registers. The outcome of the EGovernment procedure should be satisfied citizens with the public services. Recently, there have been realized several projects in abovementioned directions.

The aim of this paper is to introduce and evaluate the process of EGovernment implementation in Czech Republic up to the 2014. It is a part of the information politic of Czech Republic and it has an eminent influence on the performance and stability of business sector. This is connected to the tax policy and the state budget. Many of services provided by the public offices are shared for the citizens and companies. This helps the people to find many useful information. First part of the paper focuses on successful stories from EGovernment structure. Second part depicts not really successful backgrounds, which influence EGovernment position.

The paper is structured as follows. In the second section main parts of EGovernment in Czech Republic are introduced. The state of contemporary EGovernment implementation is presented in

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third section. Finally, some suggestions for EGovernment improvement are provided in the last part of paper.

2 The tools of EGovernment management

Smart administration (SMART, 2014) - Effective government and friendly public services is one of the priorities of cohesion politics, which prefers also Czech Republic. The global aim of this strategy is to support socio-economic development, and to improve the life quality of Czech Republic citizens. This should be done by streamlining the government and services functionality.

2.1 Smart administration strategy

The term "Smart administration" can be found in documents, which refer to 2007 - 2015 period. Specifically, in "National strategic reference framework" in Operational programs "Human resources and employment" and in Integrated operational program. This strategy was developed due to several reasons, which could be divided into inner and outer. Among inner reasons rise the interest of political parties to push on the improvement of competitiveness, pressure of citizens and other institutions, and rejuvenation, performance and quality of services, which citizens ask for. The particular aims of this strategy are:

- To optimize the development and implementation of politics.
- To improve and simplify the regulatory environment and to create an attractive place for companies, domestic and foreign investors.
- To streamline the government offices activities, to lower the money needed for the administrations functioning and to ensure transparent management of government.
- To get the public services to the citizen and to ensure their accessibility and quality.
- To streamline the justice quality.

These aims correspond with the EGovernment aims. As the main priority it is necessary to establish a reliable and trustworthy information and communication technology (ICT). The communication should be faster and effective. The data should be accessible to all officials. This will ensure the speed and transparency of decisions. (MVČR, 2013) Recently, there have been introduced and implemented several projects under the strategy framework "Smart administration". Some of them were very successful. The examples are: Czech POINT, information system of data boxes, Registry of citizens, etc. (EurActiv.cz, 2014).

2.2 eGON and Klaudie

eGON is a symbol of a whole process of electronic government. It has started in 2006. In 2007 it was mainly oriented on Czech POINT project. The pilot execution was implemented in 37 municipalities. Its main aim was to force some legislature changes, which turns out to the law act No. 300/2008 Sb., about electronic operations and authorized conversion of documents, in 2008. eGON represents a "living entity", which should contribute to communication between offices and citizens, and also to the interaction between government offices, and vice versa. In 2009 started the project of information system of data boxes and common infrastructure to enable this functionality. The data boxes project is the most successful part of Czech Republic EGovernment nowadays. The final part of eGON came to the life in 2012, it was the basic registers.

In 2014 is eGON not the only one symbol of EGovernment in Czech Republic. The Klaudie project involves to the process in Czech Republic the cloud computing technology. It should ensure that ICT projects are not only effective and cheaper, but it should utilize especially the prototyping and using the services. (MVČR, 2014) Cloud computing (Song et al., 2013) is in today's world one of the most used terms in an area of the data centre establishing and its architecture. It can be translated as a sharing of software and hardware tools using a network. It serves to use the data centres more effectively, but it also ensures the users to utilize the services faster and with more

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variability. It also provides transparent price of the service based on the time or quantity, which is comfortably measurable. Klaudie project was established in 2011.

2.3 Data boxes and Czech POINT

The information system of data boxes belongs to the government information systems. It includes the information about data boxes, users of data boxes, and their access events to the boxes. The manager of the system is the Home Office of Czech Republic. The operator is the Czech Post Service. Data in this government system are not public and the access to them is restricted. Data boxes serve as an e-mail box and ensures the delivering of documents or forms between government offices and citizens, and vice versa.

Czech POINT project was established in 2007 (Czech POINT, 2010). Its aim is to minimize the bureaucracy, especially in the relation between government offices and citizen. The idea was to build one place, from which the citizen can communicate with the government offices regardless of the service they request. At this place they can attest and witness the signatures on documents, get and confirm the data from public and private information sources. It provides a service for a conversion of normal documents into their electronic form, and vice versa. People can get information about their administration procedures. This project delivers a simplification for citizen, who was previously sent to different government offices to complete one procedure. Now he gets it at one place in one visit, mostly, at his place of living. At a final part of this project this could be done also from citizen home (Podmolíková, 2008).

3 EGovernment in 2014 in Czech Republic

According to the UN ranking of the EGovernment state in particular countries, Czech Republic placed 46th (it was 33rd place in 2010) among 190 states. The criteria evaluated were the scope and readiness of EGovernment. In the top ten are: Republic of Korea, Netherlands, UK, Denmark, and Singapore.

3.1 Statistical research

In front of Czech Republic are e.g., Estonia, Slovenia, Croatia, Chile, and Colombia (Figure 1). This signifies that the EGovernment process in Czech Republic is too slow, maybe declining. The reasons could be different (e.g., many changes in governments, etc.).

The Index Score is based on an assessment of the National and Ministerial websites of the 192 United Nations Member States and includes data from these areas: Information dissemination and outreach, Access and Usability, Service Delivery Capability, Citizen Participation and interconnectedness (UN1, 2014).

Czech Statistical Office from the 2004 regularly investigates the development and use of the ICT in government. As the main information source serves the annual report of ICT use by government, which is attached to the annual statistical report of organizational state units. As a supplementary information source serves a survey of web pages of government organizational units. In the coming figures the reference period about the ICT use of government ends on December 31, 2013. The research on web pages took place in the August, 2013. The data for people are related to the 2nd quarter of 2013 and the data for companies are related to the end of 2012. The basic research group includes every organizational state unit (382 subjects), regions and municipalities (together with city parts of Prague; 6302 subjects).

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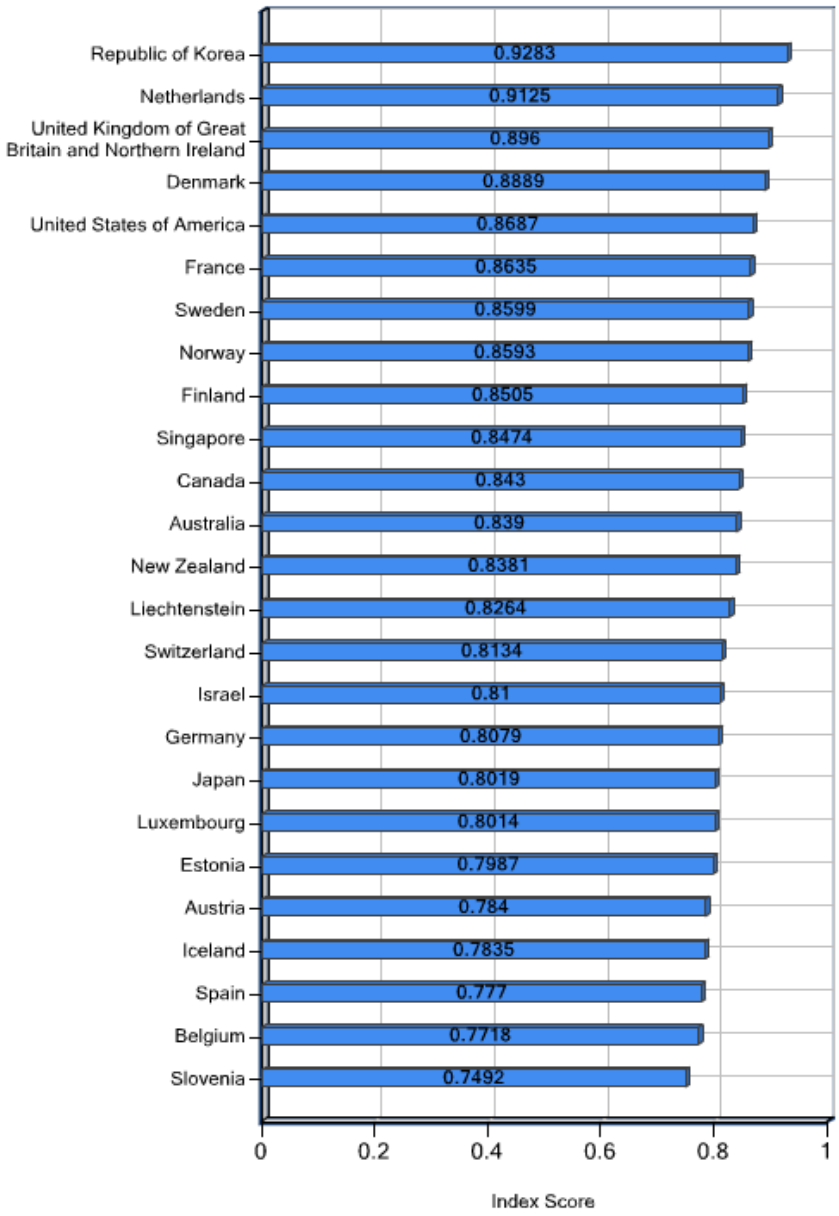

Figure 1. Top 25 Rank: EGovernment 2012 (Source: UN2, 2014)

The EGovernment implementation is closely connected to the services provided by the government units to the public. Besides the successful building blocks of EGovernment described in section 2, there are other aspects that influence the overall performance of the process (mostly negatively). Table 1 illustrates the ICT use in government units, namely, LAN (Local Area Network), internet connection, and web pages (2013). LAN enables the government units' employees to work in one network in their office and to share the working artefacts, documents, etc. Internet connection ensures to be in touch with clients and central offices. Web pages should serve as an interface to public. Figure 2 depicts the percentage of government units using the internet for banking and employees training. Figure 3 summarizes the units with fast internet connection and web pages.

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Table 1. ICT use in government organizations

	LAN	Internet	Web pages
Organizational state units	99.0	100.0	95.0
Regional offices	100.0	100.0	100.0
Municipal offices entirely	**59.4**	**99.8**	**97.9**
According to the size of municipality			
> 20 000 cit.	100.0	100.0	100.0
5 000–19 999 cit.	99.5	100.0	100.0
2 000–4 999 cit.	97.3	100.0	99.8
1 000–1 999 cit.	87.9	100.0	99.3
500–999 cit.	70.2	99.8	99.2
< 500 cit.	40.8	99.6	96.7

Source: Czech Statistical Office.

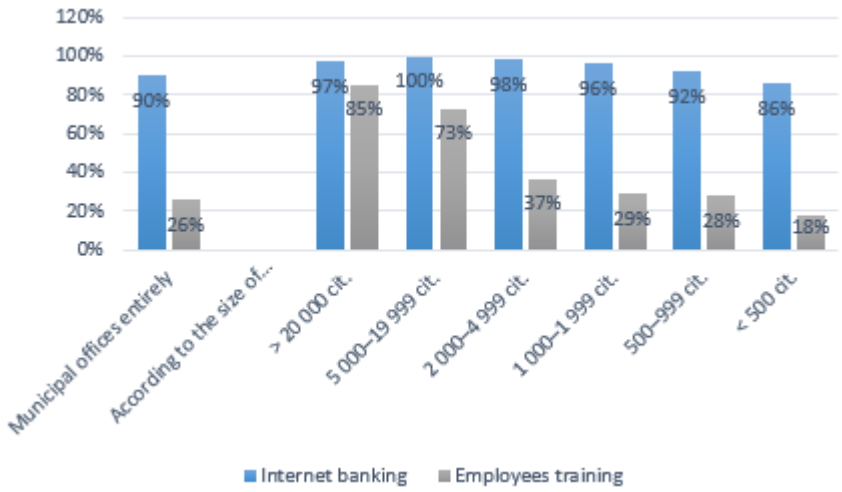

Figure 2. Municipal offices with internet connection, 2011. (Source: Czech Statistical Office)

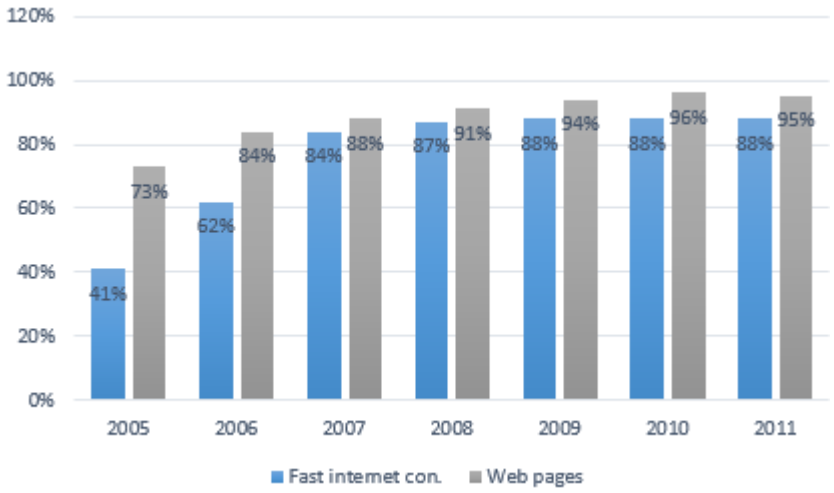

Figure 3. Municipal offices with fast internet connection and web pages. (Source: Czech Statistical Office)

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Table 2 informs about the government units coverage with forms provided on-line (2013). We differ between three ways how to provide the form to the client. First way enables the clients to find and download a form on a municipal web pages and store it locally (Figure 4). Second way is on-line form filling without the need to download files locally. It is possible then to print the form. The last and the most intelligent way is to fill the form on-line and to submit it to the municipal office without the necessity to print it and to pass it personally in the municipal office (Figure 5). This possibility is not so spread because it requires an ICT background at the side of municipal office to proceed the form.

Table 2. On-line services provided on government units web pages

	Forms to download	On-line forms	Complete electronic form passing
Organizational state units	64.0	32.2	38.9
Regional offices	100.0	84.6	69.2
Municipal offices entirely	50.5	14.3	13.0
According to the size of municipality			
> 20 000 cit.	97.5	34.2	20.3
5 000–19 999 cit.	98.1	18.6	19.5
2 000–4 999 cit.	82.1	19.9	21.9
1 000–1 999 cit.	62.3	16.3	15.4
500–999 cit.	50.2	14.8	12.0
< 500 cit.	39.6	12.3	11.1

Source: Czech Statistical Office.

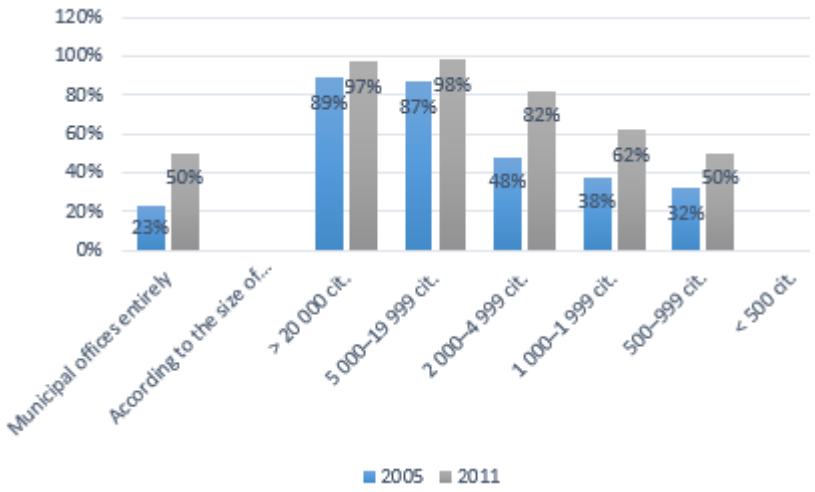

Figure 4. Municipal offices with form download possibility. (Source: Czech Statistical Office)

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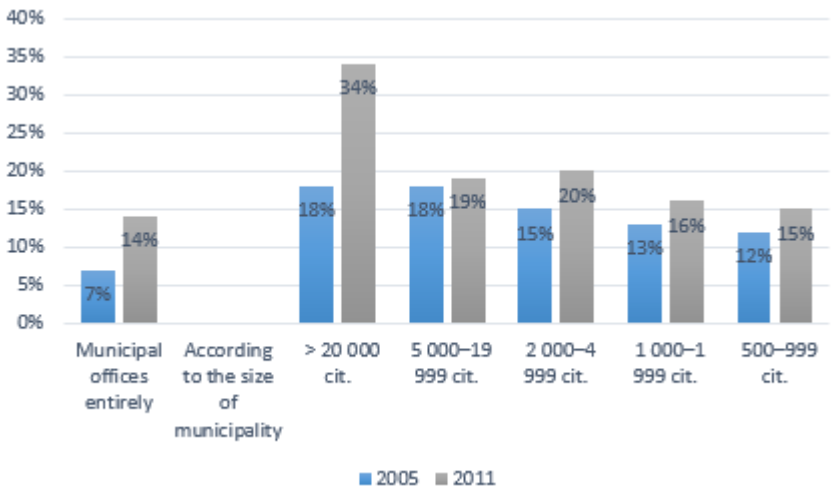

Figure 5. Municipal offices with complete electronic form passing. (Source: Czech Statistical Office)

Table 3 concentrates on statistics concerning the companies' attitude to the use of government information and services on-line. Here is the situation much better in some areas e.g., the Telecommunications and IT sector, and Financial and insurance activities use complete electronic form passing in more than 90 percent occurrences. On the other hand, the food and beverage sector, and retail are below 80 percent in searching for an information.

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Table 3. Companies using internet to some of the government activities

	Searching for information	Downloading forms	Complete electronic form passing
Entirely (10 and more empl.)	92.1	89.9	80.7
small (10–49 empl.)	90.6	88.0	77.7
medium (50–249 empl.)	97.5	96.9	91.6
large (250 and more empl.)	99.5	99.1	95.7
According to the economic activity			
Manufacturing	94.4	92.1	82.8
Production and distribution of energy, gas and water	93.0	92.3	86.3
Building	93.9	92.2	84.0
Sale and repair of motor vehicles	93.7	91.9	87.4
Wholesale	94.0	92.2	84.0
Retail	79.0	76.1	69.0
Transport and storage	92.4	91.7	77.7
Accommodation	95.2	91.2	80.7
Food and beverage service	79.8	74.2	59.3
Tourism	97.0	94.8	83.7
Media and Publishing	97.4	94.0	87.7
Telecommunications and IT	97.2 98.4	98.1 98.0	91.7 93.2
Financial and insurance activities	99.3	96.9	87.9
Real estate activities	97.1	94.9	88.7
Profession, scientific and technical activities	94.6	93.1	83.1
Administrative and support activities	88.0	85.1	72.3

Source: Czech Statistical Office.

3.2 Discussion and recommendations

The experiences, presented in this chapter are based on the research of ICT UNIE (ICT UNIE, online). On one hand, Czech Republic is not successful e.g., in complete electronic form passing. On the other hand, in some areas like the communication between government offices and companies, Czech Republic belongs to the worldwide best. Thanks to the information system of data boxes. Dramatically pushing forward by means of international ranking in EGovernment implementation signifies also the system of basic registers. Unfortunately, this parameter is not registered and taken into account while assessing the EGovernment worldwide. The consolidated data basis and shared data are the reason for the possibility not to announce the changes at every government office. The changes will be made only once, and they will be shared from one place. This attribute of sharing set the basic assumption for further development of EGovernment on the whole. But probably the most significant advantages for the citizen has brought the Czech POINT project in last time. It became the day-to-day part of our lives thanks to the proper strategy of establishing new places besides the existing ones. Czech Post offices were the most visited places in

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municipalities once. Now, when they represent also Czech POINT places, they are visited even more often. The module character of adding new services to the existing, became a welcome way. This conception seem to be the appropriate one, when looking onto other countries in our region, where these possibilities are not existing or they struggle to make them real. The brake in spreading this concept could be building completely new infrastructure of one-stop-shops. The system and conception of Czech POINT could be inspiring for a lot of other countries.

As the most significant factor causing the failing of such projects might be indicated the political and administrative instability in country. Also, it could be the absence of a whole strategic framework, which should define the global direction, and from which partial project could be established. Similarly strong is the law act about public orders. As relatively weaker aspects, which could negatively influence EGovernment projects in the realization phase are lobbying pressures and underestimated financing.

We recommend to take the coordination and strategic aspect of EGovernment projects into account. The management and controlling mechanism is also important, because it is thought as the main reason for delaying the forthcoming projects. The projects themselves report only partial results, the main result should be visible after wider realization and execution of EGovernment project. Based on this, it could be easier than to support and to claim legislature changes, which can contribute to rather successful implementation. This need has also an immense impact on the day-to-day praxis of ICT systems. With the rising number of functionalities rises also the architecture and complexity of the system. When the data in primary data basis are not correct or struggle, the negative effect will be at the end-user in government offices. This fact should be implemented into the robustness and reliability of primary systems. The setting of standards, which should be kept, will force strict implementation of an architecture, interoperability, and security. The real time management of operations is also crucial. Planning in real numbers and dates will make the whole process more reliable. It could be beneficial also to use the user's feedback, assessment of user's satisfaction, and fast reaction on incidents and problems, which might happen.

The people are naturally resistant to new challenges, especially in the ICT field of government offices. This is the main reason for the lower ranking position of Czech Republic in EGovernment area. They are not willing to use new services, they like to use old procedures. In such cases it is important to motivate people to see the positive outcomes of such attitude (e.g., lowering administration fees, etc.). The public relations and publicity of successful stories will be crucial. People should believe, that the changes are useful for them. More detailed description can be found in the document "Přínosy projektů eGovernment v ČR - Poziční dokument Klubu ICT UNIE" (ICT UNIE, 2014).

4 Conclusion

This paper emphasizes on the EGovernment implementation in Czech Republic. The data used in this research were actual for the 2013. We introduced an EGovernment definition and basic parts of EGovernment framework, which are very successful from the international point of view. On the other hand, the underlying infrastructure and the people unwillingness to use new technologies pushing Czech Republic down the EGovernment worldwide ranking. The main reasons are many political and administrative changes during the long-term project realization, too many changes in the project management team, different priorities, etc. We recommend to take control of the project and to coordinate the activities according to the strategic plan, which should be fulfilled without delays. We also suggest to persuade the people about advantages of this solution, to get feedback from the users, and to make proper publicity to successful stories from this area.

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CONSUMER PROTECTION IN COMMON EUROPEAN SALES LAW

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Abstract
The aim of this paper is to update the academic discussion on the proposal for a Common European Sales Law with respect to consumer protection following the amendments adopted by the European Parliament in February 2014. The existing analyses of this topic have only taken account of the original Commission Proposal of the Common European Sales Law; however, they do not reflect important changes introduced to the scope of application of the draft Common European Sales Law as introduced by the European Parliament. This paper discusses whether the updated Commission proposal is more favourable to consumers and/or traders and it addresses the perspectives of the proposal in a future, in case the Council of the European Union adopts the Regulation on the Common European Sales Law.

Keywords
Common European Sales Law, Consumer Protection, European Parliament, Traders.

JEL Classification
K2.

1 Introduction

Making full use of the potential of the internal market by the European Union is a challenge for both, businesses and consumers. To protect the latter, the European Union has devised consumer policy which shall be taken into account while implementing other EU policies.

Directives have been the main instrument of harmonizing the national rules on consumer policy in the field of EU secondary legislation[1]. They pursue the aim of protecting consumers both in the area of public law and in terms of private law. Whereas the public law related consumer protection is guaranteed and implemented by national bodies[2] and EU institutions, and it can be perceived as effective in the regulated areas, the private law protection features more complex issues. First, in terms of the substantive scope of consumer protection, and second, in terms of enforcing rights guaranteed by substantive law.

With respect to consumer protection in the field of contractual obligations, in particular when concluding and implementing sales contracts, the main objectives of EU policy should be twofold:

i) providing the consumer with sufficient information concerning the sales contract to enable him/her to decide on concluding a contract,[3] and

[1] Recently, also regulations have become part of EU consumer law policies. Nevertheless, their objective is different from directives. Rather than harmonizing selected aspects of law they are aimed at unifying it. Regulation (EC) No 1924/2006 of the European Parliament and of the Council of 20 December 2006 on nutrition and health claims made on foods is an example of an act unifying certain aspects of consumer protection laws.

[2] State supervisory bodies, for instance, have been granted the powers to impose fines for breaching Regulation (EC) No. 1924/2006 cited above.

[3] In this area, both public law and private law regulations interfere, since legislation stipulates a number of data which have to be displayed on products and grant the supervisory state authorities the power to impose fines for breaching these rules. At the same time, these laws impose an obligation on traders to inform consumers correspondingly. If traders breach this duty, consumers are entitled to terminate the contract.

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ii) protecting consumers in their capacity as the weaker contracting parties from unfair commercial practices followed by traders when concluding and implementing contracts, in particular when it comes to the liability for faulty products.

Changes brought about by the economic and technical developments increase the risk of breaching rights envisaged to protect the consumer, in particular when concluding contracts away from business premises, and when entering into distance contracts. Both of these contracts are essential for pursuing cross-border trade. On the other hand, surveys show that (apart from language barriers) consumers fear that they cannot make an effective use of these tools without risks inherent in engaging with a foreign business.

Hence, directives aim at harmonizing legislation to make sure that both consumers and businesses residing in different EU Member States have a clear idea on their rights and obligations, regardless of the law applicable to their situation pursuant to the conflict of law rules (Švarc, 2010).

Since the European Parliament substantially changed the original wording of the Commission proposal for a Common European Sales Law in February 2014, the aim of this paper is to update the academic discussion in this field with respect to consumer protection. Also, this paper discusses whether the current text of the proposal is more favorable to consumers and/or traders and it addresses the perspectives of the proposal in a future, in case the Council of the European Union adopts the Regulation on the Common European Sales Law.

2 The Way towards Adopting the Proposal for a Common European Sales Law

The harmonization of consumer law has been subject to a continuous development which may be summed up by a few words: from minimum to full harmonization. Whereas the principle of minimum harmonization leaves room for Member States to adopt rules granting stronger consumer protection compared to the lowest EU common standard, the principle of full harmonization precludes Member States from doing so in order to reach the same level of consumer protection in all EU Member States. The recent Consumer Rights Directive[4] constitutes an example of a directive introducing the principle of full harmonization. This directive repeals two older directives based on the principle of minimum harmonization[5] which is being abandoned. Thus the objectives of a directive based on the principle of full harmonization and those of a regulation (i.e. to unify Member States legislation) seem to converge.

2.1 From the Draft Common Frame of Reference to the Proposal for a Common European Sales Law

The European Union engaged a lot of resources in having the Draft Common Frame of Reference (DCFR) compiled by academic researchers, covering a wide span of civil law issues. After three years of work, the DCFR was published in 2009 as a soft law instrument, which could constitute the basis for binding legislation for specific types of contract in a future. When drafting the Common Frame of Reference, the authors drew their inspiration from an existing document, the Principles of European Contract Law, widely known as PECL (Beale, 2010).

Having abandoned the idea of a Common European Civil Code, the European Commission decided to concentrate on the most common type of contract in cross border business-to-customer relations, the sales agreement. Some scholars refer to the idea of an optional European instrument as to the "blue button" choice, in which the trader offering its goods in an online shop gives its customer the choice between following the national regime of sales agreement or opting for a blue flag, i.e. a Europe-wide form of a sales agreement (Schulte-Noelke, 2010). This has been finally the path

[4] Directive 2011/83/EU of the European Parliament and of the Council on consumer rights.

[5] In particular, Directive 97/7/EC of the European Parliament and of the Council of 20 May 1997 on the protection of consumers in respect of distance contracts and Council Directive 85/577/EEC of 20 December 1985 to protect the consumer in respect of contracts negotiated away from business premises (the Doorstep Selling Directive).

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followed by the Commission Proposal on the Common European Sales Law published in October 2011 (COM(2011)635). The legislative process leading towards the adoption of the regulation governing the Common European Sales law is still in progress (File no. 2011/0284(COD). The Commission proposal has been voted on by the European Parliament, which proposed a number of substantial changes to the original wording of the Commission draft. To complete the legislative process, the Council of the European Union still has to vote on the text and reach an agreement with the European Parliament.

2.2 Substantive and Personal Scope of the Proposal for a Common European Sales Law

The legislative process leading to the adoption of the regulation governing the Common European Sales Law has faced a number of outstanding points of discussion, both in terms of content and form.

First of all, the European Commission had to decide whether it wishes to cover contractual obligations in general, or whether it should concentrate on a specific type of contract only. The second option finally prevailed. Subsequently, the Commission proposed a Sales Law, basically limited to business to customer relations. This limitation does not come as a surprise, since business to business relations in cross border trade have been covered by the UN Convention on the International Sales of Goods (Convention). This Convention unified rules governing international trade in goods to a great extent and contributed to its development and legal certainty. The Convention clearly excludes business to customer relations from the scope of its application (see Article 2 of the Convention).

However, the proposal for a Common European Sales Law does not cover all consumer sales contracts. Its scope is limited to those cross border sales agreements which have been concluded by means of distance communication or away from business premises. Under Article 4 (3) of the draft regulation a contract between a trader and a consumer is considered cross-border, if the address stated by the consumer, the delivery address or the invoice address are located in a different country than the domicile of the trader and at the same time at least one of the countries involved is an EU Member State. This definition of the cross-border element of the sales agreement makes it clear, that the Commission has envisaged an extraterritorial scope of the regulation, not discarding its application whenever only one of the contractual parties has its habitual residence within the EU. In case of agreements concluded in favour of a third party having its habitual residence in a third country, the cross-border element may be disappear, if the delivery address of the consumer coincides with the state of the domicile of the trader, however the goods had been ordered and paid for by a consumer residing in an EU Member State different from the state of delivery and from the domicile of the trader (Grmelová, 2012).

With respect to the above limitation of scope to certain consumer contracts only, it was not authored by the European Commission. Whereas in its original wording, the Commission envisaged the application of the regulation to all business to customer sales agreements, the European Parliament adopted amendments limiting its scope to distance contracts (including online contracts) only. On the other hand, the European Parliament does not preclude the Commission to extend the scope of application of the regulation to a wider range of situations in a future when it reviews the functioning of the underlying regulation (see Article 186d of the draft Common European Sales Law as amended by the European Parliament). To compensate for the limitation of the material scope of the regulation, the European Parliament decided to cover also dual purpose agreements which have been expressly excluded from the scope of the Common European Sales Law in the original Commission wording of the draft regulation. Dual contract agreements have been defined in recital 17 of the Consumer Rights Directive as contracts *concluded for purposes partly within and partly outside the person's trade [where] the trade purpose is so limited as not to be predominant in the overall context of the contract*.

With respect to the scope of the future Common European Sales Law, one more point is worth mentioning with respect to is possibly misleading and confusing title. The name of Common European Sales Law is likely to suggest that it introduces a completely autonomous legal regime,

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fully self-sufficient and independent of the national legislations. However, the contrary is true. Article 11a (new) of the proposal of the Common European Sales Law as amended by the European Parliament includes a list of topics which will have to be covered by a national law applicable under the conflict of law rules. These issues include in particular the determination of legal personality, the invalidity of a contract arising from lack of capacity, illegality or immorality, determination of the language of the contract, representation, plurality of debtors and creditors and change of parties, including assignment, set-off and merger, the creation, acquisition or transfer of immovable property or of rights in immovable property, intellectual property law; and the law of torts, including the issue of whether concurrent contractual and non-contractual liability claims can be pursued together.

The amendments of the European Parliament have also contributed to clarifying the relations between the draft Common European Sales Law and the Rome I Regulation[6] governing the law applicable to contractual relations. In this context, the Common European Sales Law is to be considered a second legal regime within the legal order determined under the rules of conflict of laws, i.e. the Rome I Regulation (European Parliament Legislative Observatory, 2014). The numerous references to national rules governing the sales agreement throughout the wording of the Common European Sales Law are unlikely to reduce the costs of small and medium sized enterprises related to comparing different national legislations as envisaged by the European Commission in the recitals of the draft regulation.

A last note on the content of the draft Common European Sales Law should stress that this EU regime is optional and it has by no means been devised to replace the existing national legislations on sales agreement. Its aim is rather that of creating a competing instrument, the viability and attractiveness of which shall only be tested in practice.

The second set of issues connected to the proposal for a Common European Sales Law refers to the determination of the form of the legal act governing this transaction. Until recently, the prevailing legislative instrument has been that of directives, especially those based on the principle of minimum harmonization. However, subsequent surveys commissioned by the European Commission have shown that the implementation of directives is very uneven in many Member States and that significant differences persist when it comes to the level of consumer protection in individual Member States. These findings have paved the way for the approach based on full harmonization. Compared to a regulation, fully harmonized directives display a negative feature, a deferred date of coming into effect which results from a few years implementation period granted to Member States to achieve their transformation into the national legal orders. Therefore, the legal form of regulation has been the option of first choice by the Commission with respect to the draft Common European Sales Law, providing for a uniform content and not requiring an implementation period. Since the contents of the draft Common European Sales Law do not introduce any major novelties compared to the usual contents of national sales agreements, an almost immediate effect of the regulation should not pose any major difficulties in Member States. However, the choice between the national regime and the Common European Sales Law could constitute a problem for both consumers and businesses that may not be sufficiently acquainted with this new piece of EU legislation, which will co-exist with the national regime of sales agreements.

The European Parliament has not objected to the choice of regulation as a legal instrument for governing the Common European Sales Law. However, some national parliaments, including the Parliament of the Czech Republic have voiced their concerns as to the suitability of this choice. Given the optional character of Common European Sales Law which will not exclude the use of national sales agreements, some national parliaments believe the European Commission should have opted for a soft law instrument, such as a recommendation. The House of Representatives of the Czech Republic shares this view and even though it has not made use of its right of veto when reviewing

[6] Regulation (EC) No 593/2008 of the European Parliament and of the Council of 17 June 2008 on the law applicable to contractual obligations.

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whether the principle of subsidiarity has been observed, it expressed a number of reservations with respect to the proposed legislation. The House of Representative of the Czech Republic is convinced that the proposal for a Common European Sales Law will lead to a bigger confusion of consumers. This statement is based on an opinion of a business association, the Czech Chamber of Commerce, which finds no added value in the Commission Proposal (EU Interparliamentary Exchange, 2014). The Senate of the Czech Republic has questioned the methodology used by Eurobarometer (commissioned by the European Commission) when researching the need for an EU wide regulation of a sales agreement. Eurobarometer only makes very simple questions, which do not provide for an in-depth view of businesses on the proposed legislation (EU Interparliamentary Exchange, 2014).

3 Analysis of Selected Aspects of Consumer Protection in the Proposal for a Common European Sales Law

The limited extent of this paper does not allow for a detailed account of all relevant aspects of consumer protection related to Common European Sales Law, therefore the authors will concentrate on those issues which are essential for consumers when making a decision on the choice of applicable law for purchasing the same type of goods. Usually, the consumer will not be invited by the trader to negotiate the terms of the sales agreement. Especially in cross-border cases, the consumer's linguistic abilities may be limited to understanding the terms of an offer on the internet. This corresponds to the effort of the European Parliament to create a model European Sales Law (Article 186c (new) as amended by European Parliament), which would enable the consumer to accept the offer following the "take-it-or-leave-it" strategy, i.e. without any room for negotiation of the terms of the contract whatsoever (Great Britain, 2011).

When deciding whether to follow the Common European Sales Law or the national sales agreement consumers are most likely to consider the following aspects: the manner of claiming their rights resulting form faulty products (higher costs of claiming rights abroad), the length of commercial guarantee (a longer guarantee would be more attractive for consumers) and an effective enforcement of rights resulting from the sales agreement before a law court or by means of an alterative dispute settlement resolution (Grmelová, 2013), including the duration of the prescription period.

3.1 Legal Regulation of Claiming Faulty Products

The first issue linked to consumer protection is associated with the legal regulation of remedies in case of faulty products in the draft Common European Sales Law. Article 13 defines an extensive duty to provide information when concluding a distance or off-premises contract with respect to the available remedies (Grmelová, 2013).

Article 106 of the draft Common European Sales Law enumerates the different remedies consumers have when claiming faulty products as follows:

- require performance, which includes specific performance, repair or replacement of the goods or digital content;
- withhold the buyer's own performance;
- terminate the contract and claim the return of any price already paid;
- reduce the price or
- claim damages.

To make the termination of the contract easy for the consumer, Appendix 1 of the draft Commons European Sales Law contains "Model instructions on withdrawal", and Appendix 2 thereof a "Model withdrawal form".

As to the right of the consumer to claim damages, the draft Common European Sales Law only regulates its partial elements. Non-contractual liability shall be governed by the law determined under

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the Rome II Regulation[7]. Another outstanding issue related to claiming damages is the missing answer as to the possibility of cumulating contractual and non-contractual liability which will have to be governed by the substantive law of the individual Member States (Selucká, 2013).

3.2 The Length of the Commercial Guarantee

An essential issue from consumers´ point of view is the length of the commercial guarantee offered with respect to goods bought with a foreign trader from another EU Member State.

The draft Common European Sales Law defines the Commercial Guarantee in its Article 2 lit. s) as follows:

'*commercial guarantee' means any undertaking by the trader or a producer to the consumer, in addition to legal obligations under Article 106 in case of lack of conformity to reimburse the price paid or to replace or repair, or service goods or digital content in any way if they do not meet the specifications or any other requirements not related to conformity set out in the guarantee statement or in the relevant advertising available at the time of, or before the conclusion of the contract;*

The draft Common European Sales Law does not specify the statutory length of the usual commercial guarantee. Such a provision would in fact be superfluous, as the commercial guarantee has been fully harmonized to two years by the new Consumer Rights Directive. Hence, unless the trader decides to introduce a longer commercial guarantee on a voluntary basis, there will be no difference between its national and European duration that could possible attract more consumers.

3.3 Enforcement of Rights Resulting from the Common European Sales Law

An effective manner of resolving disputes resulting from the Common European Sales Law can make this EU-wide instrument either attractive to consumers or it may completely discourage them from using it.

Article 169 of the draft Regulation can be perceived as rather innovative as it grants the creditor the right to claim a fixed sum of compensation (amounting to 40 EUR or equivalent in national currency) for his or her recovery costs. Under the second paragraph of Article 169, however, the previous provision does not preclude the creditor from claiming reasonable compensation for any recovery costs exceeding the fixed sum.

Any provision governing a lower fixed sum for recovery costs shall be deemed null and void under Article 170 of the draft Regulation.

Even though the above provisions may seem favourable to consumers, the last sentence of Annex II to the draft Regulation does not trust the legal consciousness of these buyers by saying that "In case of dispute you [i.e. the consumer] may wish to ask for legal advice". Hence, consumers are not expected to be able to cope with enforcing their rights under the Common European Sales Law without the assistance of lawyers. Also, lawyers willing to provide consulting on Common European Sales Law and selected aspects of foreign law which may be applicable to the Common European Sales Law are likely to charge higher fees than lawyers dealing with national law only. An average consumer is unlikely to be able to determine the competent court and the applicable law for issues not governed by the draft Common European Sales Law (Grmelová, 2013).

Two very different legal cultures (one based on Roman Law and the other on Common Law) are also bound to arrive at different interpretations of the rules stipulated in the draft Common European Sales Law. The legal uncertainty as to the lack of unified interpretation of Common European Sales Law may deter consumers for opting for this EU-wide instrument (Grmelová, 2012). If national courts decide to make preliminary references to the Court of Justice of the European Union to achieve a uniform interpretation of the Common European Sales Law, consumer disputes will take very long to achieve a satisfactory resolution for the buyer. Also, traders may be discouraged from offering

[7] Regulation (EC) No 864/2007 of the European Parliament and of the Council of 11 July 2007 on the law applicable to non-contractual obligations.

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their goods under the Common European Sales Law fearing that a possible interpretation of this EU-wide instrument will be too favourable for consumers as we have seen in the recent case-law of the Court of Justice (Gongol, 2013). The only advantage for consumers in terms of enforcing their rights before a law court is the possibility to start an action before the tribunals of the state of the consumers´ habitual residence under Brussels I Regulation[8]. However, if the judgment has not been voluntarily complied with, consumers will have to apply for the recognition and enforcement of the judgement before the law courts of the state of the trader's domicile. This is obviously a procedure an average consumer will not undertake.

To help national courts with compatible interpretation of Common European Sales Law, the European Commission plans to introduce a database containing judicial decisions issued by both national courts and the Court of Justice of the European Union in this field. Submitting court decisions to this database will be no doubt costly and burdensome for national courts. Also, the European Commission would have to reserve some resources for the maintenance of the database. The Commission seems to be aware of the financial implications of such a database which are likely to rise with an increasing number of available final court decisions. The Commission also plans to organize training for the representatives of the legal profession concerning the use of the Common European Sales Law. These costs, the Commission believes, may drop in the long run, once the knowledge of the Common European Sales Law becomes notorious.

The judicial resolution of dispute is likely to be lengthy and costly. Therefore, the European Parliament adopted amendments which also envisage out-of-court dispute settlement instruments. Article 186b (new) entitled "Alternative dispute settlement" encourages contractual parties to *consider submitting disputes arising from a contract for which they have agreed to use the Common European Sales Law to an ADR entity within the meaning of point (h) of Article 4(1) of Directive 2013/11/EU.*[9]

One more aspect which is common to both, the judicial and extra-judicial means of dispute resolution concerns prescription. Article 179 of the draft regulation defines both, the short and the long periods of prescription. Whereas the short period of prescription amounts to two years, the long period of prescription has been reduced by an amendment of the European Parliament from 10 years to 6 years. Yet, in the case of a right to damages for personal injuries, the prescription period amounts to thirty years, a period much longer than that in many national legislations, which would make the draft Common European Sales Law extremely unattractive for traders in some Member States compared to national laws.

3.4 Consumer Protection versus Promotion of Cross-Border Trade in Goods

The authors do not share the Commission's optimism that the Common European Sales Law is going to boost cross-border trade by lowering transaction costs for traders who will no longer have to compare 28 different national legislations. The European Commission seems to forget that most small and medium sized enterprises (SMEs) do not trade in all the other Member States, but limit their activities mostly to the neighbouring countries, or to those with the closest linguistic ties. Also, a number of legal issues will continue to be governed by national laws applicable under Rome I and Rome II Regulations, which will not eliminate the transaction costs SMEs have to bear for comparing national legislation. On the contrary, SMEs are likely to incur costs associated with getting to know the contents of the draft Common European Sales Law. Also, SMEs may be reluctant to use the Common European Sales Law due to the legal uncertainty associated with its interpretation before different national courts which are to apply objectives and principles guiding the draft regulation

[8] Council Regulation (EC) No 44/2001 of 22 December 2000 on jurisdiction and the recognition and enforcement of judgments in civil and commercial matters.

[9] Regulation (EU) No 524/2013 of the European Parliament and of the Council of 21 May 2013 on online dispute resolution for consumer disputes. Member States are obliged to bring their national legislation in line with this directive no later than by 9 July 2015.

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besides their national laws when filling up the gaps of the Common European Sales Law.

Last but not least, traders may feel discouraged from using Common European Sales Law if it provides for a higher level of consumer protection than national provision. To give an example, the prescription period governed by the Common European Sales Law is much longer than in Czech consumer sales contracts. The new Czech Civil Code provides for the possibility of extending the minimum statutory prescription, but traders are unlikely to make use of this provision in their detriment (Eliáš et al., 2013).

4 Conclusion

The proposal for a Common European Sales Law provides for more freedom of choice for both consumers and traders when it comes to the law applicable to their sales agreement. At the same time, however, it creates vast room for legal uncertainty as to the interpretation of the draft regulation on the Common European Sales Law which may outweigh the possible advantages thereof. Since the Common European Sales Law does not constitute an entirely autonomous legal regime and requires the application of national legislation determined pursuant to the conflict of law rules, the authors believe, that its introduction is rather premature. The application of the draft Common European Sales Law may lead to unforeseeable results in practice. Hence, the European Commission would be well advised to withdraw the proposal and to redraft it thoroughly so as to provide for a self-sufficient instrument free of any external interference. If the draft Regulation is adopted, it will be subject to free competition which will decide on its viability and attractiveness for both, traders and consumers alike.

It is clear, however, that no single draft of a Common European Sales Law can be more favourable to traders and consumers at the same time. If it is provides for a higher protection of consumers, traders will opt for offering their goods under national legislation. If the Common European Sales Law is more favourable to traders, consumers are likely to choose their national sales agreement providing them with a higher level of protection. In short, as seen above, the interests of traders and consumers are opposed to each other, and the choice between the Common European Sales Law and a national sales agreement will be a difficult one even for specialized lawyers, let alone for an average consumer.

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ATTITUDE OF EUROPEAN UNION TOWARDS MIDDLE EAST AND NORTHERN AFRICA SINCE 1990

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Abstract
This article aims to introduce and analyze European Neighborhood Policy towards Middle East and Northern Africa since 1990s. Historically, Mediterranean region has always been very important for European Union in terms of trade, culture, and last but not least the regional stability. Nowadays, European Union cooperates with these countries through the instrument of European Neighborhood Policy. The first comprehensive instrument for the cooperation of European Union with the South was Euro-Mediterranean Partnership established in 1995. In 2008 during French Presidency of the Council of European Union, French president Nicolas Sarkozy declared the intention to deepen the mutual cooperation with Middle East and northern Africa through establishment of Union for Mediterranean. Four year later, it seems that Union for Mediterranean is not as effective tool as it was expected. Many countries of Middle East and northern Africa have had the experience of Arab revolutions that in some cases turned into serious armed conflicts. The attitudes of EU member states towards these conflicts have been rather divided. In result, European Union has not been able to develop a clear response to these events.

Keywords
European Union, European Neighborhood Policy, Middle East, Northern Africa.

JEL Classification
R58.

1 Introduction

The aim of this article is to introduce and analyze European Neighborhood Policy towards Middle East and Northern Africa since 1990s with a respect to a historical development of Mediterranean region. Special attention will be headed to the changes that have appeared since 2011 when Arab revolutions started (so called Arab spring).

Mediterranean region has always played a very important role in European and sometimes even in the world politics. During 20th century, it was possible to observe many changes concerning this region. At the beginning of 20th century, most of the Middle East and northern Africa was colonized by European countries. After World War II, there was a rapid wave of decolonization. Unfortunately, most of new independent countries in the region turned to some kind of undemocratic regime. At the beginning of Arab revolutions, some observers believed that a significant change was coming. Three years later, it seems that these hopes are in vain.

European states (later European Communities/European Union) have always had an interest in Mediterranean region. While right after the process of decolonization Europe was seen rather as enemy to most of countries of Middle East and Africa, nowadays the situation is totally different. With reservations, Europe is considered as a respectable partner and European Neighborhood Policy is understood as one of the important tools of mutual communication and cooperation (Fenko, 2012).

2 Methodology

In terms of methodology, this article shall be seen as a preliminary study and survey. Thus, descriptions of the discussed issues shall be the main method that is used. The available primary and secondary sources of literature will be studied and analyzed.

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As the topic of this article is very contemporary, most of the conclusions cannot be confronted with the conclusions of other authors. It is also necessary to emphasize that the described trends cannot be considered as having been completed yet, thus the presented conclusions cannot be understood as definitive. The basic method of research is qualitative research with regard to the analysis and interpretation of the available quantitative data. The historical research methods will be used. If possible, the examples of specific events will be demonstrated in order to explain the attitudes of European Union towards Mediterranean region since 1990s.

3 Historical background

Historically, Mediterranean region has always been very important for Europe in terms of trade, culture, and last but not least the regional stability. Since the antique times, the mutual relations of the local actors of both sides of Mediterranean Sea have had a significant influence not only on the situation in the region but also in the world. Almost all important empires in this part of the world (e.g. Persian Empire, Roman Empire, Byzantine Empire, Caliphate, British colonial empire, French colonial empire) tried to rule the Mediterranean regions in order to strengthen their political power.

The importance of Mediterranean region for Europe was reconfirmed in 19th century. At that period of time, it was obvious the Ottoman Empire, the former leader in Middle East and northern Africa, had been weakening. A famous term "sick man of Europe" was firstly used by Tsar Nicholas I of Russia referring to the power status of Ottoman Empire during Crimean War (1853-1856). It is likely that without the intervention of her European allies, Ottoman Empire would have lost the war against Russia. At the same period of time, European states – especially France and Great Britain - began to promote their interests in northern Africa. In 1830s, there were the beginnings of French conquest of Algeria. In 1881, French protectorate of Tunisia was established. Imperial France gradually absorbed the territories of present-day Mauritania in late 19th century. In 1912, France established a full protectorate over Morocco. Great Britain had a long-term interest in the territory of Egypt- a formal British protectorate over Egypt was declared in 1914. Since 1899, Sudan was administered as unofficial British colony. After Italo-Turkish war (1911-1912) Italy was able to rule the territory of nowadays Libya (Kamrava, 2005).

A breaking point in the history of modern Middle East and northern Africa was World War I (1914-1918). As the Ottoman Empire joint the coalition led by Germany and Austria-Hungary (so called Central Powers), the defeat of the Central Powers by the Allies (France, Great Britain, Russia, USA and the others) led to the dissolution of Ottoman Empire. In result of Treaty of Sèvres1920, Ottoman Empire lost more than 2/3 of the territory mostly in favor of France and Great Britain. New-established League of Nations created a new legal instrument called a mandate. Originally, a mandate territory was not supposed to be equal to colonies but in practice, there were no many factual differences between these two types of administration system. According to League of Nations, former Ottoman-controlled Middle East was classified as Class A Mandate. The final details were discussed in San Remo Conference in 1920 and the conclusions of this conference were as follows (Yapp, 1996):

- Territories under the control of Great Britain: Mandatory Palestine, Transjordan, Mandatory Mesopotamia (later Iraq).
- Territories under the control of France: Mandatory Syria, Mandatory Lebanon.

The results of San Remo are very important as the borders of modern Middle East were stand based on a decision of European colonial powers. Later, some of these borders were seen as controversial and led to many regional problems. Most of the countries of Middle East and northern Africa declared their independence after World War II when it was obvious that due to internal economic problems neither France nor Great Britain would be able to maintain their colonial empires. While Great Britain preferred a peaceful dissolution of her colonial empire, France was resistant to the claims of nationalist movements in the colonies. In result there was a series of colonial war such

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as Algerian War (1954-1962) and First Indochina War (1946-1952). The processes of colonization and decolonization in Middle East and northern Africa are illustrated by a following map.

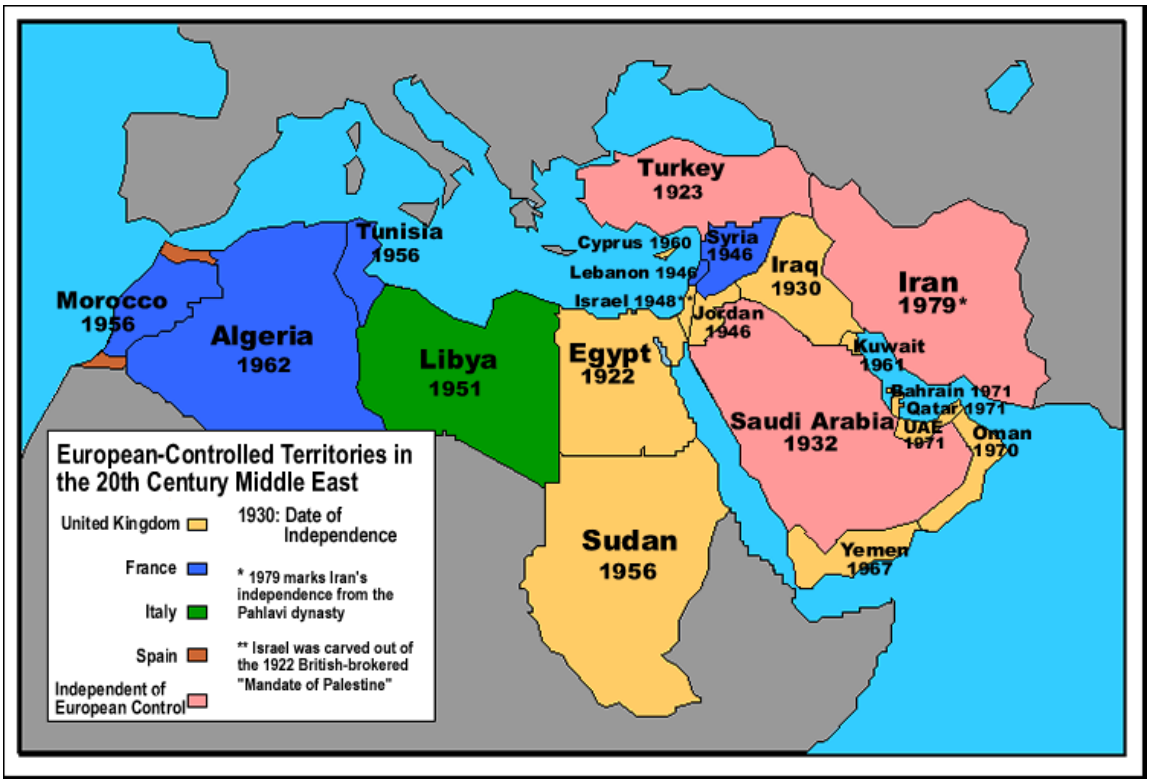

Figure 1. Colonization and decolonization of northern Africa and Middle East
(Source: University of Notre Dame, 2012)

4 European Communities[1] and Mediterranean region

After the end of World War II, most European countries were in ruins. The traditional European colonizers were no more able to maintain the territories they had controlled worldwide. Since late 1940s it was obvious that there are two new superpowers in the world: Soviet Union (USSR) and the United States of America (USA). Undoubtedly Mediterranean region became one of the battlefields in ongoing Cold War. The importance of this region during Cold War can be demonstrated by using various examples when both superpowers decided to intervene such as Suez Crisis in 1956, Algerian War 1954-1962, conflict over Cyprus starting in 1974, all Arab-Israeli wars etc.

In the first decades after decolonization, there were not so many mutual relations between European states and the new-established Arab countries. The reasons were various. Firstly, European countries were rather focused on their own internal problems and the events of Cold War. Secondly, European countries were rather unpopular in Arab countries as the colonial period was demonized by the public opinion. Last but not least, the new superpowers of the world politics had more influence on local affairs than traditional European actors.

During time, western European states were able to renew their position in world affairs. Obviously, a success of the integration process helped Europe to become an influential actor in global politics again. Even though European Union is sometimes titled as an economic giant but a political dwarf, the political importance of Europe for her neighbor regions is undoubtable.

Since 1970s, European Communities aimed to balance the position of USA in Arab-Israeli conflict. While USA has been rather pro-Israeli, European states decided to support the Arabs. Arab-

[1] European Coal and Steel Community (ECSC), European Economic Community (EEC), European Atomic Energy Community (Euroatom).

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Israeli conflict is not for sure the only issue that is important in the region however it is a highly sensitive issue.

As European industry was revitalized from the war damages, the western European countries started to focus on the mutual cooperation with the other world regions. Due the geographic proximity and historical ties, Mediterranean region was considered as a crucial area in many aspects. In this point, it is necessary to distinguish among the individual Mediterranean countries. While Turkey was seen as a long-term partner (Turkey is a member state of NATO since 1952), Libya under Colonel Muammar Gaddafi was perceived as rather hostile to the west. Some other countries of Middle East and northern Africa were criticized by Europe because of their undemocratic regimes. An instrument of mutual cooperation called the global Mediterranean policy was established. Mediterranean policy was implemented in period 1972–1992 and focused mostly on economic affairs.

In general, it is possible to assume that in period from 1960s to 1980s European Communities attempted to overcome the gap and to benefit from their knowledge of Mediterranean region based on the historical experience of the former European colonizers.

5 Closer Cooperation in Mediterranean region

Today, Mediterranean region is considered to be crucial regarding politics, economy, security, and culture in both Europe and Middle East and northern Africa. The beginnings of closer cooperation between European Communities and Mediterranean region date back to 1990s. 1990s is sometimes titled as the decade of hope. Cold War was finally over and the post-cold war world seemed to be a full of opportunities. There was also a lot of hope concerning Arab-Israeli peace process as there were continuous negotiations in 1990s (so called Oslo Peace Process).

The Euro-Mediterranean Partnership (Barcelona Process) was created in 1995 during Spanish presidency of the Council of European Union. According to Barcelona Declaration which was an official outcome of the conference, the main goal of the Euro-Mediterranean Partnership was *"turning the Mediterranean basin into an area of dialogue, exchange and cooperation guaranteeing peace, stability and prosperity"* (Europa, 1995).

The goals of the Euro-Mediterranean Partnership were defined as follows (Europa, 1995):

- Political and security partnership,
- Economic and financial partnership,
- Social, cultural and human partnership.

In 2005, there was Euro-Mediterranean Summit 2005. This summit was held in order to discuss all the agenda designed by Barcelona conference 1995 and possible improvements for future. It was assumed that some goals of the Euro-Mediterranean Partnership are fulfilled only partially. While the economic cooperation between European Union and Mediterranean region was considered as quite successful because some steps to the Free Trade Area had been done (such as Agadir Agreement signed in 2004 with an aim to decrease the obstacles of mutual economic cooperation), the political cooperation was still very vague (Kausch and Youngs, 2009).

A new impetus for the cooperation in Mediterranean was the election of Nicolas Sarkozy as the new French president. Since the very beginning of his political campaign, Sarkozy called for a deeper cooperation in Mediterranean. From French perspective, the reasons for a deeper cooperation were obvious: history, economy, and above all geopolitics. The most typical argument was that it is necessary to build a zone of security and stability in the regions neighboring European Union.

Nicolas Sarkozy made a lot of effort to promote a deeper cooperation in the Mediterranean during French Presidency of the Council of European Union in 2008. Finally, the Union for the Mediterranean was launched in Paris in July 2008. Nicolas Sarkozy assumed: *"We had dreamt of it. The Union for the Mediterranean is now a reality"* (Euobserver, 2008).

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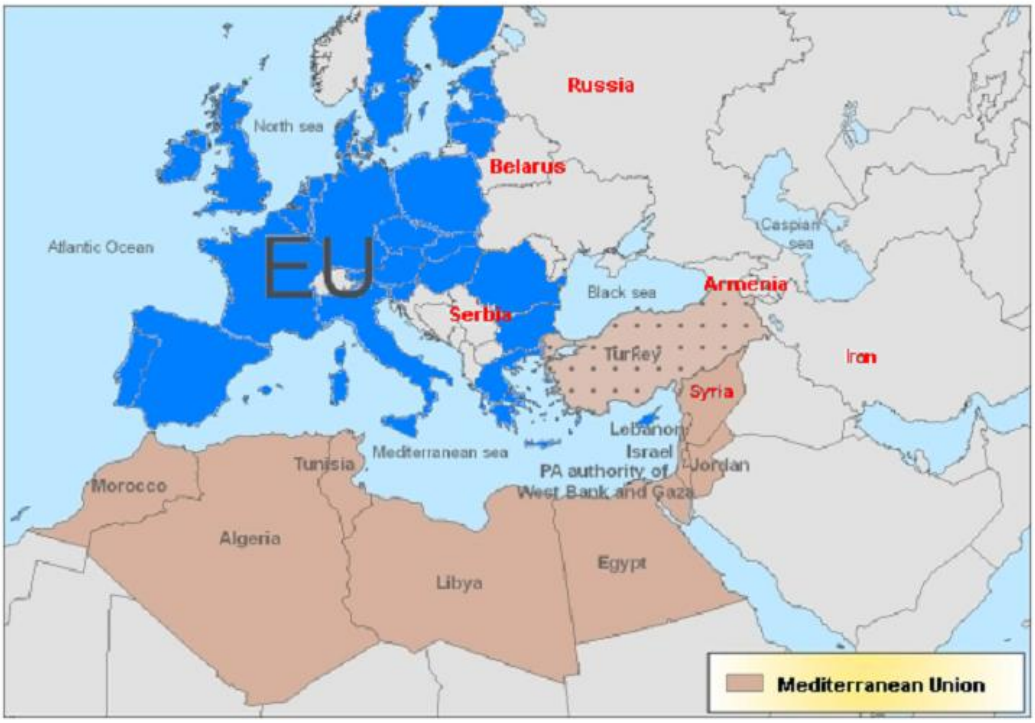

Figure 2. Map of Mediterranean Union (Source: Nazemroaya, 2012)

Today, the Mediterranean Union consists of 28 European Union member states and 15 countries of Middle East and northern Africa. In 2008, the Mediterranean Union was established as a very ambitious project that aimed to cover many priority areas such as business development, transport and urban development, energy, water and environment, higher education and research, and social and civil affairs (Union for the Mediterranean Secretariat).

According to Nicolas Sarkozy, the Mediterranean Union could have served as an alternative to full membership in European Union. Regrettably, the countries of Middle East and northern Africa did not understand it the same way. Especially Turkey was very disappointed and made clear that only the full membership in EU is a satisfactory outcome of her long-term accession process.

Another great goal of the Mediterranean Union was to renew the peace negotiations between Israel and the Arab states. Since the fiasco in Camp David summit in 2000, Arab-Israeli process has been frozen (Ross, 2005). It was believed that European Union could have been a more successful negotiator than USA known for their pro-Israeli attitudes. In 2014, it seems that even the Europeans were not able to make any differences as the peace between Israel and the Arabs is still very far away (Del Sarto, 2011).

A very sensitive issue was the assistance of European Union to these Mediterranean countries going through transition to democracy. As the later events of Arab revolution demonstrated, this effort was not successful (Bicchi, 2009).

What is usually interpreted as a positive aspect of Mediterranean cooperation is the economic partnership. The following picture shows trade in goods statistic from 2011 to 2013.

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EU-Euro-Mediterranean partnership "trade in goods" statistics

Trade in goods 2011-2013, € billions

Year	EU imports	EU exports	Balance
2011	131.8	161.9	30.1
2012	154.9	175.1	20.2
2013	146.0	179.7	33.7

Figure 3. Mutual trade between EU and Mediterranean region (Source: European Commission)

Despite of the partial success of economic cooperation, some authors believe that the concept of Mediterranean Union needs to be changed. Some of them even call for a fundamental transformation (Balfour, 2009). The most significant argument that is used in this context is the inability of European Union to react to the events of Arab revolutions (Schlumberger, 2001).

6 Arab Spring and the Response of European Union

The beginnings of Arab revolutions (sometimes known as Arab Spring) date back to November 2011 when the mass demonstration against the regime of president Zine El Abidine Ben Ali erupted following a self-immolation of a young Tunisian Mohamed Bouazizi. This protests inspired many people in other countries of Middle East and northern Africa. Nowadays (July 2014), it can be assumed that due to Arab revolutions, four governments were overthrown (Egypt, Libya, Tunisia, and Yemen), there is one civil war (Syria), three countries experienced major protests (Algeria, Iraq, and Sudan), and six countries went through serious demonstration that led to the governmental changes (Bahrain, Jordan Kuwait, Morocco/Western Sahara, and Oman). Most of these states are the members of Union for the Mediterranean and all of them are very close to Europe in terms of geography.

Therefore, a clear response from European Union was expected from the very early beginning of Arab revolutions. Unfortunately the response that came from Europe was rather inconsistent. Once again, it was confirmed that there is not one voice in European Union regarding the foreign policy. Instead there are many voices reflecting the positions of individual member states. These discrepancies appeared every time when a significant decision was needed such as the reaction to a civil war in Syria, and the intervention of NATO in Libya. Under these circumstances, Union for the Mediterranean did not prove to be an effective instrument that could be used in a time of crisis (Schlumberger, 2011). Another problem is that after the end of French presidency of Council of European Union in December 2008, no other state of European Union showed so much enthusiasm and support for the cooperation in Mediterranean region.

7 Conclusion

Union for the Mediterranean has been a very ambitious project of European Union. In a case of success, the benefits of such a project could have been immense. Unfortunately the Arab revolutions have demonstrated that European Union is still not prepared to be a global actor regarding the political affairs. Sadly, it seems that European Union is not prepared to be even a regional actor. Similarly to Eastern Partnership, it is obvious that Union for the Mediterranean has got a lot of problems and limits. In a time of crisis, there are not mechanisms that would serve to provide an immediate response.

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It can be assumed that the contemporary phase of integration in Europe is neither final nor perfect. The federalists would say that as long as the EU member states are not able to leave their egoistic interests and the foreign policy issues are not transferred to European Union level, the institutions of European Union, including Union for the Mediterranean would not be powerful enough (Gillespie, 2011). Another argument comes from the discussion about the possible influence of European Union instruments on behavior of the external actors. Obviously, there are some strategies based either on positive or negative motivation such as a promise of financial assistance or a threat of economic sanctions. However, a detailed analysis of the world politics in last two decades shows that impetus leading to an essential change usually has to come rather from inside than from outside.

Union for the Mediterranean is still not a dead project. Actually, it has a lot of potential but if such a project shall be successful, a fundamental reform is needed. This reform should focus on the objectives (to stand less ambitious goals that would be more realistic) or on the change in foreign policy-making of European Union.

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INDUSTRIAL COALITONS AND EDUCATION IN CONTEXT OF INFOMATION AND COMMUNICATION TECHNOLOGY SECTOR IN THE CZECH REPUBLIC

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Abstract
This present article continues in author's ongoing research of regional disparities in economic branch of information and communication technology defined by NACE Rev. 2. in Czech Republic between selected years 1995 and 2012. This sector, sector of information and communication technology, is one of the most important economic operations and activities because of its high and multiplicative positive potential for further economic growth of product performance and productivity. Here is described the principal role of industrial coalitions as clusters, technological platforms and science and technology parks and business incubators and master studies as university education in context of situation and development of information and communication technology activities in 14 Czech regions defined by NUTS3. The main aim of this present article is to find out existing relations between these set of factors and the regions in which are concentrated economic activities related to information and communication technology.

Keywords
Information and Communication Technology, Region, Cluster, Education, Comparison.

JEL classification
I21, L86, R10, R12.

1 Introduction

The sector of information and communication technology (ICT) is recently one of the most potential branches of economical activities and operations whose extensive global development started in the eighties of the last century. ICT sector generates weighty gross value added which is important source of economic development and ICT production contribute to stable qualitative economic growth of all economies at present and also in the future. ICT sector is characterized by multiplier economic effects when the activities and operations in this sector directly or indirectly affect performance in other sectors, contribute to significant savings and productivity growth, to increase of intellectual capital, especially human capital, growth of social value created by the synergy of knowledge, information and technology that are being created in this economical sector, developed and supported. All of these aforementioned positive effects associated with the activities of companies in the ICT sector, improve the competitiveness of the regions in which they operate and contribute to improving in quality of life and growth of standard of living. (Turečková, 2014b)

The aim of this article is to define the regions which potentially have ability to support activities in ICT sector with emphasis on industrial coalitions and specific educations. All industrial coalitions, concretely meaning clusters, technological platforms, science and technology parks, business incubators and business and innovation centres, and master studies or university education have to be related with ICT to create convenient conditions for development of this economical branch. The second aim is to compare these regions with regions that are successful in providing ICT activities and operations in year 2012.

ICT sector definition based on classification NACE rev. 2. which is used in European Community as standard classification of economical activities. ICT sector is there determined through Section J, Information and communication. The ICT sector consists of all enterprises/units (including both natural and legal persons) which principal activity (principal activity contributes 50 and more percent to the value added) belongs to following divisions and groups (classes) of NACE rev. 2 classification: ICT manufacturing industries, ICT trade industries and ICT services

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industries. (CZSO, online) Regions for this analysis are defined by territorial level NUTS3. There are 14 regions in Czech Republic.

The article is organized as follows. Section 2 describes ICT sector in regions of Czech Republic with putting emphasis on interregional disparities in context of ICT performance. This section proceeds from earlier analysis (Turečková, 2014b) because of comparing the level of ICT in the regions of Czech Republic with industry coalitions and education that are analyzed in present article. Section 3 deals with ICT industry coalitions in Czech Republic in year 2012 while section 4 describes masters' studies specialized in information and communication technology. Section 5 compares ICT performance in each region of Czech Republic with regional industry coalitions and regional ICT education. Finally, the conclusion highlights some major conclusions of regional development of ICT performance in context of selected factors (before mentioned) of regional competitiveness.

2 ICT sector in regions of Czech Republic

Branch of ICT in whole Czech Republic has undergone a significant positive development between years 1995 to 2012. ICT sector created value if 37,045 mil. CZK in 1995 which was 2.66% of total gross value added while after 18 years it was 173,013 mil. CZK which was more than 5% of total Czech output and ICT contribute importantly to the gross domestic product. Percentual share of employment in ICT sector grew about 65% and ICT labour productivity measured of the efficient use of sources to create value expressed as gross value added per worker rose from 1995 to 2012 more than 185%.

Table 1. Established basic criteria for evaluation ICT sector in regions for 2012

Regions of Czech Republic	GVA of regional ICT sector in 2012 (mil. CZK)	Change in ICT sector between 1995-2012	Share of regional ICT sector on total in 2012	Change in share of regional ICT on total between 1995-2012	Sectoral productivity in 2012 (in thousands CZK per employee)	Change in productivity between 1995-2012	Difference between change in production and in employment between 1995-2012	Order
Prague	104,204	475%	60.23%	11.3%	1,730	263.9%	417%	1
Central Bohemia Region	5,583	170%	3.23%	-2.3%	652	-11.8%	-36%	7
South Bohemia Region	3,174	118%	1.83%	-2.1%	816	85.8%	101%	12
The Plzen Region	3,675	173%	2.12%	-1.5%	685	-5.5%	-16%	10
The Karlovy Vary Region	618	73%	0.36%	-0.6%	523	-14.1%	-28%	14
The Usti Region	6,789	287%	3.92%	-0.8%	2,336	207.9%	261%	4
The Liberec Region	1,901	171%	1.10%	-0.8%	594	13.5%	32%	13
The Hradec Kralove Region	5,329	384%	3.08%	0.1%	1,222	193.4%	319%	5
The Pardubice Region	5,261	285%	3.04%	-0.6%	1,271	120.6%	211%	6
The Vysocina Region	1,656	212%	0.96%	-0.5%	687	85.6%	144%	9
The South Moravian Region	19,628	408%	11.34%	0.9%	1,232	276.5%	373%	2
The Olomouc Region	2,868	181%	1.66%	-1.1%	856	64.4%	110%	8
The Zlin Region	2,420	114%	1.40%	-1.6%	1,025	78.4%	94%	11
The Moravian-Silesian Region	9,907	345%	5.73%	-0.3%	1,152	142.8%	262%	3

Source: Czech Statistical Office, adjusted by author.

Analysis of 7 basic selected indicators characterizing ICT determined performance and success in ICT activities in regions and set the order of them as is shown in Table 1. It was used Point

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Method for setting up the ranking. Established criteria for ranking ICT were amount of gross value added of regional ICT sector in 2012, regional percentage change in ICT sector during analyzed period which was 1995 - 2012, percentage share of regional ICT sector on total in 2012, percentage change in share of regional ICT on total during analyzed period, regional sectoral productivity in 2012, percentage change in regional sectoral productivity during analyzed period and difference between percentage change in production and employment between years 1995 and 2012.

There are great disparities in branch of ICT on regional level as you can see in each indicator mentioned above. The order (ranking) of regions in succeeds in ICT sector is consequential: Prague on its first place is followed by The South Moravian Region. Third of the most important regions is The Moravian-Silesian Region closely followed by The Usti Region. The Hradec Kralove Region, The Pardubice Region and Central Bohemia Region also perform well. Other regions have minimal contribution to the (effective) aggregate ICT performance.[1]

3 Industry coalitions

Industry coalitions are significant sources of regional sectoral competitiveness. Regional sectoral competiveness is understood as ability of a region in relevant sector to defend and/or to gain market share in open markets relying on price and/or quality of their production. This is projected in positive and permanent growth of macroeconomic aggregates of this region. Competiveness of particular sector in region is supported by set of elements, relationships and characteristics enabling to the region outperform other regions in ability to generate higher national income and attract more permanent factors of production. These factors are replenished by synergy of mutual relation, positive externality and dynamical sharing of information, knowledge, experiences, innovations and technological advancements.

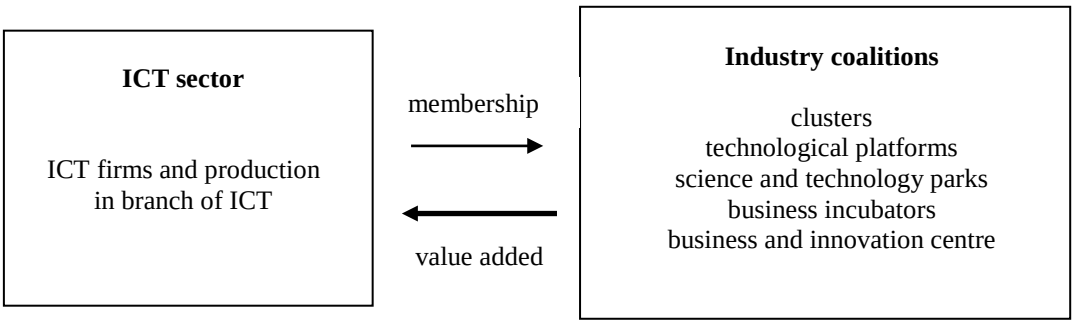

Figure 1. Branch of ICT and industry coalitions (Source: Turečková (2014a), adjusted)

Firms that do business in ICT and form ICT sector increase their competitiveness through voluntary entrance into specific industry coalitions (Figure 1.) These industry coalitions mutually support cooperation and further development of the companies by creating a motivating environment for support of trade and innovation where the theory of research and development are applied into practice and where the sharing of knowledge, experience and information is the source of growth for all participating members. Companies consequent of participation in these industry coalition further increase their value. Particular types of industry coalitions connected to ICT in Czech Republic are listed below.

[1] Thanks to investments in infrastructure other Czech regions than Prague are gaining attractiveness, especially in the ICT sector. Brno, the second largest city in the Czech Republic, is considered to be the Czech IT hub, where companies' needs are fulfilled by qualified professionals, R&D facilities and institutions, and advanced ICT infrastructure. Ostrava has been gaining importance in recent years and is on the path to greater international recognition thanks to projects such as IT4Innovations. It is thus not surprising that companies such as Tieto have decided to establish their centre there. (CzechInvest, 2014b)

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3.1 Clusters

Clusters are geographically concentrated groupings of independent companies and associated institutions in competition, but also cooperate with each other, and which bonds have the potential to strengthen and enhance their competitiveness.

Participating companies solves a number of similar problems (education employees' access to the same suppliers, collaboration with research and development capacities, insufficient resources to research, etc.). Thanks to the cooperation in these areas a lot of restrictions and gain a competitive advantage that is difficult simulate. It is general advantageous partnership firms, universities and regional institutions which has a number of benefits to all its member organizations. (CzechInvest, 2014a)

Table 2. ICT Clusters in regions for 2012

Name	Region
Czech Cloud Cluster	South Bohemia Region
Český IT klastr, z.s.p.o.	South Bohemia Region
Hradecký IT klastr	The Hradec Kralove Region
IT Cluster, o.s.	The Moravian-Silesian Region
IQ Klastr, z.s.p.o.	The South Moravian Region
Network Security Monitoring Cluster, družstvo	The South Moravian Region
Czech IT Cluster	The Vysocina Region
Olomoucký klastr inovací, družstvo	The Olomouc Region

Source: CzechInvest, adjusted by author.

Table 2 shows all ICT clusters in Czech Republic for year 2012 that are mentioned by CzechInvest. There is 8 clusters focused on ICT located in 6 regions of Czech Republic. The South Moravian Region and South Bohemia Region have two each, The Hradec Kralove Region, The Vysocina Region, The Olomouc Region and The Moravian-Silesian Region have one each.

3.2 Technological Platforms

The technology platform is a cooperative sectoral grouping bringing together industrial companies, trade associations and unions, research and financial institutions, national public authorities, associations of users and consumers involved in the research, development and innovation in strategically important technological areas at national or international level. The aim of the group is to create, promote and implement medium or long term vision of future technological developments and coherent dynamic strategy to achieve the vision which includes important questions for future economic growth, competitiveness and sustainable development in the Czech Republic and Europe. (CzechInvest, 2014c)

Table 3. ICT Technological Platforms in regions for 2012

Name	Region
Technologická platforma pro IT služby	Central Bohemia Region

Source: CzechInvest, adjusted by author.

There is only one technological platform related to ICT in Czech Republic as is shown in Table 3. It is "Technologická platforma pro IT služby" (Technology platform for IT services) situated in Central Bohemia Region. The principal activity of the this technology platform for IT services is to create industry coalitons in IT services as a driving force for development of this progressive field of Czech knowledge economy. The platform supports the creation of a favorable business environment for IT services and improves conditions for entrepreneurship and innovation.

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The technological platform for IT services was created by the initiative of the Czech ICT Alliance, an official export alliance of the government agency CzechTrade, in the field of IT services, and its aim is to, define the vision of the development of the Czech IT, to develop and then enforce specific measures, associated with this intention. Partners involved in the activities of the technological platform are: the Czech Society for system integration (CSSI), the College of Economics in Prague, the Technical University in Liberec, the University in Hradec Kralove and many important IT companies. (ITS Platform, 2014)

3.3 Science and Technology Parks, Business Incubators and Business and Innovation Centres

Science and technology parks are in the Czech Republic used for all kinds of parks (centres). Science and technology parks are profiled primarily into three main types:

- Science Park (center),
- Technology Park (center),
- and Business and Innovation Centre (BIC).

Science and technology parks´ founders are state and regional authorities, universities, research and development organizations, industrial enterprises, chambers of commerce, financial institutions, private companies, associations and unions. Science and technology parks have been developed and more are being prepared in an environment of scientific research institutes and universities in the environment, created on the initiative of production, trade and other business entities or from the initiative of private individuals.

Table 4. Science and Technology Parks, BICs and Business Incubators in context of supporting ICT in regions for 2012

Name	Region
VTP Mstětice, Zeleneč – Mstětice	Central Bohemia Region
Inovacentrum ČVUT	Prague
Technologické centrum Akademie věd Č	Prague
Vědeckotechnický park Agrien	South Bohemia Region
BIC Ostrava	The Moravian-Silesian Region
Vědeckotechnologický park Ostrava	The Moravian-Silesian Region
Vědeckotechnický park UP v Olomouci	The Olomouc Region
BIC Plzeň	The Plzen Region
Podnikatelský inkubátor Brno – Jih	The South Moravian Region
BIC Brno	The South Moravian Region
Technologický inkubátor VUT	The South Moravian Region
Podnikatelský a inovační park H. Brod	The Vysocina Region
Technologický park Jihlava	The Vysocina Region
Podnikatelský inkubátor Kroměříž	The Zlin Region
Technologický park Progress	The Zlin Region
Technologické a inovační centrum Zlín	The Zlin Region

Source: Společnost vědeckotechnických parků ČR, adjusted by author.

Table 4[2] shows the allocation of 16 science and technology parks, BICs and business incubators between 9 regions of Czech Republic in 2012 where the major parts of them are located in 5 regions. All these associations are dealing with processing of data, transfer of knowledge and information and development of ICT.

[2] Any of incubators or BICs may be a single entity (are separately mentioned in the list) or can be a part of science and technology parks.

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4 Education

The Czech Republic is one of Europe's top locations for ICT investments because of its long industrial tradition and it is absolutely no surprise that new technologies naturally grow in the established environment of recognized universities, institutions and research centers. Czech Republic has very good education system which serves as a basis for future skills development and produces a very capable workforce that is why we have creative, innovative, experienced and skilled professionals. (CzechInvest, 2014b, adjusted by author)

Kramer et al. mentioned that ICT sector requires a certain level or certain set of skills and knowledge to effective use of information and communication technology. And it is not only employers as a ICT companies that employ ITC specialists who need specific education, but ICT (and also technical and engineering) skills are required in broad spectrum of workers, business partners, customers or inhabitances of the regions.

Next development of ICT is tied to education and the regional development of ICT performance directly depends on regional educational institutions, mainly on universities as the holder of tertiary masters studies. Next two tables introduce lists of faculties of public universities which are involved in ICT supplement of amount of graduates for year 2012.

Table 5. Faculties focusing directly on ICT in regions for 2012

Name	Region	Amount of graduates in 2012
Fakulta informačních technologií ČVUT	Prague	205
Fakulta informatiky a statistiky VŠE	Prague	745
Fakulta informatiky a managementu UHK	The Hradec Kralove Region	505
Fakulta mechatroniky, informatiky a mezioborových studií TUL	The Liberec Region	166
Fakulta elektrotechniky a informatiky VŠB-TUO	The Moravian-Silesian Region	638
Fakulta elektrotechniky a informatiky UPA	The Pardubice Region	131
Fakulta informatiky MU	The South Moravian Region	510
Fakulta informačních technologií VUT	The South Moravian Region	545
Fakulta elektrotechniky a komunikačních technologií VUT	The South Moravian Region	881
Fakulta aplikované informatiky UTB	The Zlin Region	443

Source: MSMT, adjusted by author.

Table 5 shows all faculties focusing directly on ICT in Czech Republic where 10 faculties are distribted into 7 regions. There were 1752 graduates from 5 faculties located in Bohemia in 2012 while 3017 graduates from 5 faculties located in Moravia. Most faculties focused on the study of ICT are in The South Moravian Region, concretely in city of Brno, where 1936 graduates finished their study.

Table 6. Other faculties focusing on ICT in regions for 2012

Name	Region	Amount of graduates in 2012
Matematicko-fyzikální fakulta UK	Prague	563
Přírodovědecká fakulta JU	South Bohemia Region	202
Přírodovědecká fakulta OU	The Moravian-Silesian Region	410
Fakulta ekonomická VŠB-TUO	The Moravian-Silesian Region	1802
Filozoficko-přírodovědecká fakulta SU	The Moravian-Silesian Region	551
Přírodovědecká fakulta UP	The Olomouc Region	774
Fakulta aplikovaných věd ZČU	The Plzen Region	255
Fakulta pedagogická ZČU	The Plzen Region	780
Přírodovědecká fakulta UJEP	The Usti Region	144

Source: Marešová et al. (2012), MSMT , adjusted by author

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Faculties which are directly oriented especially on ICT studies replenish supplemented other group of faculties where are also tought information technology or communication technology (see Table 6).

Table 7. Public Universities in regions for 2012

Region	Number of public universities in region	Amount of graduates in 2012
Prague	8	25,369
Central Bohemia Region	0	0
South Bohemia Region	2	3,317
The Plzen Region	1	3,720
The Karlovy Vary Region	0	0
The Usti Region	1	2,072
The Liberec Region	1	1,979
The Hradec Kralove Region	1	2,019
The Pardubice Region	1	2,086
The Vysocina Region	1	719
The South Moravian Region	5	17,467
The Olomouc Region	1	4,975
The Zlin Region	1	3,597
The Moravian-Silesian Region	3	9,640

Source: MSMT, adjusted by author.

Table 7 shows the number of public universities and amount of graduates in each region of Czech Republic in 2012. Total amount of graduates throughout the Czech Republic were 64,936 in 2012 where most students completed their masters studies in Prague (more than 25 thousand), followed by The South Moravian Region with approximately 17,500 graduates and The Moravian-Silesian Region with more than 9,500 graduates.

5 Industrial coalitions and education in context of performance of regional ICT sector

The core of this section is to compare ICT performance in each region of Czech Republic with regional industry coalitions and regional ICT education for year 2012.

The regions are compared using 2 indicators. First of them is simply sum of amount of ICT clusters, ICT Technological Platforms and Science and Technology Parks, BICs and Business Incubators in context of supporting ICT, all for each region. This sum reflects engagements of business and other regional subjects into activities connected with ICT. From this we can infer that the regions more involved in branch of ICT, will have a greater number of these industrial coalitions.

The second indicator reflects level of master studies. This index is based on 3 parts determining tertiary educations: amount of graduates of faculties focusing directly on ICT, amount of graduates of other faculties focusing on ICT and total amount of graduates per university, all for each region. Weight these tree factors in construct index are 0.5, 0.3 and 0.2. The actual index value for each region is then calculated as the recalculated value of the degree of education in the region to the countrywide average. The average value of the index is 1. All regions whose index is greater than 1 in this indicator improved, while regions which index value is less than 1 are in terms of education, particularly with regard to studies focused on ICT, worse off.

In Figure 2 we obtain the distribution of the regions in terms of their success in both indicators, as described above. When the region is located further from the zero (0), then it is doing better in comparison to others. There is, in this comparison, Prague as the best region followed by The South Moravian Region. The Moravian-Silesian Region is in the third place. The Olomouc Region, The Zlin Region and South Bohemia Region are also doing well.

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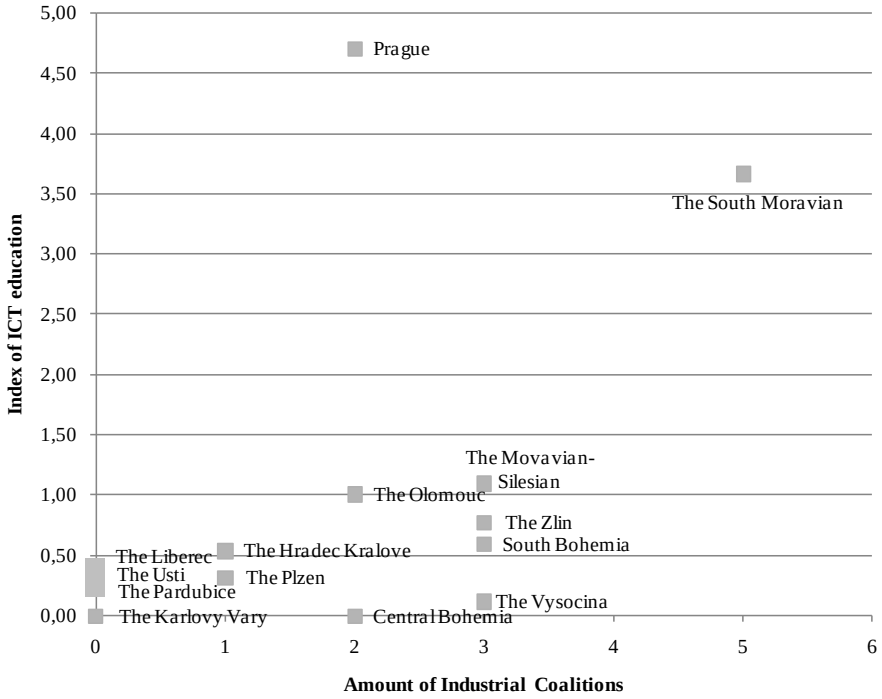

Figure 2. Comparison of Czech Regions for 2012 (Source: own)

Conclusions from the analysis of industrial coalitions and tertiary education correspond with the conclusions of section 2. Centre of ICT activities are formed in three regions of Czech Republic. These are Prague, The South Moravian Region and The Moravian-Silesian Region. These regions have sufficient skilled labor that reflects the quality of university facilities. As mentioned Dedrick et al. resource necessary to support IT use is human capital, including general education as well as IT-specific knowledge in areas such as computer science and management of information system. (Dedrick et al., 2013)

6 Conclusion

The field of Information and Communication Technologies has over the past few years transformed from a field on the outskirts to one of the most important sectors of the Czech economy. (CzechInvest, 2014b). Significant role in formation of all Czech branches of ICT played for 2012 three regions - Prague, The South Moravian Region and The Moravian-Silesian Region. These regions dispose of considerable branch facilities relating to the existence of industrial coalitions and also sufficient amount of qualified professional labour work having a basis in regional universities. IT use is associated with a shift toward workers with higher skill levels when these workers earn higher wages on average (Dedrick et al., 2003, adjusted by author). All these factors contribute to the growth of living standards and improve the economic and social potential of the region.

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EFFECTS OF THE EURO ADOPTION ON BUSINESS COMPANIES IN SLOVAKIA

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Abstract
In 2009, Slovakia entered European Monetary Union and adopted euro currency. This important milestone has brought many changes, opportunities, and situations, which have been completely new for the Slovak economic agents. One of the areas, which were influenced by the euro adoption, is area of business relationships. Business relationships are the widest and most important relationships that could arise within the business activities, not only between Slovak business partners, but also between Slovak and foreign partners. However, there are only limited sources of the theoretical papers and field researches that reflected membership in the euro area from the business sector point of view. In 2012, we conducted original field research in which we focused on gaining information about real experience and perceptions of Slovak business companies concerning so far effects of the euro currency on the business relationships. In this article, we focus on identification of euro-adoption effects on the business relationships of Slovak business companies. By using statistical methods and hypothesis verification, we try to determine how the euro adoption affected business relationships, prices of goods and services, as well as changes in relationships between Slovak companies and foreign business partners.

Keywords
Euro Adoption, Business Sector, Slovak Business Companies, Short-run Effects, Business Relationships.

JEL Classification
M21, E31, E42, F36.

1 Introduction

Membership of the Slovak republic in the European Union and consequently in the European Monetary Union (EMU) has been connected with many changes, new opportunities, as well as situations, which have been completely new for the Slovak economical agents and have caused many advantages or disadvantages, comparing with the past situation. One of the areas, which have been influenced by the European integration process, is area of the business relationships. However, in Slovakia there was not appropriate attention paid to the area of the business relationships, there was not a complex, and comprehensive analyse of the euro changeover effects on business relationships prepared, including the potential opportunities and threats for the business companies.

Identification of the positive and negative effects of the euro currency on the business relationships is complicated, mostly because economic agents in different EMU member states have to face different conditions in the economic, political, social, psychological, cultural and public areas. Existing papers and analyses are based only on the field researches, which were done in particular euro area member states. Results from these researches have served for making summaries and conclusions about features, which are considered as common for the monetary union.

However, the economic conditions that existed at the time of the EMU creation in the 2002 were completely different from the conditions at the time when Slovakia entered the EMU. This is also reason, why not all generally accepted advantages of the common currency have been fully presented in Slovakia yet (eventually, their effects are at least partly eliminated by the economic crises). According to us, it is not possible to generalise and apply all results from the researches from other countries to the Slovakia ´s conditions. That is why it is difficult to identify all positive as well as negative effects of the euro currency on the business relationships of the business companies in the Slovak Republic.

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In spite of that, we set basic assumption of our research as the fact that business companies should be affected by the short-run effects of the euro changeover (short-run period because our reserach was conducted within short period after joining monetary union).

2 Pros and costs of the membership in the European Monetary Union on the business sector

In the research, we focused on the limited area of relationships that could have been affected by the euro currency. The reason for such a narrow view is the fact, that there is only limited availability of the theoretical papers and field researches that reflected membership in the euro area from the entrepreneurs´ point of view. Majority of the theoretical papers focus on the macroeconomic reasons of the monetary integration such for example nominal and real convergence, theory of the optimum currency area, theory of the economy cycles and shocks, eventually they focused on the euro effects on the households (Baldwin and Wyploszh, 2013, Frankel and Rose, In: Šikulová, 2006). Even more, theoretical sources describe only expected pros and costs of the monetary union membership and there are no relevant papers monitoring the real situation in the euro area member states, including the comparison with the third countries.

Because of the short existence of the EMU, pros and costs of the euro currency on the business sector are still only estimated or they are are determined according to the empiric field researches. In 1990, there was a field research for the expertise "One Market, One Money" conducted. In this research, entrepreneurs were asked what are their expectations about the microeconomic consequences of the euro adoption. According to the research, entrepreneurs considered single market with the common currency as much more effective than just creation of the single market. More than 80 % of respondents had positive expectation about the single market creation and euro adoption at the same time (One Market, One Money, 1990). Because this research was realised few years before the real euro adoption, its results shows only expectations of the entrepreneurs, not the real pros or cons of the common euro currency.

American economist A. Kruft studied advantages of EMU creation for the business companies few years before euro adoption. He based his research on the experience from the American market that is, according to the usage of the common currency, analogical to EMU on the European continent. According to him (Kruft, 1998), euro adoption could influence all the aspects of the business relationships realised within the euro area. Mostly increasing of the competitiveness and necessity to introduce new and innovative marketing strategies will be visible. It will lead to the ambition to create standard offer of the goods, standardization of the goods´ packages and companies will be able to launch global advertisings to address much more consumers. However, pricing and distribution will be the most influenced parts of the marketing mix after the euro adoption. Within the price policy, euro adoption will lead to larger transparency and consequently to the possibility of consumers to compare prices in more countries. Because of that, companies will be forced to re-evaluate their strategy of the differentiated prices on particular markets. Further, after the euro changeover, companies will not be able to utilize strategy of so-called Baťa prices any more. To continue with the Baťa price strategy, companies will be forced either to change prices (increase or decrease prices) or to change volume of the packages. To keep the existing prices, or eventually decrease them (because of the pressure of the growing competition), companies can eliminate number of dealers or other agents. Further, companies can concentrate on the direct sell to end users even on the foreign markets. For Kruft (1998), expansion of the online internet shopping can be another possibility for the business companies. Such a shopping will lead to decreasing of the transaction costs and to elimination of the problems with the calculating prices in different currencies.

Andrew K. Rose (2000) conducted another empirical research; it was just after the introduction of the euro currency in the cashless payment system. Rose considered increasing of the trade possibilities for business companies as one of the most comprehensive advantages of the monetary union. According to him, monetary unions in general lead to macroeconomic costs and

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microeconomic pros. Single currency eliminate transaction costs and that is why it is cheaper to trade with the country using the same currency, than with the country using different currency. It is, however, necessary to find out, how much trades with single currency get cheaper and how much volume of these trades will increase. According to the Rose´s research, the volume of the trades within the EMU should increase three-times. In 2008, professor of the Washington University Theo Eicher realised another field research with the intention to find out how much EMU influenced the volume of the trade. According to his research, euro adoption led to the increasing of the trade volume, but only by approximately 40 % (Eicher, 2009). In addition, Baldwin and Wyploszh (2013) considered euro adoption as the advantage for the trade development, mostly because of the elimination of the long lasting uncertainty due to the changes in the exchange rates. This can motivate companies to start business cooperation with partners from other member states of the monetary union and to consider euro area as a new potential market. That is why single currency should lead not only to increasing of the turnover for the exporting companies, but also to increasing of number of exporting companies.

Gonda is one of the Slovak economists who studied pros and cons of the EMU. He considers prices transparency as one of the most reliable advantages of the single currency. Transparency in prices helps companies and consumers to compare prices and costs in different states easier. It consequently leads to creation of the more competitive environment within the whole EMU (Gonda, 2006).

Above mentioned researches and studies influenced our decision to find out at least few short-term pros and cons of the euro adoption on Slovak business companies.

3 Methods and methodology

In the paper, we present results of the original field research that we conducted in 2012. Research was realised by the mean of questionnaire. Questionnaire consisted of two sets of questions; first group of questions concerned on the statistical data of respondents (respondents were managers of the business companies), second group of questions helped us to verify research hypothesis.

In the research, 166 business companies were involved. They were chosen by the random selection from the list of business companies managed by the Statistical office of the Slovak Republic. According to legal form, 91 % of companies were private limited companies, 7 % were joint stock companies and 1 % were limited partnership and general commercial partnership. According to the number of employees (based on the Commission recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises), 37 % were medium-sized enterprises, 31 % were micro companies and 26 % were small companies. Large companies represented 6 % of all respondents.

We verified goodness to fit of the observed values by the mean of chi square test. Our research was adequate and representative according to the seat of the business company, legal form and main subject-matter of the business activity. Research was not adequate according to the number of employees (there was not enough respondents in micro companies and too much respondent in small and medium-sized companies). However, results from the Flesh barometers and experience from other countries confirmed that companies, which employed more employees and reach higher turnover, were able to identify and evaluate euro adoption effects more accurately (source: Preparing for the euro: Survey among enterprises in the Republic of Cyprus, Preparing for the euro: survey among Slovak enterprises). That is why we considered our research adequate to reflect real situation in Slovak companies after euro adoption.

In the research, we focused only on the standard situations in business relationships, which could occur regardless the legal form, number of employees of the company, organisation structure, and foreign capital in the company, activities of company or other features. In this article, we present results linked with three groups of research questions:

1. Expectations of companies regarding the effects of euro adoption and the reality,

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2. Costs of the euro adoption for business companies and reflection of the costs in the price of goods and services,
3. Euro currency as an accelerator of the changes in the business relationships with the partners from other countries of EMU.

Based on the above mentioned research questions we set following research hypothesis

H1: We assume, that the majority of the business companies expected positive influence of the euro adoption on the business relationships and their expectations were also fulfilled.

H2: We assume, that despite the persisting problems within the euro area majority of business companies consider membership of Slovakia in monetary union rather positive than negative.

H3: We assume that most of the companies faced only short run costs due to the euro changeover and because of these costs prices of their goods and services increased just slightly (not more than 5 %).

H4: We assume that the majority of the business companies with the partner in other state of the euro area have taken advantage of the euro adoption to start their activities on the new markets within the euro area and to strengthen business relationships with existing partners.

To verify hypotheses, we used mostly nonparametric binomial test and Spearman's rank correlation coefficient to measure statistical dependence between variables.

In the following text, we present results of our field research and verification of research hypotheses.

4 Expectations of companies regarding the effects of euro adoption and the reality

Positive or negative expectations of business companies regarding the euro adoption effects were influenced also by the preparedness of companies for single currency. By the means of questionnaire, we tried to find out what companies expected before entering to monetary union and whether their expectations were fulfilled. We found out that more that 83 % of business companies had positive or more positive expectations before entering to the monetary union. Less than 11 % of companies had negative or more negative experience and only 6 % of companies had no any expectations.

Regarding the particular areas of business relationships, 81,3 % of companies had positive expectations in the area of realization of payments to foreign partners and receiving payments from abroad, 71,1 % in the area of decreasing of the fees for non-cash payments to other member states of the euro area. On the other side, there were no positive expectations regarding availability of the information about business partners´ financial situation, legal certainty in the business relationships and prices of the final goods and services.

Using the nonparametric binomial test, we verified hypothesis H1 (We assume, that the majority of the business companies expected positive influence of the euro adoption on the business relationships and their expectations were also fulfilled). On the probability level $\alpha = 0{,}05$ we confirmed that business companies expected more advantages than disadvantages after entering to monetary union (they had positive expectations or more positive expectations). Regarding the fulfilment of their expectations, we were able to verify and approve it only regarding the bank fees for non-cash transactions to other member states of the monetary union and regarding realization of payments to foreign partners and receiving payments from abroad. This result confirmed that decreasing of the transaction costs is one of the most considerable advantages of the monetary union that is available also for the business sector. Even more, it is only one pros linked with the business companies that was matter of interest before euro adoption itself. This could be also the reason, why business companies expected advantages only in the area of bank fees for non-cash transactions to other member states of the monetary union and regarding realization of payments to foreign partners and receiving payments from abroad.

Referring to other parts of the business relationships, we were not able to approve this hypothesis. Either only half of respondents confirmed that their expectations were fulfilled

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(possibility to conclude more affordable business contracts, availability of more bank products and services, increasing of the status of the company, improving of the business environment in Slovakia), or according to the most of respondents expectations were not fulfilled at all (availability of information about business partners´ financial situation, legal certainty in the business relationships and prices of the final goods and services, availability of the financial products form foreign financial institutions, decreasing of prices of the inputs, improving of the business conditions with foreign business partners).

We verified hypothesis H2 (we assume, that despite the persisting problems within the euro area majority of business companies consider membership of Slovakia in monetary union rather positive than negative) by the means of binomial test on the probability level $\alpha = 0{,}05$. We proved that for the majority of business companies consider membership in the euro area at the time of the economic crisis, as the advantage and they prefer to remain in the monetary union.

5 Costs of the euro adoption for business companies and reflection of the costs in the price of goods and services

One of the disadvantages connected with the euro adoption are extra costs that all entrepreneurs (including business companies) had to faced. National Bank of Slovakia in cooperation with the Statistical Office of Slovak Republic conducted a research in 2006 which aim was to find out what kind of costs entrepreneurs in Slovakia expect regarding the euro adoption. In the table 1, there is a list of estimated (expected) costs for the euro adoption in different types of entrepreneurs (according to number of employees). This research was based on the assumption, that there will be only one-time unrepeated costs.

Table 1. Estimated costs for the euro adoption in Slovak enterprises in 2006

Number of Employees	Ration of costs on the annual turnover (%)
Small and medium-sized enterprises	
Micro enterprises 0 – 9 employees	0,22
Small enterprises 10 – 49 employees	0,29
Medium-sized enterprises 50 – 249 e.	0,28
Mean Value	0,27
Large enterprises	
250 – 499 employees	0,24
500 – 999 employees	0,11
1000 and more employees	0,07
Mean Value	0,09

Source: NBS, Odhad možných vplyvov zavedenia eura na podnikateľský sektor v SR.

Within small and medium-sized enterprises, more than 24 % of respondents stated that they did not expect any extra costs linked with the euro adoption. About 17 % of the respondents were not able to estimate volume of the extra costs (Odhad možných vplyvov zavedenia eura na podnikateľský sektor v SR, 2006). Because this research was conducted 3 years before real euro adoption, it is possible that entrepreneurs did not have all necessary information about all areas in their activities that will be affected by euro adoption (such as dual circulation period and dual pricing, changing of the information technologies, changes in cashiers, etc.). This is also possible reason, why entrepreneurs were not able to estimate extra costs for euro adoption realistically.

According to our research we confirmed that 21 % of business companies (from them 94 % belongs to small and medium-sized enterprises) did not have any additional costs connected with the euro changeover. It is 3 percentage points less that was reached in the research conducted by the National Bank of Slovakia in 2006. This number is, indeed, very surprising, because every business company had to face at least minimum additional cost for euro changeover (at least for the change of the accounting and earning software, dual price displaying and necessity to change price lists,

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change of the asset values and registered capital). That is why this result is mostly influenced by the fact that small and medium-sized companies did not realise these causalities or they did not perceive them fully.

About 12 % of business companies stated that they have not only one-time unrepeated costs, but their costs existed in the whole year 2009. Nearly 6 % of business companies had had ongoing extra costs linked with euro adoption even in 2012 (for information technologies, for adding or updating accounting and wage software, displaying the informative price is Slovak cowns, for training of employees to manipulate with the euro cash and for the extra fees for banks for the euro coins transactions).

Extra costs linked with euro adoption had to be managed by the business companies themselves. One of the possibilities they had was including the extra costs in the final price of particular goods and services.

Prices of goods and services in the market-oriented economy are created as equilibrium between the supply and demand of the goods and services. However, it is evident in Slovakia, that starting from 2008 prices were influenced also by the euro adoption and economic crisis. Despite the fact, that it is not possible to consider changes in the price level only because of the euro adoption, we asked business companies whether they involved costs for the euro changeover into the price of their goods and services. Only 9,6 % of business companies increased prices of goods and services proportionally to the extra costs. Less than 11 % of companies increased prices partly because of the euro adoption costs (increase in prices was lower than total costs). Rest of companies (about 80 %) did not change their prices due to the extra costs of euro adoption. More than 45 % of companies stated, that in 2011 they had the same price level of goods and services that in 2008. About 26 % of companies had even lower prices in 2011 than in 20008 and only 29 % of companies increased their prices. These data, however, do not represent exactly how the euro adoption influenced changes in the prices. But we can assume, that introduction of the euro currency influenced prices of goods and services at least partly.

Using the nonparametric binomial test, we verified hypothesis H3 (we assume, that most of the companies faced only short run costs due to the euro changeover and because of these costs prices of their goods and services increased just slightly (not more than 5 %))). On the probability level $\alpha = 0,05$ we confirmed that most of the companies had only one-time unrepeated costs linked with the euro adoption. However, we were not able to approve that companies reflected extra costs in the increase of the prices of their goods and services. We also did not confirm, that companies had higher prices in 2011 than in 2008. By the means of the Spearman's rank correlation coefficient we tried to measure statistical dependence between the extra costs of euro adoption and the percentage increase or decrease of the price of goods and services. This coefficient confirmed only weak dependency between price changes and euro adoption costs. We even did not approve, that in case of those companies who increased prices as a consequence of the euro changeover costs, such an increase was only minimal (most of the companies increased prices of more than 5 %).

6 Euro currency as an accelerator of the changes in the business relationships with the partners from other countries of EMU

One of the advantages of the euro adoption should be also elimination of the trade barriers for the business relationships between partners from different states of the monetary union (mostly because of elimination of exchange rate risk, decreasing transaction costs, price transparency, etc.). By the means of questionnaire we tried to find out whether companies took advantage of the euro adoption for strengthen existing or for creating new business relationships.

Only 16 % of all business companies started new relationships with partners form other member states of the monetary union due to the euro adoption. Most of these relationships were created with partners from Austria (31 % of new relationships) and Italy (14 % of new relationships). One of the reasons to create new relationships with Austrian business partners could be a fact, that Austria is

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the only one country neighbouring the Slovakia, which is a member state of the monetary union. Direct cross-border cooperation helps to decrease also other costs that are linked with the foreign trade (such as transport and logistic costs, business trips costs, etc.). This is also strengthening by the fact, that 88 % of companies that started new relationships with Austrian partners are located in Bratislava region.

Reasons why business companies did not start new cooperation from partners form other member states of the monetary union were different. About 10 % of companies cooperated with partners from monetary union even before euro adoption; more than 17 % of companies are not able to extend their activities abroad because of the subject-matter of their business activities; about 3 % of companies are retail companies covering just small area of Slovakia and more than 4 % of companies had partners only from countries that are not member states of monetary union. About 10 % of companies would like to extend their business activities to other member states of euro area but they were not able to do that by the 2012 due to the economic crisis.

We focused also on the business conditions and changes of them after the euro adoption. Only 11 % of companies confirmed that euro adoption in Slovakia caused changes in existing business conditions. These changes covered mostly change in prices, delivery terms, possibility to pay invoices in more part-payments, extending date of payments and decreasing amount used by partners as retention. Partners from euro area also set a financial limit as a part of business conditions. Slovak companies have longer date of payments within this limit. However, most of them had to pay invoice sum above this financial limit in advance. This limit is usually linked with the insurance coverage (and insurance companies offered higher coverage for Slovak companies after Slovakia joined the monetary union).

To verify hypothesis no. 4 (we assume, that the majority of the business companies with the partner in other state of the euro area have taken advantage of the euro to implant their activities on the new markets within the euro area and to strengthen business relationships with existing partners) we used binomial test. However, we were not able to approve this hypothesis on the probability level $\alpha = 0{,}05$. New opportunities arising from the euro adoption were effectively exercised only by the small quantity of business companies, and most of them implement their activities at the Austrian market (most of them were from the Bratislava region). It is also not possible to observe any special improvement in the existing business relationships (for example in the business conditions or price conditions). This could be influenced by the fact, that creating of new relationships due to the euro adoption will be more evident in the long-term horizon than in the short-term. Even more, economic crisis that in 2012 still persisted, could had also negative effect on the creation of new business relationships.

7 Conclusion

Membership of the Slovak Republic in the European Union and consequently in the European Monetary Union has been connected with many changes, new opportunities, as well as situations, which have been completely new for the Slovak economical agents, including business companies. The aim of this paper was to present particular results of our field research that we conducted in 2012. The aim of the research was to compare theoretical and expected pros and cons of the Slovak Republic membership in the monetary union with the real experience and perceptions of the business companies (it means euro adoption effects on the business sector).

We have found out that identification of the positive and negative effects of the euro currency on the business relationships is complicated, mostly because economic agents in different EMU member states have to face different conditions in the economic, political, social, psychological, cultural and public areas. Existing papers and analyses are based only on the field researches, which were done in particular euro area member states. However, economic conditions at the moment of the EMU creation in the 2002 were completely different from the conditions at the moment of the Slovakia´s joining to the EMU. This is also reason, why not all generally accepted advantages of the

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common currency have been fully presented in Slovakia yet (eventually, their effects are at least partly eliminated by the economic crises).

By the means of our field research, we can make two basic conclusions:

1. Elimination of the transaction costs for the payments to euro area as well as elimination of the exchange rate risk are evident advanatages for the business companies linked with the euro adoption. These advantages are being considered as general ones; however, mostly companies with partners from other EMU member states can fully take advantage of them. On the other side, companies that focused only on the activities on the Slovak market have not experienced this advantage at all (even if they considered it as euro adoption pros). Most of the business companies confirmed that euro adoption led to the elimination of the costs linked with the direct payments to other countries of the monetary union (more than 66 % of companies considered elimination of transaction costs for the most important advantage of the membership in the monetary union). Business companies also confirmed that elimination of the exchange rate risk is another big advantage of the euro adoption. However, it was confirmed mostly by the companies involved in the foreign trade with partners from euro area (63 % of companies proved this fact).
2. It is very difficult to distinguish between the euro adoption effects and other phenomena that have occurred in Slovakia in the last few years. Most of the euro adoption effects on the business sector were for companies evident immediately in 2009 (even if effects have existed up to now and will exist also in the future). Dual circulation period, dual pricing and necessity to adapt information technologies for euro currency caused extra costs for all business companies (however, 21 % of companies in the research believed that they did not have any additional costs linked with euro adoption). We are not able to associate changes in the prices of goods and services only with the extra costs of euro adoption (prices should depend mostly on the demand and supply). In the period of 2008 – 2012, economic crisis also influenced the prices, because of the decreasing of demand. Even more, fiscal influence of the government from the 1.1.2011 (increasing of value added tax from 19 % to 20 %) caused increase of the prices. At least these three phenomena were joined together to influence prices of goods and services from 2008 up to now.

Effects of the euro adoption that we found out and verified by our field research have mostly short-term character. We are sure, that in the medium-term and long-term period there will be much more effects of the single euro currency evident also for the business companies. We consider necessary to continue with the researches of euro effects on business companies also in the future, and to compare results within different time periods as well as between different member states of the euro area. It will help to strengthen the importance of the common currency not only for the Slovak companies but it could serve also as the background for the future decisions of counties, which plan to join monetary union.

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NATIONAL AND REGIONAL UNEMPLOYMENT: THE CASE OF HUNGARY

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Abstract
The paper deals with development of national and regional unemployment in Hungary. The unemployment rate differed significantly among Hungarian NUTS 3 regions during the period 2005 and 2013. According to previous studies high unemployment is caused by drop in economic performance or by some structural problems in the region. We can see that the development of the Hungarian national unemployment rate was correlated with the economic cycle. We used Hungarian Labour Office´s monthly data during the observed period between the years 2005 and 2013. These data were seasonally adjusted using Demetra +. We have applied 2005 registered unemployment methodology. In total, we had 108 observations. We also applied the Hodrick-Prescott filter for estimating the natural rate of unemployment. This method is often used for estimating the potential output and is possible to use in the case of unemployment. Our empirical results show that in most regions the real unemployment rate was lower than the natural rate of unemployment during the pre-crisis period. However, this gap was not the same in all regions.

Keywords
Hodrick-Prescott Filter, Hungary, Regional Disparities, Unemployment Rate.

JEL Classification
J14, R10.

1 Introduction

In labour economics, unemployment is seen as a phenomenon when there is a market surplus of supplied amount of labour in the market. In other words, unemployment occurs when a person who is actively searching for employment is unable to find a job. Unemployment is often used as a measure of health of the economy. The most often used measure of unemployment is the unemployment rate. This is usually the number of unemployed persons that are actively searching for employment divided by the number of people in the labour force.

As written above, there is no doubt that the business cycle influences unemployment. How-ever, the impact of economic downturns on structural unemployment will depend on many factors. By weakening the labour market situation, economic downturns can lead to an increase in structural unemployment; through hysteresis effects whereby the path of actual unemployment influences structural unemployment (see Furceri and Mourougane, 2009). The level of structural unemployment reflects many different aspects, i.e. the wage bargaining system, the unemployment benefit system including eligibility and availability rules, tax rates, the scale and character of active labour market measures, hiring and firing rules, the educational composition of the labour force, the intensity of product market competition, etc.

The aim of this paper is to compare labour market development in the Hungarian NUTS 3 regions in the period between the years 2005 and 2013. We also compare development of the registered unemployment rate in comparison with the natural rate of unemployment. For this purpose, we applied the Hodrick-Prescott filter as the method how to estimate the natural rate of unemployment. The paper is structured as follows: the introductory section deals with methodological-theoretical aspects of the natural rate of unemployment and its relationship with the real unemployment rate and economic performance. In the second part, we described the method (the Hodrick-Prescott filter) used in the paper and in the third, empirical, section, we compared labour market development among the Hungarian NUTS 3 regions and the last part concludes.

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2 Theoretical background

The concept of the natural rate of unemployment (NRU) represents the hypothetical unemployment rate consistent with aggregate production being at the "long-run" level. This level is consistent with aggregate production in the absence of various temporary frictions such as incomplete price adjustment in labour and goods markets. The natural rate of unemployment therefore corresponds to the unemployment rate prevailing under a classical view of determination of activity. It is mainly determined by the economy's supply side, and hence production possibilities and economic institutions. If these institutional features involve permanent mismatches in the labour market or real wage rigidities, the natural rate of unemployment may feature involuntary unemployment.

Romer (2005) argues that the development of the theory of the natural rate of unemployment came in the 1960s where economists observed that the Phillips-curve relationship between inflation and unemployment began to break down. Until then, it was widely believed that a stable negative relation between inflation and unemployment existed. This belief had the policy implication that unemployment could be permanently reduced by expansive demand policy and thus higher inflation. Nevertheless, if we look at the original Friedman´s paper Friedman (1968) we do not find a clear, well-defined characterization of this concept, but rather description of some features that it should have. This resulted in the hysteresis hypothesis, which states that cyclical fluctuations in the labour market might affect the unemployment rate permanently and might lead to a long-term persistence. This means that the unemployment should be an integrated process (Gomes and da Silva, 2009).

According to Weiner (1993) when the economy is at the natural rate of unemployment, inflation tends to be constant from one year to the next. Individuals come to expect this inflation rate and base their decisions on it. Any attempt to use monetary of fiscal policy to reduce unemployment below the natural rate of unemployment ultimately results in higher inflation. Under such a scenario, aggregate demand increases, prices rise, but wages initially lag behind. As a result, firms have an incentive to hire more workers to produce more output and the unemployment rate declines. The decline in unemployment is temporary, however, because workers eventually demand higher wages. The increase in inflation, in contrast, is permanent. The central bank can set the inflation or the economic cycle. If the central bank follows the inflation variability, the society must tolerate the output gap variability. On the other side central bank can set the economic cycle goal. It means the central bank minimises the output gap variability (for more detailed analysis see Kotlán, 2001).

The OECD distinguishes between a long-run structural rate of unemployment (NRU), corresponding to Friedman's original natural rate, determined by economic fundamentals, and the nonaccelerating inflation rate of unemployment (NAIRU) as a short-run phenomenon. The latter may differ from the NRU, when structural or demand shocks occur. In general, the NAIRU is considered an extension of Friedman's natural rate when labor markets are not competitive and most of the literature overlaps the two concepts (Chiarini and Piselli, 2001).

3 Methodology

Based on Němec (2008), Tasci (2012), Tuleja and Tvrdon (2011) and da Silvia Filho (2010) we applied the Hodrick-Prescott filter (HP filter) for estimation natural rate of unemployment (NRU). This method is quite frequently used to filter the trend and the cyclical time series. To estimate the natural rate of unemployment, it is necessary to have just the time series of the unemployment rate – in our case the registered one. The only input parameter for the optimal filter, we have to specify, is an appropriate smoothing constant λ. It is defined as the ratio of dispersion of shock causing cyclical fluctuations and shocks affecting the growth trend Hloušek and Polanský (2007).

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The filter is characterized by this formula Hájek and Bezděk (2001):

$$Min\left\{\sum_{t=1}^{T}\left(\ln U_t - \ln U_t^*\right)^2 + \lambda\sum_{t=2}^{T-1}\left[\left(\ln U_{t+1}^* - \ln U_t^*\right) - \left(\ln U_t^* - \ln U_{t-1}^*\right)\right]\right\} \quad (1)$$

where U denotes the registered unemployment rate, U^* is the natural rate of unemployment, λ is a parameter determining the smoothness of the trend smoothing. For $\lambda = 0$ the natural rate of unemployment is equal to the real unemployment rate, for $\lambda \to \infty$ the trend will be a straight line.

For $\lambda = 0$ the natural rate of unemployment is equal to the real unemployment rate, for $\lambda \to \infty$ the trend will be a straight line. When choosing a value of smoothing constant λ, we then drew on generally accepted recommendations – experts consider optimal value 14400 for monthly data, 1600 for quarterly data and 100 for annual data (Rozmahel, 2011, Gerlach and Yiu, 2004, Zimkova and Barochovský, 2007 or Hájek and Bezděk, 2001).

The disadvantage of this method of estimation using the HP filter represents, according to Hajek and Bezdek (2001), the fact that the results are mainly at the end of the series somewhat skewed. In other words, it means that they tend to be least reliable at the end of the sample. However, adding a few data of forecasts to the end of the data sample has become standard practice.

To estimate the natural rate of unemployment, it is necessary to have just the time series of the unemployment rate – in our case the seasonally not adjusted unemployment rate. Monthly data between the years 2005 and 2013 (108 observations) obtained from the Hungarian Labour Office database were applied. The standard ANOVA (analysis of variance) was carried out in order to determine the presence of quarterly seasonality in the unemployment rates series. Unemployment rates usually exhibit significant seasonality. There are several methods and techniques to adjust time series, e.g. Census X12 and TRAMO/SEATS. The first program is produced and widely used by the U.S. Census Bureau. TRAMO (Time series regression with ARIMA noise missing observations and outliers) and SEATS (Signal extraction in ARIMA time series), was developed by Gómez and Maravall (1996). For more details to seasonal adjustment and TRAMO/SEATS method see Gómez and Maravall (1998). TRAMO preadjust the series to be adjusted by SEATS Maravall and Sánchez (2000). Both of them are officially used by Eurostat and Czech statistical office. Hence this method was applied to seasonal adjustment.

4 Empirical results

The real product of the Hungarian economy was below potential output for most of the period. It should be noted, however, that the negative output gap was not large. The growth rate of the Hungarian potential product was not as dynamic from mid-2000 as it was in previous years. In contrast, growth rate had accelerated in other countries, mainly due to different trends in investment and employment growth. Moreover, real GDP growth deteriorated in comparison with rest of Visegrad group. Divergence acquired its peak in 2006, when real GDP growth fell to 3.9 % at a time when most countries in the EU has accelerated their economic performance. The Hungarian economy showed signs of overheating at the beginning of 2008 (see figure 1), which can prove the existence of a positive output gap (it amounted to 3.3% in 2008Q1). The deep slump in economic performance as the impact of the economic recession in Western Europe also befell the Hungarian economy.

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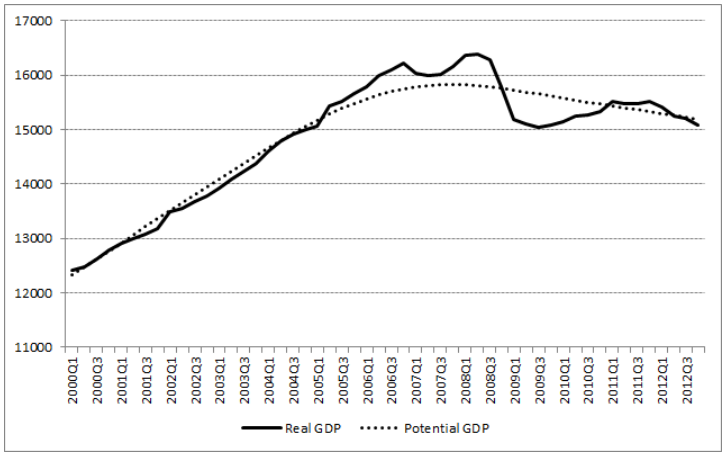

Figure 1. Output gap: national level (Source: OECD)

As well as others Visegrad group countries Hungary was remarkably affected by the global crisis, although the development was different due to problems of internal nature. This development was caused by unstable finances, large fiscal imbalances and high government debt. Given the size of fiscal imbalances, government had to raise state budget´s revenues, e.g. hikes in employee social contributions, value-added tax and business taxation. The resulting squeeze on households' disposable incomes and businesses was damping demand (OECD, 2007).

The Hungarian labour market can be described as rigid, though some shifts occurred during the observed period. In the first half of the observed period (until 2004), the unemployment rate was quite stable and stayed at a relatively low level. Since 2004, however, the rate of unemployment has increased and the rate of unfilled jobs has decline. Unlike other V-4 countries the subsequent development of the labour market was affected by the problems with which the economy struggled. As shown in Figure 2, the unemployment rate has increased continuously since 2008Q1, even labour market performance significantly improved in the other V-4 countries. This insufficient labour market development was influenced by bad economic situation in the country which was caused by unstable finances, large fiscal imbalances and high government debt. Given the size of fiscal imbalances, government had to raise state budget´s revenues, e.g. hikes in employee social contributions, value-added tax and business taxation. Unlike other Visegrad group countries estimated structural unemployment rate increased during observed period (see Figure 2). Moreover, cyclical component of un-employment did not have so significant effect on total unemployment.

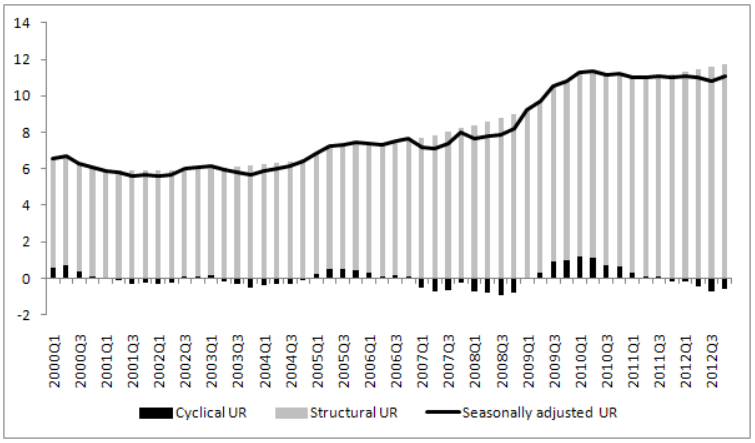

Figure 2. Decomposition of unemployment: national level (Source: OECD)

In this paper, we used data from national labour market authority´s database. Basically, regions are divided, based on the Eurostat´s methodology NUTS, into three territorial levels: (i) NUTS 1

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territorial unit as major regional countries; (ii) NUTS 2 territorial unit which usually corresponds to the level of lower level of the administrative division and (iii) NUTS 3 territorial unit which generally corresponds to the lowest administrative level. We used data at the relevant administrative level – "megye" for Hungary (20 regions at the NUTS 3 level). As seen above NUTS 3 territorial level corresponds to natural administrative units in Hungary countries with their own regional government (see figure 3). 12 of 20 regions are predominantly rural, six are intermediate, and two, which form the statistical region of Central Hungary, are predominantly urban.

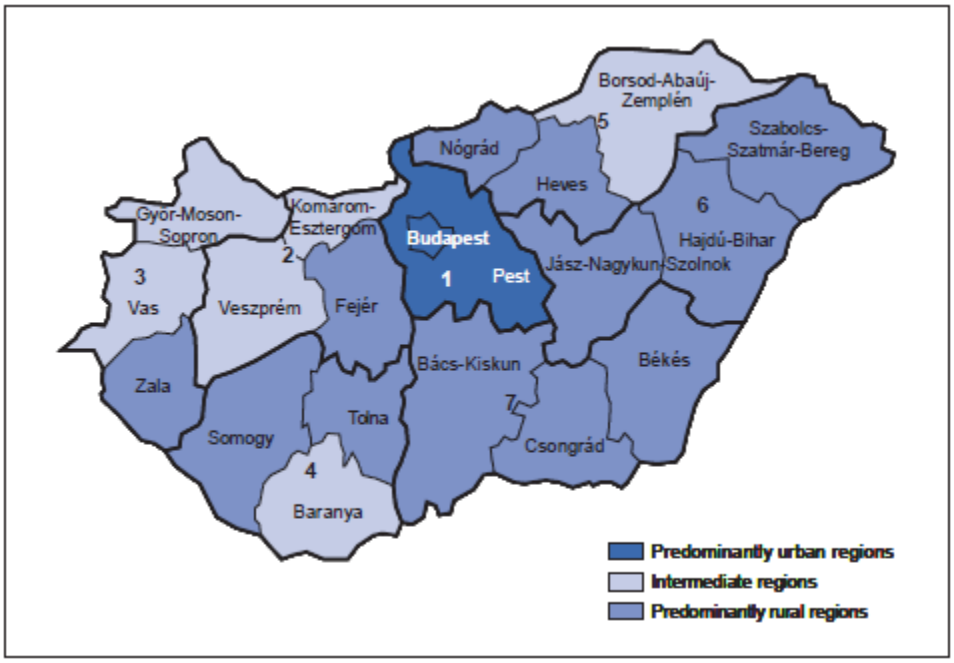

Figure 3. Typology of Hungarian regions (Source: OECD)

According to Hungarian National Development Plan the spatial differences are pervasive at different levels: between Budapest and the rest of the country; at regional level, between the north-western regions, and the lagging behind regions of South Transdanubia and eastern regions; microregional level, where the rise or decline of industries together with the geographical endowments shape the differences; or at local level, between the cities and their agglomeration; or finally between the central and the peripheral border regions.

If we look at labour market development in the Hungarian regions we can see that some regions were below the national average and some were above this average (see Figure 2 – regions with similar or higher unemployment rates in comparison with the national one are on the left side of the figure and regions with the lower unemployment rates are on the right side of the figure). However, we found one common feature – the registered unemployment rate was increasing in almost all regions before the crisis even fact that other Visegrad four countries experienced sharp decline in the unemployment rate. Thereafter, labour market´s development was similar with other V-4 countries - the unemployment rate rose and it returned to a high level within four months.

As mentioned above, regions on the left side of the figure 4 are considered as problematic regions with very high unemployment rate - the number of unemployed has stayed higher in these regions in comparison with other regions and it means a longstanding problem of highly regionalized structural unemployment.

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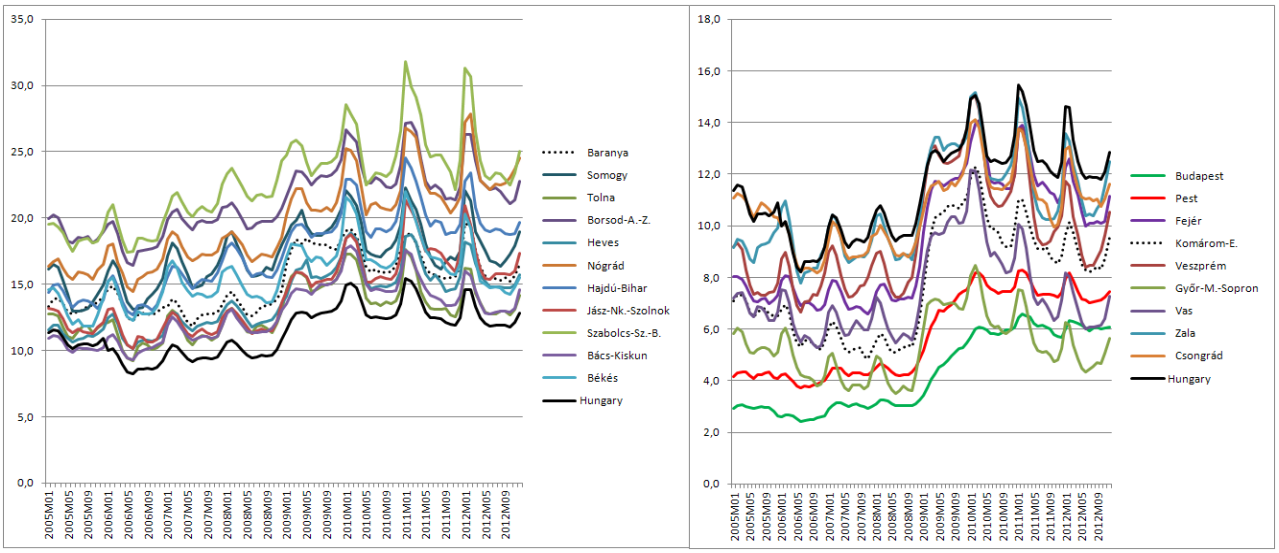

Figure 4. Development of the national unemployment rate in Hungary, monthly data 2005-2013 (Source: Hungarian National Labour Office)

Hungarian labour market´s development (see Figure 4) – the lowest unemployment in comparison with the national level existed in the Budapest region. In addition, we can find more regions with lower unemployment rate – Győr-Moson-Sopron, Pest, Komárom-Esztergom, Fejér or Veszprém region. On the other hand, there were some regions with significant problems leading to poor labour market performance – e.g. Szabolcs-Szatmár-Bereg, Borsod-Abaúj-Zemplén or Nógrád region. These problems are reflected in particular by the fact that the highest unemployment was reached within the Visegrad group´s regions. Moreover, last data indicate that the situation might get worse. If we look at a range between reached minimum and maximum, the situation is the same as in Poland or Slovakia. The only difference lies in the fact that the values are shifted to the right; in other words it means that the values are higher. We can see that the most problematic regions experienced huge difference between the minimum and maximum (see figure 5).

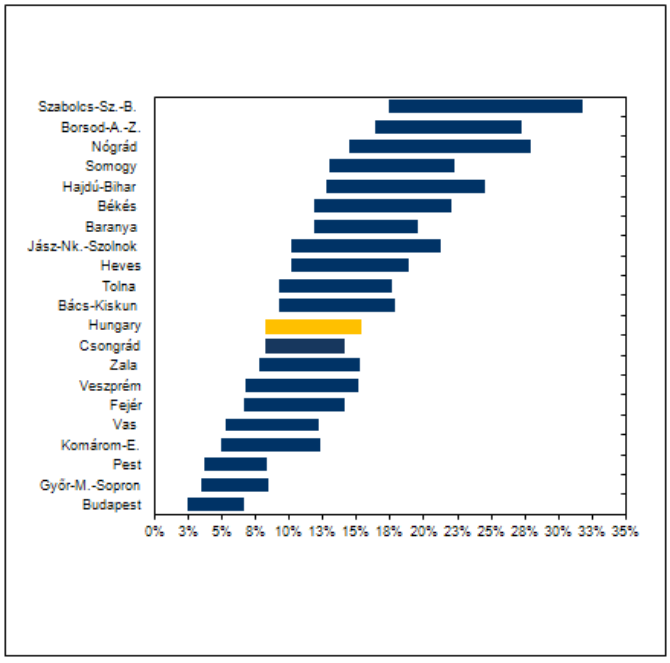

Figure 5. The minimum and maximum range of regional unemployment rate in Hungary, 2005-2014 (Source: Hungarian National Labour Office)

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Firstly, we have chosen region with the lowest unemployment rate (Budapest) – see figure 6. Both the real unemployment rate and the estimated natural rate of unemployment were significantly lower than in the rest of regions. This is mainly due to the position of the capital city which is the heart of the Hungarian economy. Its position is similar to which has Prague in the Czech Republic or Bratislava in Slovakia.

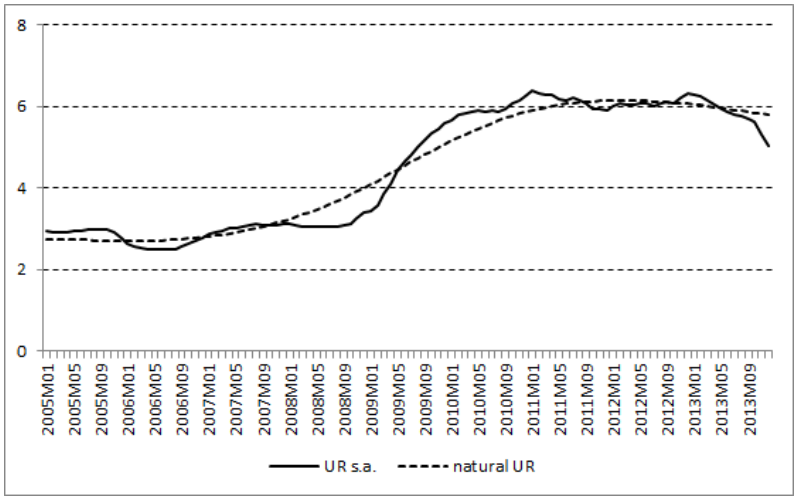

Figure 6. Natural and real unemployment rate in Budapest region, monthly data 2005-2013, seasonally adjusted (Source: Hungarian National Labour Office)

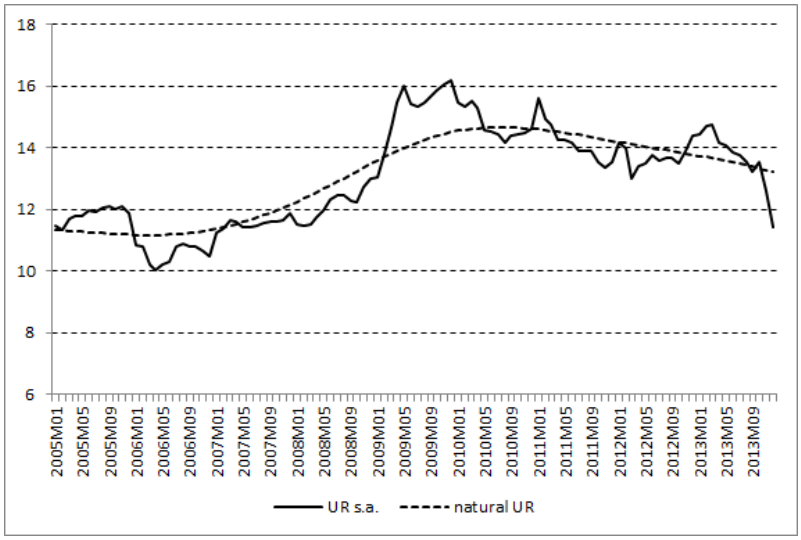

Figure 7. Natural and real unemployment rate in Tolna region, monthly data 2005-2013, seasonally adjusted (Source: Hungarian National Labour Office)

Figure 8 illustrates situation in the most problematic region – Szabolcs-Szatmár-Bereg. This region had the highest unemployment rate due to its agriculture and eastern location. The similar situation was also in Borsod-Abaúj-Zemplén and Nógrád region. However factors are different – these regions used to be the most important Hungarian basic of heavy industry before the transition. Economic transition and restructuring of production after 1989 (loss of some traditional industries and sectors – especially mining and quarrying, metallurgy and some engineering fields, construction and chemical industry), among other things led to extensive changes in industry structure and changes in the distribution of economic activities of the regions´ economic base. Firstly, both the real unemployment rate and the natural rate of unemployment were significantly higher than in other regions during the observed period.

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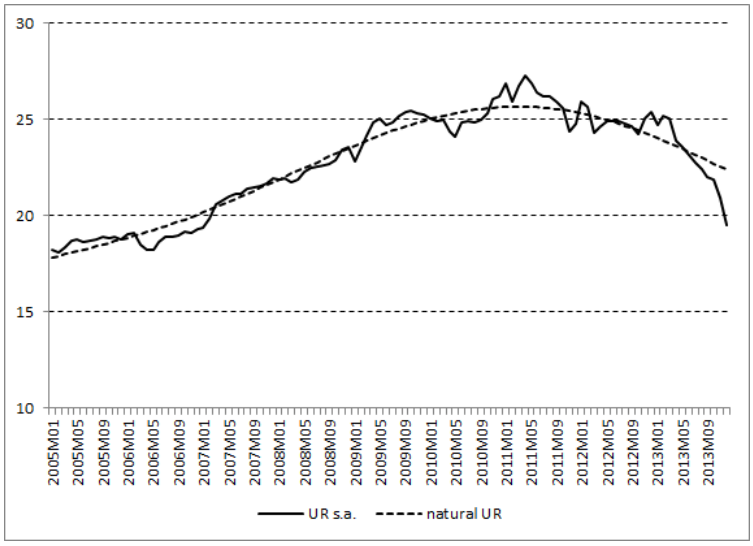

Figure 8. Natural and real unemployment rate in Szabolcs-Szatmár-Bereg region, monthly data 2005-2013, seasonally adjusted (Source: Hungarian National Labour Office)

However, deterioration of labour market performance did not have so dynamic development. Secondly, an interesting fact is that levels of both rates did not differ remarkable, especially in the pre-crisis period. It means that some structural problem still existed in these regions.

5 Conclusion

The aim of this paper was to examine development of labour market performance, especially in the regions during the period 2005–2013. We compared development of the registered unemployment rate and the estimated natural rate of unemployment. We applied the Hodrick-Prescott filter (HP filter) for estimation the natural rate of unemployment. This method is quite frequently used to filter the trend and the cyclical time series. Research in this study is based on regional monthly data between the years 2005 and 2013 (registered unemployment rate) which were published by the Hungarian National Labour Office).

We have found out the difference between the estimated natural rate of unemployment and the unemployment differed among the regions. We found that the positive unemployment gap was lower in the problematic regions like the Szabolcs-Szatmár-Bereg Borsod-Abaúj-Zemplén and Nógrád regions. These findings suggest that these regions still have to face some structural problems and the labour market is not as flexible as in the rest of regions. In addition, we also found that the natural rate of unemployment has shifted permanently higher in comparison with the pre-crisis period.

6 Acknowledgement

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LAST TEN YEARS OF THE VISEGRAD GROUP COUNTRIES IN THE EU

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Abstract
In 2004, when the Czech Republic and other countries of the Visegrad Group joined to the EU, were considered more economically weaker countries but also as economies with a big potential of economic growth. With a population of over 64 million inhabitants representing 13 % of the EU28 was to the total economic output in 2003 only about 3,7 % of the EU28. After ten years of membership in the EU countries become economically stronger and their importance for the European Union increased. The economic power of the V4 countries in comparison with the EU28 measured by the GDP over the last ten years has increased nearly half. The goal of this paper is to evaluate the positives but also the negatives membership of the V4 countries in the EU after 10 years. From this paper we can see that the European Union was more popular during the first few years after EU enlargement in 2004. But in last five years we observe down warde trend in its popularity.

Keywords
Visegrad Group, Economic Level, External Balance, Risk of Poverty, Living Conditions.

JEL Classification
O1, O4.

1 Introduction

In 2004, whene the Czech Republic and other countries of the Visegrad Group joined the EU, were then considered more economically weaker countries, but on the other hand also for economies with huge growth potential. With a population of over 64 million, representing 13 % of the EU28 amounted to the total economic output in 2003, only about 3,7 % of the EU28. After ten years of membership in the EU countries become economically stronger and their importance for the European Union increased.

The economic power of the V4 countries due to the EU 28 as measured by the GDP over the last ten years has increased nearly half. The aim of this paper is to evaluate the positives but also the negatives membership of the Czech Republic in the EU after 10 years.

2 The economic impact of EU membership for the countries of the Visegrad Group

During the last decade, the economies of the Visegrad Group V4) in the standard used indicators of economic performance strongly closer to other EU countries. With a lot of macroeconomic indicators we can present the positive effects of EU membership.

Gross domestic product per capita V4 countries measured in purchasing power standards increased from 49 % of the EU15 average in 2003 to 65 % in 2013. It means, that difference in income between the V4 countries and old EU member states decreased by approximately one third. According the theory of approximation income countries with a lower initial level of economic development (such as Slovakia and Poland), grew much faster than advanced Czech Republic. Hungary in the convergence of economic level, unfortunately to fall behind, mainly as a result of to domestic political errors. Double deficit in the period 2003 – 2006 and unorthodox measures undermined the growth potential of Hungary, which Poland and Slovakia overcome.

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Figure 1 presents convergence of the V4 countries:

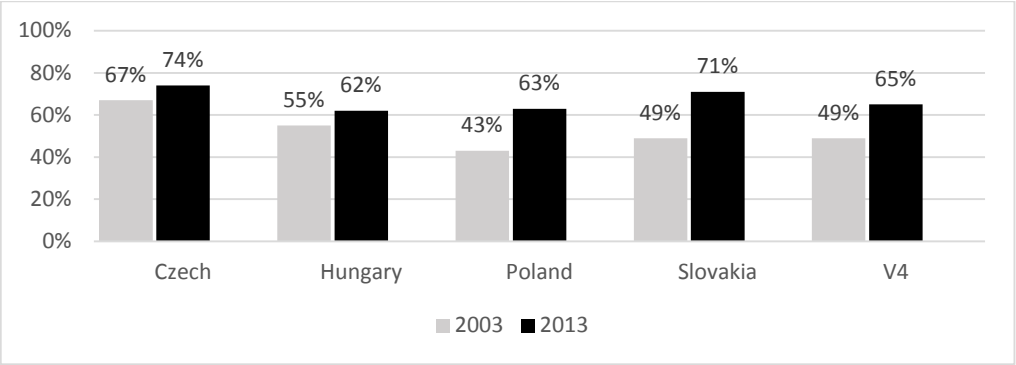

Figure 1. GDP per capita in PPS (% EU 15) (Source: Eurostat)

As we can see from Figure 1, the process of convergence of all V4 countries took place in the last ten years. Overall, economic level in these economies increased by 16 percentage points over the last ten years. Figure 2 shows the value of GDP generated per capita in purchasing power standards. In this case, it is possible to observe the fastest convergence process in Poland (an increase of 7 000 PPS) and the fastest converging economy – Slovakia (an increase of 7 900 PPS).

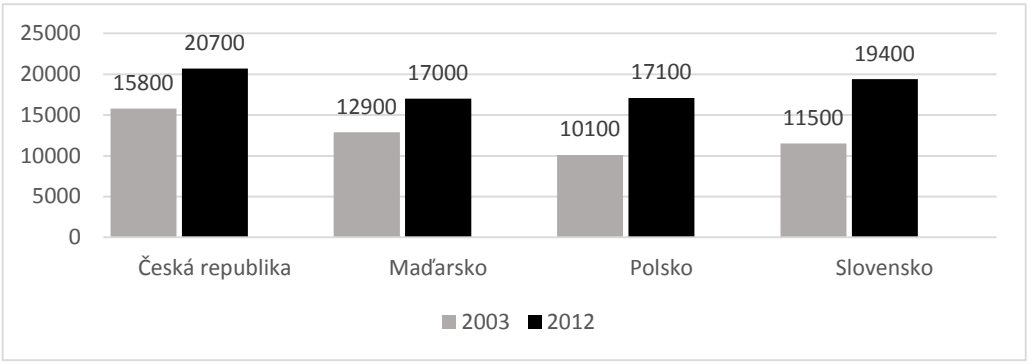

Figure 2. GDP per capita in PPS (Source: Eurostat)

2.1 Effect ot the External Balance

Another indicator of positive ratings of the V4 countries is the share of export to the EU. Also this indicator has seen a significant increase over the last ten years. It shows a growth of competitiveness of the V4 countries. Export of these countries grew three times faster than in the EU15. In this time, this region is the fourth largest exporter in the EU28, which it gained important position among European exporters.

Export grew espacialy thanks to export to the old EU member states (EU15). However, countries of theV4 were also successful in other markets outside the EU. Their export to countries outside the EU28 have increased four times since 2003. EU enlargement mean also a unique opportunity for companies in the Western Europe for a newly built or expanded production capacity in the new territories of the EU, which would make them more competitive as the EU internal market and as the external market.

The most important export promotion sector in the V4 countries has become a production of cars. The global auto industry is a key sector of the economy for every major country in the world. Automotive industry produces consistently surpassed production cars of the old EU member states. V4 countries became after Germany the second largest producer of cars in the EU.

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Changing of the export performance in the V4 countries is reflected in the following Figure 3, which shows the growth of the share the export of V4 on overall export performance of the EU28 countries.

Figure 3. Exports of the V4 countries (% EU 28) (Source: Eurostat)

The last economic crisis has shown how dangerous unilateral territorial and commodity structure of foreign trade is for keeping of macroeconomic stability. Greater diversification in the territories where the export of V4 countries is going, would undoubtedly help to reduce risk to external balance and loss markets for domestic exporters in case of negative exogenous shocks. If the effective demand decline in countries, where the V4 countries export, it touches especially goods and services that people do not need for their daily needs. Therefore, the diversification of the commodity structure of foreign trade would be suitable for reduce the risk of significant impact on the macroeconomic balance in the case of global economic crises.

The development of production cars in the V4 countries is documented in Table 1. An increase share in car production we can see in all four economies during the period 2003 – 2013. A significant change is particularly evident for the Czech Republic and Slovakia, for which the automotive industry is a key sector of the economy.

Change in the period 2013/2012 shows how sensitive for change consumer demand is this sector. This factor may have a significant impact on the overall macroeconomic balance.

Table 1. Production of cars

	production of cars		**change**	**production of cars**	**change**
	2003	2013	2013/2003	2012	2013/2012
Czech	441 699	1 132 931	256,5 %	1 179 938	-3,9 %
Hungary	126 116	222 400	176,3 %	217 840	2,1 %
Poland	322 061	583 258	181,1 %	647 803	-9,9 %
Slovakia	281 347	975 000	346,5 %	900 000	8,3 %

Source: IOCA.

Figure 5 shows that the EU economies are for V4 countries crucial partners in trade exchange. On the other side, presented time series suggests a slight decline of this share, which can be justified just by the new export opportunities outside the EU.

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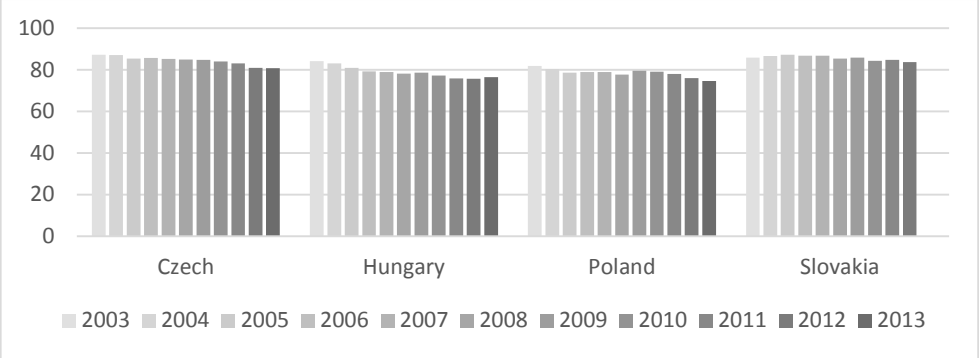

Figure 4. Share of exports to EU 27 as a % of total exports (Source: Eurostat)

After 10 years in the EU is able to observe changes in the development of foreign trade balance and the change in the evolution of the current account balance of payments. The current account deficit of balance of payments, compared to values around 6 – 7 % of GDP in the last decade, has decreased significantly. All four economies have managed over the last ten years to get to values approaching zero. Comparing 2003 with 2013 is for illustration summarized in Figure 6:

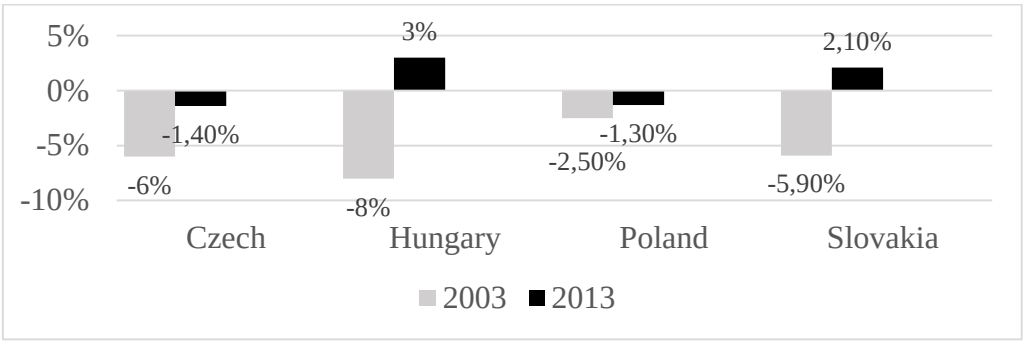

Figure 5. Current account as a % of GDP

Among the V4 countries Hungary was in the worst starting position from the perspective of the external balance. The current account deficit before entering the EU moved about 8 % of GDP. This is also the cause of the development of the Hungarian currency. Hungary is the only country where the currency is weaker currency (- 22 % against the euro) compared with the period before its entry into the EU. Approximation of GDP in nominal terms was strongly affected by exchange rate fluctuations when devaluation of the currencies of the V4 countries during the crisis was slowed or even partially averted a process of convergence.

2.2 Currency Development

Slovak currency revalued about 26 % to half of the 2008. It was the strongest revaluation of the V4 countries. Slovakia decided to join the euro, which protect against high currency fluctuations during the financial crisis. In addition, the Slovakia managed to set a fixed conversion rate on its top in 2008 on the upper limit of the fluctuation band. However, adoption of the euro was associated with costs that were so obvious before the financial crisis. The fixing of the exchange rate at a high level reduced inflation risks associated with the introduction of the euro in the Slovak Republic, but also harmed when the region was influenced by the crisis. In this time Slovak currency could not depreciate as the other currencies of the V4 countries. Slovakia lost 10 – 15 % of the price competitiveness against the V4 countries because of the strong and rigid foreign exchange rate.

Exchange rate of the national currency against the euro presents Figure 7:

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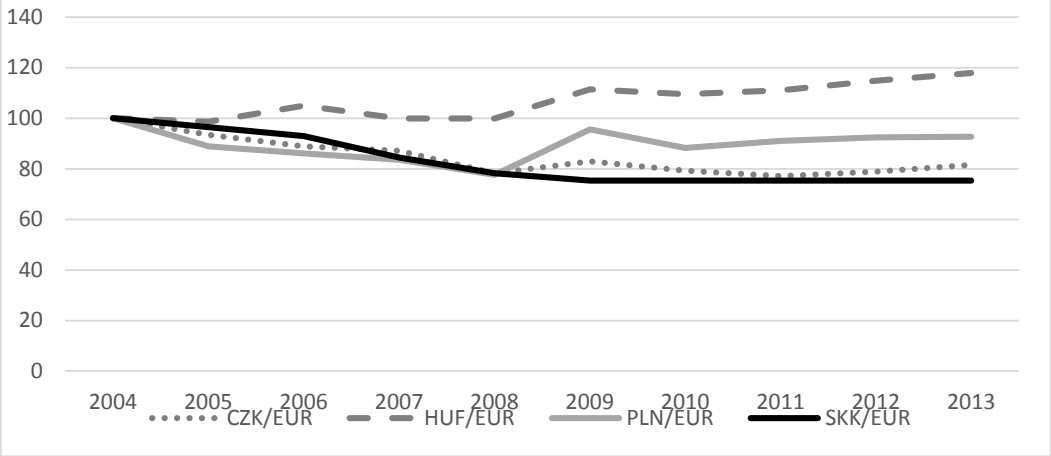

Figure 6. Exchange rate (Index, 2004 = 100) (Source: PACIFIC Exchange Rate Service)

3 Indicators of Living Standards

Growth of GDP or export performance have a little importance for assessment of the economic situation of ordinary citizens. The overall situation is evaluated according to other criteria. Some of these indicators will be outlined in the next part of this paper.

3.1 The Risk of Poverty

The concept of poverty in developed market economies should be defined differently than in the developing countries. Rating poverty is not based on the concept of absolute poverty, which is defined as a condition when people do not have access to basic needs such as food, water, shelter, sanitation and health care. The World Bank defines absolute poverty as a situation when people have to live on less than $ 1,25/day per person (according to PPP). The Bank estimates that the following conditions are currently living around 1,4 billion people (World Bank, 2014).

For evaluation of poverty in the developed world is necessary to define the concept of relative poverty. According to Eurostat, which publishes these dates for the European Union, the poverty threshold is defined as the proportion of persons with equivalised disposable income below the poverty threshold, which is determined as 60 % of the national median equivalised disposable income after social transfers (Eurostat, 2014).

Following Figure 8 shows the shift of the poverty line in the V4 countries. In all four economies, it is possible to see a significant shift to higher values. It is definitely a positive trend. Because there exist differences in cost of living between the Member States of the EU the poverty threshold is expressed in purchasing power standards (PPS).

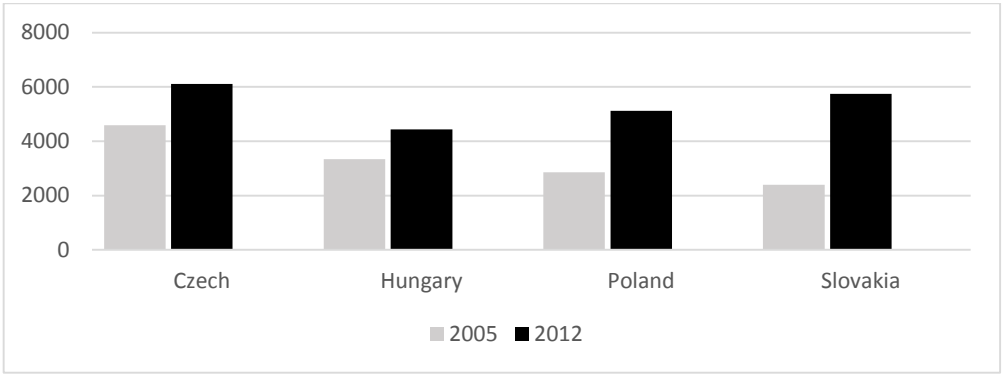

Figure 7. The poverty risk threshold in PPS (Source: Eurostat)

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However, the impact of European Union membership on the shift of the poverty threshold must be assessed on the basis of other criteria. For the assessment of the situation in individual economies should be compared the proportion of the population that can be described as relatively poor. Because in the European Union does not exist common EU social policy, we have to evaluate proportion of the national population below the poverty before social transfers and after social transfers.

From the following Figure 9 it is clear that social transfers have the significant role for the proportion of people living below the poverty threshold. Providing of social transfers substantially decreases the proportion of poor people. In assessing the situation before the current transfer payments between 2005 and 2012 can be seen that the situation in all the economies has improved, but not significantly.

As we can see the V4 countries are more sensitive to the crisis period than the original 15 EU member states in the whole time series. While some of the V4 countries can follow the growth of the share of the poor population in the context of the global financial and economic crisis in 2008 and 2009, for the old EU15 share is unchanged. From this perspective, membership in the EU does not positively affect the situation in the new member countries. Comparison of the risk of poverty after social transfers already offers a significantly different assessment. Social systems V4 are set to prevent the significant decline the population below the poverty line even in times of economic crisis. In the reporting period there was a decline the share of the poor population and also the development of the whole time series is not companied by stronger fluctuations. The exception in this assessment is the economy of Hungary which shows the opposite trend. Reason is to the bad economic situation and strong restrictive economic policy measures necessary for economic recovery.

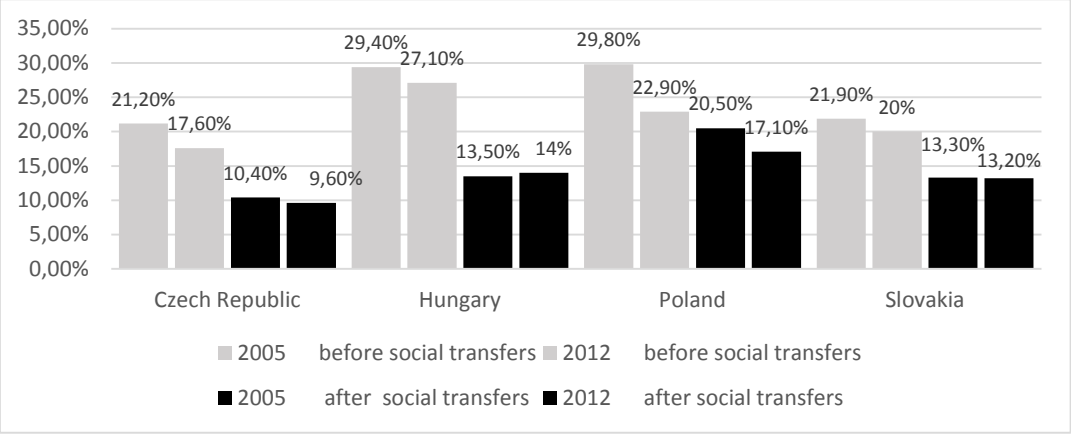

Figure 8. Risk of poverty rate before and after social transfers (%) (Source: Eurostat)

Another indicator that can be used for assessing poverty is the rate of permanent poverty risk. Eurostat defines this indicator as the proportion of persons with equivalised disposable income below the poverty level in the reference year and at least two of the previous three years. The risk threshold is determined as 60 % of the national median equivalised disposable income (Eurostat, 2014).

Consistent time series for the V4 countries is available only since 2008. However, in all four economies we can see increase of the proportion of people in a situation of permanent poverty risk. Even in this case, the EU membership did not have positive affect for the growth of living standards in the V4 countries.

The development of this indicator presents Figure 10:

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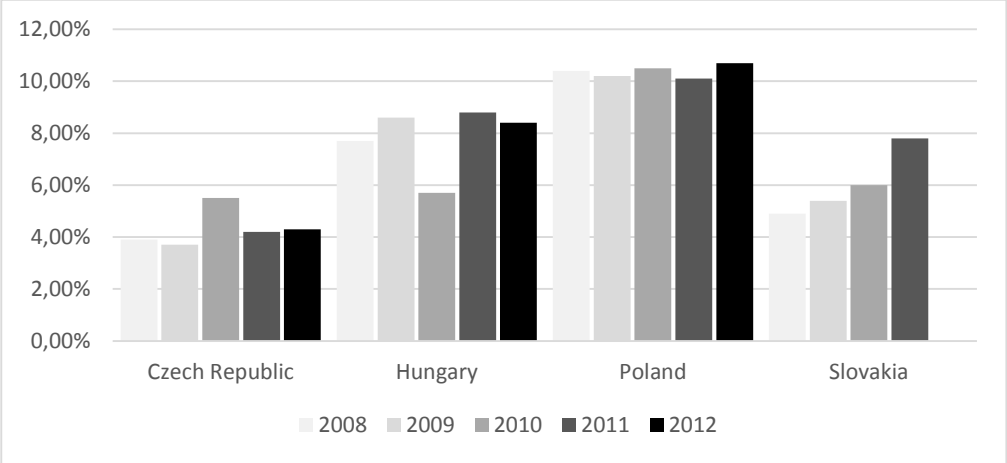

Figure 9. Permanent risk of poverty rate in % (Source: Eurostat)

3.2 Living Conditions

The problem that must be solved in the V4 countries is the rising unemployment rate especially in the period after the economic crisis. Economic development has been accompanied by a growing proportion of people without work. Another possible indicator for evaluation of living conditions of people in this perspective offers a share of unemployed households. Eurostat statistics calculated this indicator as the proportion of people aged 18 – 59 who live in households where nobody works. Students aged 18 – 24 who live in households composed solely of students of the same age are not counted in either the numerator or the denominator. Both the numerator and the denominator is based on the Labour Force Survey EU (Eurostat, 2014).

Although the problem of unemployment is a problem for most of European economies, the share of unemployed households from entering the EU decreased in all V4 countries.

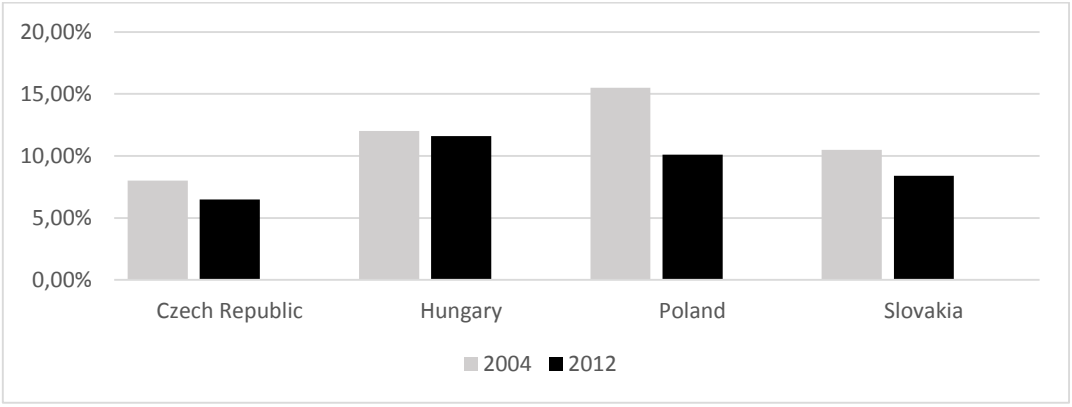

Figure 10. Households of the unemployed in % (Source: Eurostat)

Next indicator of living standard of countries Visegrad group can be Material Deprivation rate. The indicator is defined as the percentage of population with an enforced lack of at least three out of nine material deprivation items[1] in the „economic strain and durables" dimension.

[1] i) pay their rent or utility bills, ii) adequately warm apartment, iii) implement unforeseen expenses, iv) eat meat, fish or other protein every second day, v) to spend a week's holiday away from home, vi) use car, vii) have washing machine, viii) own a color TV, or ix) use the phone.

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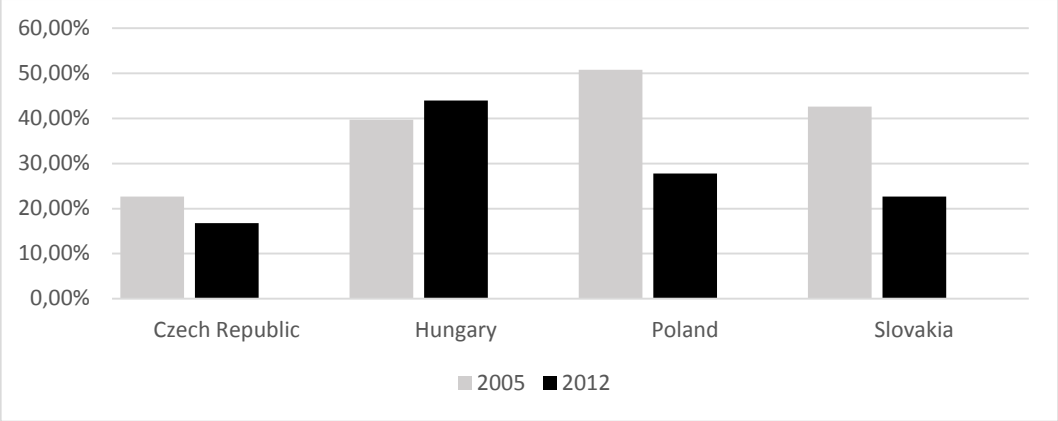

Figure 11. Material Deprivation rate (% of total population) (Source: ČSÚ)

Figure 12 shows significant differences between the V4 countries in the indicator Material Deprivation rate. The share of the population in a conditions that is unworthy of the developed market economies in the period of membership in the EU has fallen. Still, their share (excluding the Czech Republic) remains above the average of the old EU member base. There is a share of material deprivation about 17%.

3.3 The Happy Planet Index

The final indicator that will be used for the assessment of living standards in the countries of V4 last decade, will be The Happy Planet Index (HPI). The Happy Planet Index is a new measure of progress that focuses on what matters: sustainable well-being for all. It tells us how well nations are doing in terms of supporting their inhabitants to live good lives now, while ensuring that others can do the same in the future. It is an indicator that measures that what really matters to people. Thus, in the sense of well-being long, happy and meaningful life, and consumption of scarce resources. The HPI measures these factors through three components: experienced well-being, life expectancy, and Ecological Footprint.

Rankin which publishes The New Economics Foundation in 2012 shows that the advanced market economy do not hold the first place. In the first ten is Costa Rica, Vietnam, Colombia, Belize, El Salvador, Jamaica, Panama, Nicaragua, Venezuela a Guatemala. The first EU country is Germany in 46th position from 151 countries evaluated.

The evaluation of the V4 countries shows that their residents do not evaluate the last ten years in the EU from the perspective of a happy life too positively. Only in the Czech Republic we can observe a slight improvement. All the other three economies have worsened in the evaluation. The most stable development index is seen in Poland, which is dependent on the European Union at least, while the largest decrease of the index value is evident in Slovakia, a country which it is in the process of European integration far.

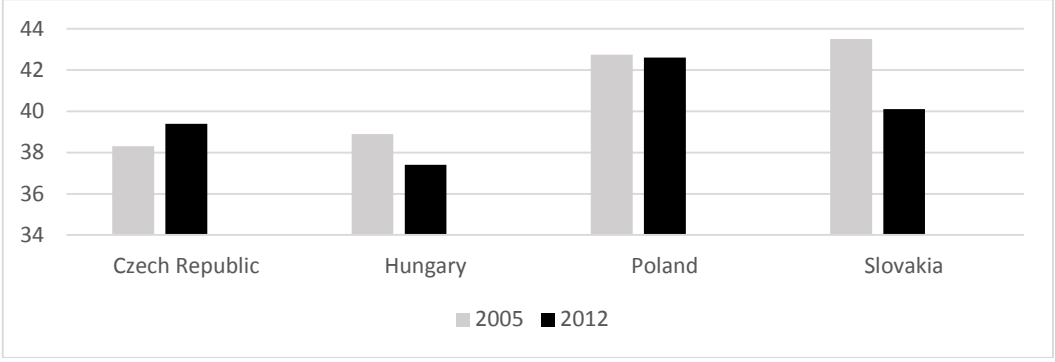

Figure 12. The Happy Planet Index (Source: The New Economics Foundation)

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4 Conclusion

The idea of a united Europe is based on rational foundations of international cooperation and division of labor. Czech Republic, Slovakia and Hungary are small or medium-sized members of the EU. If they want to promote their interests on the EU level, it is necessary to form a coalition with each other. All V4 countries have together the population about 64,4 million (more than the United Kingdom). In the Council of the EU only Germany and France have a stronger position in number of population. The V4 countries with 106 Members of Parliament have in the European Parliament even stronger position than Germany with 96 seats.

Another big challenge for a common European future is a potential conflict between two opposing tendencies which are primarily associated with the current debt crisis and the taken measures. These measures, on the one hand lead to the natural acceleration of the European integration process, but on the other hand are unpopular among citizens, leading to stronger support for Eurosceptic parties. A similar trend is also evident in the region of V4. The European Union was at its peak of popularity during the first few years after EU enlargement in 2004. Since 2008 when the financial crisis began, we observe a downward trend in popularity EU which can be largely attributed to the restrictive measures and the global economic slowdown.

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ALIGNMENT OF BUSINESS CYCLES OF THE EUROPEAN UNION AND BRICS COUNTRIES

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Abstract
This paper deals with an analysis of business cycles between the EU and BRICS countries. There are theories that claim that when greater trade flows between two countries can cause higher synchronicity between their business cycles. The size and growth of trade between the two countries may partly determine the alignment of business cycles. In order to determine this effect, a correlation between economic cycles of selected economies must be established. The business cycles are analysed by the correlation analysis and by Concordance index method. The results show that the alignment of business cycles between the European Union and BRICS countries is high, but it does not apply to mutual alignment of business cycles among the BRICS countries.

Keywords
Business Cycle, International Trade, Concordance Index, European Union, Correlation.

JEL Classification
E32, F10, F44.

1 Introduction

The similarity of business cycles is usually monitored because it is one of many criteria for the proper functioning of the Optimum Currency Area (OCA). This article does not attempt to determine whether the business cycles of the European Union (EU) and the BRICS countries attuned to each other due to the possibility to create a monetary union among these economies. Such a scenario is more than unlikely even in the distant future. However, the goal is to highlight the fact that the growing volume of trade among these countries affects the alignment of business cycles.

The growth of trade among countries can play an important role in the rapid growth in output and income of the country. If there is a growing mutual trade among countries, these countries have become more dependent on each other; more integrated, and they are so closely connected with regard to their economic performance. The functioning of the international trade channel is very important for understanding the changes in the business cycles of the economy. The economic theory says that the growth of mutual trade among countries can cause alignment of their business cycles (Shin and Wang, 2004).

The common currency, trade intensity, economic and financial integration etc., increase business cycle synchronization (Altavilla, 2004). A lot of scientific research shows that the more industrial economies trade, the greater convergence of economic cycles. This is demonstrated, for example, in Frankel and Rose (1998), Clark and van Wincoop (2001) or Kose and Kei - Mu (2005). Frankel and Rose also pointed out that the intra-industry trade has greater impact on the alignment of business cycles among trading countries than inter-industry trade. It depends not only on the total volume of foreign trade, but also on its composition. Some research argue that product specialization would cause lower synchronicity of business cycles, while common positive demand shocks and productivity growth increases an alignment of business cycles. However, some studies have refuted these opinions (Gruben, Koo and Millis, 2003). Several studies show that there is a big difference between developed and emerging economies in the influence of foreign trade on the alignment of business cycles (Bejan, 2011). Large economies, like the EU or just the BRICS countries, that dominate its production for the domestic market, should not be too much influenced by foreign trade channel. However, this prerequisite for major economies may not be valid in today's globalized world. Changes of the exchange rates (Kvainauskaité and Šarkiniené, 2007) have a great influence on the synchronicity between international trade and business cycle.

The paper analyses quarterly data from 1996 to 2012. Examined variable is the gross domestic product of the economies, namely its cyclical component, obtained from the OECD database. The

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cyclical component was gained using two filtering techniques: Hodrick-Prescott filter and Baxter-King filter. Correlation analysis is used to assess the alignment of business cycles of economies, which examines the interdependence (i.e. the relationship) between the observed variables. The second way to analyse the alignment of business cycles is the method of Concordance index.

The paper aims to determine whether there is indeed an alignment of business cycles between the EU and BRICS countries and how strong this alignment is. The hypothesis says that the alignment of business cycles will be higher between the EU and BRICS countries than among BRICS countries themselves. The paper is organized as follows. The second chapter traces the development of foreign trade among the surveyed economies. The third part presents used methods and data, and the results will be presented in the fourth part of this paper.

2 Bilateral trade among the European Union and BRICS countries

The world economy is becoming increasingly integrated over the last decades. The growth of foreign trade has greatest credit to the current world economic development. For most economies the foreign trade is the essential ingredient of domestic product. It influences economic growth, employment and consequently many components of the social life of the country. The growth of foreign trade was primarily affected by industrialization, as well as the development of transportation, globalization, multinational corporations' investment and outsourcing, and last but not least, the development of internet and telecommunication technologies. The EU countries have already gone through tumultuous industrialization and technological development and they belong among the most advanced countries of the world. On the other hand, the BRICS countries browse the economic development in the recent years. The countries under study belong to the most involved economies in world trade, although all of them have large internal markets and they are economically large closed economies.

Table 1. Bilateral trade among the European Union and BRICS countries in 1995

ExTot 95	EU27	BRA	RUS	IN	CHI
EU27	-				
BRA	28 838 653	-			
RUS	57 209 854	665 463	-		
IN	22 431 174	405 869	1 477 383	-	
CHI	40 431 994	1 962 800	5 159 682	1 096 958	-
SA	19 940 425	475 414	70 637	1 147 000	1 297 114

Source: UNCTAD statistics (2013), author´s calculations.

The European Union as well as the BRICS countries are deeply integrated in the world economy and they play an important role in both economic and political negotiations on the world markets. All economies create a system of commercial contracts and agreements, whether in multilateral World Trade Organization (WTO), or on the basis of bilateral agreements with individual states or integration groupings. The EU negotiates better access to the market of products and services of the foreign countries. For example, the free trade agreement with South Africa entered into force in 2000 and the same agreement has been under negotiation with India in recent days. The BRICS countries sign the preferential trade agreements (PTAs) as well. Brazil has PTA with India since 1989 and within the economic grouping of MERCOSUR since 2009. China has trade agreement with India in the framework of Asia Pacific Trade Agreement already since 1976.

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Table 2. Bilateral trade among the European Union and BRICS countries in 2012

ExTot 12	EU27	BRA	RUS	IN	CHI
EU27	-				
BRA	99 828 491	-			
RUS	391 174 907	5 355 442	-		
IN	98 758 206	11 739 642	7 264 905	-	
CHI	521 184 349	74 641 174	77 614 350	62 406 768	-
SA	51 024 846	2 451 413	602 109	9 655 465	37 241 252

Source: UNCTAD statistics (2013), author´s calculations.

Table 1 and table 2 show the bilateral trade flows of industrial goods among the European Union and BRICS countries in the year 1995 and 2012. Commercial services are also traded among the surveyed economies, but their volume is negligible in the comparison to industrial goods. The highest volume of bilateral trade took place between the EU and BRICS countries. Just in the year 1995, the goods between them was exchanged in the value of more than 172 billion USD (it is more than 3.27 % of the world trade). The trade exchange among BRICS countries did not achieve such a high volume. In 1995, it was only 13 billion USD. The biggest trade flows had China with its BRICS partners. In the year 2012, the BRICS countries play more important role in the world trade system. The bilateral trade among these countries have grown eight times. The trade value between the EU and BRICS countries has grown up to 1 162 billion USD (it is more than 6 % of world trade). Just the trade flows between the EU and China achieved 2.83 % of world trade and in the case of EU-Russia trade it is 2.13 %. The bilateral trade flows among BRICS have grown up to 289 billion USD. China has the biggest position because its share keeps above 80 % of total trade flows among BRICS countries.

Development of foreign trade volume among the surveyed economies demonstrates how globalization could link the individual markets on all continents and how important the foreign trade is for each economy. China has big advantage and dominant position in the world economy through its growing position among the BRICS economies. By absolute volume of foreign trade, China catches up with the developed economies and it places her in an exceptional position in the world economy. The other BRICS countries are not so dominant, and even foreign trade does not sovereign position of these economies. Russia, India, Brazil and South Africa still play a dominant role only on their continents, but significant reciprocal commercial exchanges still occur. An example might be the relationship of South Africa and Russia, whose trade is less than 0.01 % of the world trade.

3 Alignment of the EU and BRICS business cycles

As already mentioned above, one of the criteria for the operation of the OCA is the alignment of business cycles of member countries. However, this alignment is not only important to maintain the common currency, but also to maintain long-lasting economic growth. With the alignment of business cycles decreases the likelihood of negative shocks that would be examined in relation to asymmetric countries (Rozmahel, 2010).

3.1 Methodology and Data

Input data include the value of seasonally adjusted quarterly gross domestic product in 1996 - 2012. The data were obtained from the OECD database. To examine the business cycle two filtering techniques were used: Hodrick-Prescott filter (Hodrick, 1997) and Baxter -King band pass filter (Baxter, 1999). There are two approaches to the business cycle: the classical conception and growth conception of the business cycle. While the classical concept of the business cycle is perceived as the absolute phase of the rises or falls of real production, the growth concept represents a deviation from

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the long-term trend (Poměnková, 2010). It is a problem of decomposition of real economic output into trend and cyclical components, which serves for just mentioned filtering techniques. Hodrick-Prescot filter (HP) is one of the most widely used statistical methods to obtain the cyclical component. In applying the HP filter, the smoothness parameter λ is used with the value of 1600 when the quarterly data are used. The Baxter-King filter is already more specific. It uses the weighted average of values in individual periods of time while eliminating the values at the beginning and end of the series so as to avoid distortion of the time series. The different results of the two filtering techniques used are given in Annex 1.

The alignment of business cycles of selected countries is analysed by the correlation analysis and by the Concordance index (CI). Correlation measures the relative statistical linear relationship between two variables. The Paerson correlation coefficient is the most often used technique for calculation correlation and it can take a range of values from +1 to -1. If the value of coefficient is closer to -1, there is a stronger negative linear relationship between variables. If the value is closer to +1, there is a stronger positive linear relationship between variables. The correlation coefficient can be expressed as follows:

$$r_{xy} = \frac{\sum_{i=1}^{n}(x_i - \overline{x}) * (y_i - \overline{y})}{\sqrt{\sum_{i=1}^{n}(x_i - \overline{x})^2 * \sum_{i=1}^{n}(y_i - \overline{y})^2}} \quad (1)$$

where x_i, y_i means the value of the cyclical component of the gross domestic product of the country x and y in a given year, and $\overline{x}, \overline{y}$ expresses the mean value of the cyclical component of the gross domestic product of the country x and y for the entire period.

The second method for assessing alignment of business cycles of economies is the Concordance index, which requires the identification of business cycles, their turning points and phases. The Concordance index (Rozmahel, 2010) measures the time interval in which both the countries are in the same phase of the economic cycle. The resulting value then reaches values between 0 and 1, which represents a fraction of the time evolution of the same cycle. It is important for this indicator to identify the different stages and their subsequent modifications to the binary series (0 or 1), these binary variables indicate a phase of expansion and recession phase. For identification of economic cycles is necessary to use the Cannova rules (Canova, 1999). These rules reveal the tops and bottoms of the economic cycle using simple rules. The bottom in period *t* is symbolically expressed as $c_{t-2} > c_{t-1} > c_t < c_{t+1}$, where the bottom is defined by two consecutive declines in the cyclical component, followed by its re-growth. The peak of the business cycle is then defined as a situation where two consecutive periods values increase and then causing it to drop $c_{t-2} < c_{t-1} < c_t > c_{t+1}$. The second additional rule is that there must be applied the condition for the identification of bottom (peak) as $c_t <(>)0$ and $c_{t-1} <(>)0$ or $c_{t+1} <(>)0$ and $c_t <(>)0$. It defines the conditions of intersection trend in a recession and contraction. Another requirement is the minimum length of the reference period of 15 months and the length of cycle 6 months. The Concordance index can be expressed as:

$$CI_{ij} = T^{-1} \sum_{t=1}^{T} \left[S_{it} S_{jt} + (1 - S_{it}) * (1 - S_{jt}) \right] \quad (2)$$

While the concordance statistic is useful in studying linear and non-linear relationships between two cycles, it could be misleading when the series go through an extended period of above-trend or below-trend phase (Cevic, 2011). Therefore, to deal with this potential measurement bias, it is necessary to calculate a mean corrected index of concordance (MCCI):

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$$MCCI_{ij} = 2T^{-1} \sum_{t=1}^{T} \{(S_{it} - \overline{S}_i) * (S_{jt} - \overline{S}_j)\} \quad (3)$$

in which S_{it} and S_{jt} are defined as above and $\overline{S}_i$ and $\overline{S}_j$ represent the mean for country *i* and country *j*, respectively, over the sample period. The mean corrected Concordance index ranges from -1 (complete disconcordance) to +1 (complete concordance). The MCCI provides the natural value of synchronization.

4 Results of the business cycles of the European Union and BRICS countries

Table 3 shows the Pearson correlation coefficients obtained from the cyclical components of the gross domestic product of observed countries using HP filter and BK filter. In the lower triangle of the matrix, there are results of correlation coefficients using HP filter, while in the upper triangle there are the results by the BK filter. The strongest relationship was observed between the EU and China (r = 0.76). But the weakest linear relationship was found among India and Brazil and South Africa. There can be seen that the European Union achieves the strongest relationship with all BRICS countries and all result are significant at the 0.05 level, especially between the EU and China and the EU and South Africa. The correlation among BRICS is not so strong. The business cycle of China relatively strongly correlates with Brazil, South Africa and Russia. South Africa has also high value of correlation with China and Russia. But the linear relationships among other countries are not so significant. The results of Pearson´s correlation coefficient using Baxter-King filter confirm the previous one. It confirms dominant relationship among the EU market and BRICS countries as well as weak connection among some BRICS countries. In general, the results using BK filter are lower than the results of correlation using HP filter. But there are some cases, where the relationship among variables is stronger in the opposite way.

Table 3. Pearson correlation coefficient – Hodrick-Prescott filter and Baxter-King band pass filter

	BKEU27	BKBRA	BKRUS	BKIN	BKCHI	BKSA
HPEU27	1	0.61**	0.39**	0.33**	0.64**	0.51**
HPBRA	0.52**	1	0.33**	0.17	0.76**	0.44**
HPRUS	0.53**	0.31**	1	0.12	0.49**	0.33**
HPIN	0.41**	0.16	0.21*	1	0.14	0.12
HPCHI	0.76**	0.58**	0.50**	0.30**	1	0.41**
HPSA	0.68**	0.48**	0.56**	0.16	0.61**	1

Source: OECD statistics (2013), author´s calculations.

Table 4 contains the results of the Concordance indices. During the observed period, the most harmonized cycles were between the European Union and BRICS countries. The highest value of the CI was found between the European Union and Russia and the EU and China (0.76). That means that these countries spend more than three-quarters of the time in the same business cycle. The weakest relationship is between India and South Africa. It confirms the results from the previous table. But, the Concordance index show much higher alignment among BRICS countries than correlation coefficient. It illustrates relatively strong relations among them at the same level (from 0.5 to 0.69) using the HP filter. It shows that all selected countries were in the same business cycle at least in the half of the period. The highest value of CI is reached in the case of China-Russia and China-South Africa business cycle and the lowest value is between Brazil-Russia and India-South Africa business cycle. The results of CI using BK filter confirms previous result once again. The strongest relationship

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of business cycles is between the EU and BRICS as well as in the case of China´s and South Africa´s business cycle alignment.

Table 4. Concordance index matrix – Hodrick-Prescott filter and Baxter-King band pass filter

	BKEU27	BKBRA	BKRUS	BKIN	BKCHI	BKSA
HPEU27	-	0.78	0.65	0.48	0.83	0.63
HPBRA	0.63	-	0.65	0.57	0.70	0.67
HPRUS	0.76	0.56	-	0.52	0.78	0.63
HPIN	0.59	0.64	0.60	-	0.48	0.46
HPCHI	0.76	0.59	0.69	0.57	-	0.63
HPSA	0.66	0.63	0.64	0.50	0.67	-

Source: OECD statistics (2013), author´s calculations.

As stressed above, the Mean Corrected Concordance index provides natural values of business cycle synchronization among countries. That is why the results of MCCI are much lower than the results of the Concordance index. This index shows the strongest alignment of business cycles between the European Union and China (0.26). There is also relatively strong relation with Russia. But the business cycle is at least aligned with Brazil and India. In general, the MCCI confirms that the business cycles are more closely aligned between the European Union and BRICS countries than among BRICS countries mutually. China shows the highest alignment of its business cycle with other BRICS countries. The highest value of MCCI was achieved, except the EU, with Russia and South Africa. On the other hand, the lowest value lay in the alignment of India-China, India-South Africa and Brazil-Russia business cycle. The similar results are presented by MCCI using BK filter. The highest value of business cycle alignment is between the EU-China, EU-Brazil and China-Russia. But there are some negative values in the upper triangle. It means that these countries show very weak business cycle disconcordance. It is the case of EU-India, China-India and South Africa-India business cycle alignment.

Table 5. Mean Corrected Concordance index matrix – Hodrick-Prescott filter and Baxter-King band pass filter

	BKEU27	BKBRA	BKRUS	BKIN	BKCHI	BKSA
HPEU27	-	0.28	0.15	-0.02	0.33	0.13
HPBRA	0.12	-	0.15	0.07	0.19	0.17
HPRUS	0.25	0.03	-	0.02	0.28	0.13
HPIN	0.08	0.13	0.09	-	-0.04	-0.02
HPCHI	0.26	0.09	0.19	0.00	-	0.13
HPSA	0.16	0.12	0.14	0.07	0.17	-

Source: OECD statistics (2013), author´s calculations.

5 Conclusion

The goal of this paper was to determine whether there is indeed an alignment of business cycles among the EU and BRICS countries and how strong this alignment is. To examine this question, there was used the analysis of business cycle among selected countries on quarterly data since 1996 to 2012 using two filtering techniques, Hodrick-Prescott filter and Baxter-King filter. The alignment was determined by Pearson correlation coefficient and by two methods of Concordance index.

It was found that, although the techniques exhibit significantly different results, the strength in the individual bilateral economic cycles coincide. That means that all the used techniques observed that the most alignment business cycle was between the European Union and BRICS countries, while

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the BRICS countries have the alignment of business cycles weaker among each other. The largest alignment occurred between the economies of the EU, China and Russia. But the weakest alignment of business cycle was between India and other BRICS countries.

Table 6. Order by alignment of business cycles among the European Union and BRICS countries and the total resulting sequence (the last column)

1.	EU - China	6.	Brazil - China	11.	Brazil - India	1.	European Union
2.	Russia - China	7.	China - South Africa	12.	EU - India	2.	China
3.	EU - Russia	8.	Brazil - South Africa	13.	Russia - India	3.	Russia
4.	EU - Brazil	9.	Russia - South Africa	14.	India - China	4.	Brazil
5.	EU - South Africa	10.	Brazil - Russia	15.	India - South Africa	5.	South Africa
						6.	India

Source: author´s calculations.

The table 6 shows the rank of pairs of countries according to how their business cycles have matched in the selected period 1996 - 2012. The rank was created in each group (using HP filter correlation, correlation using BK filter, Concordance index using HP filter, Concordance index using BK filter, mean corrected Concordance index using HP filter and mean corrected Concordance index using BK filter) and then the resulting rank was assembled there. As already mentioned, the European Union reached the best alignment of the business cycle with the other countries. On the other hand, India showed the lowest alignment in most cases. China and Russia also reached in most cases a high degree of alignment of business cycles with other selected countries. Brazil and South Africa have already achieved a lower degree of their alignment. Another part of the research will focus on analysing the impact of foreign trade value on the alignment of business cycles among selected economies.

6 Acknowledgement

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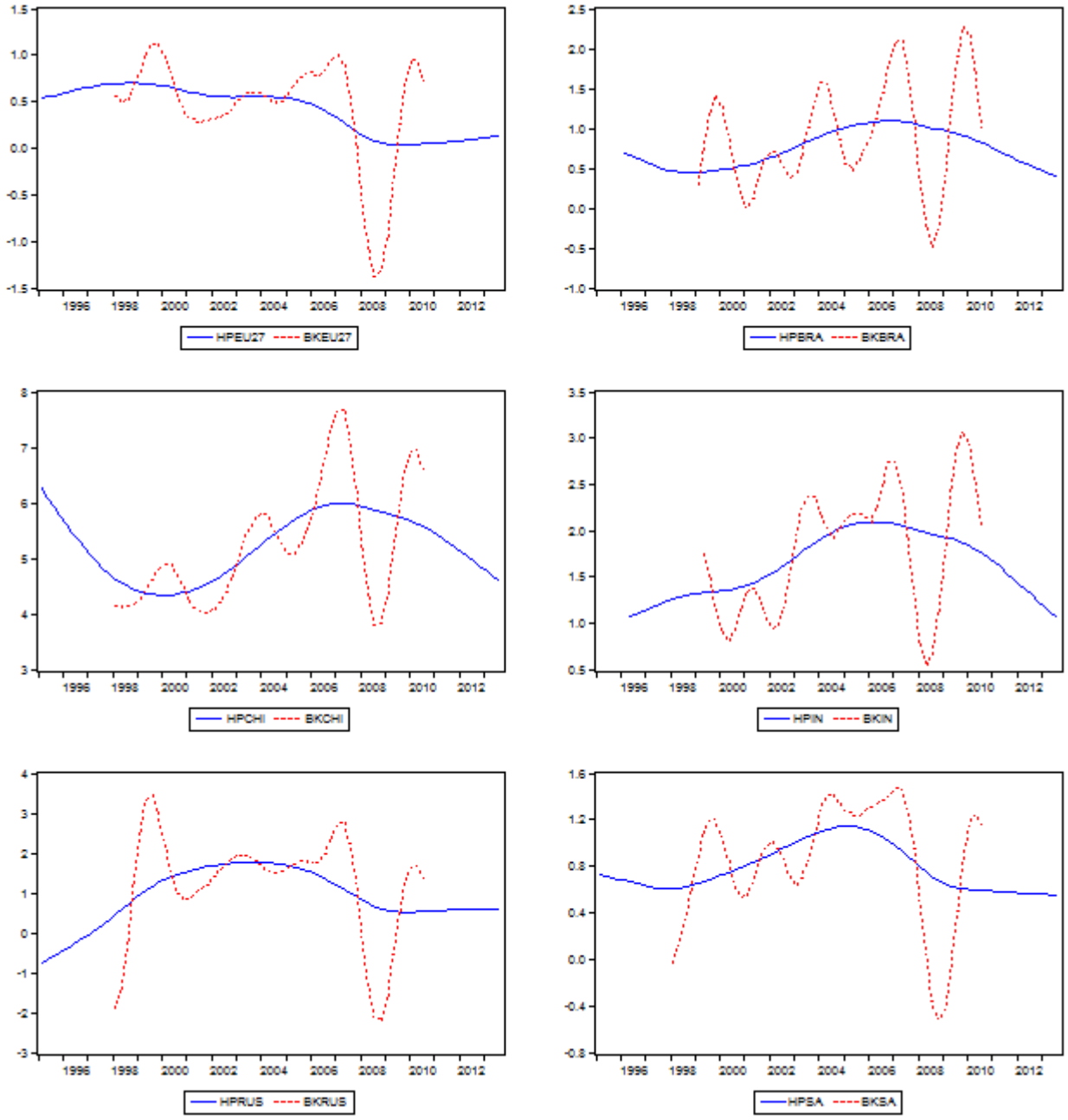
Annex

Results of the Hodrick-Prescott filter (solid line) and Baxter-King filter (dashed line)



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RELATION BETWEEN ECONOMIC FREEDOM AND CORPORATIONS' OUTPUT: CASE OF THE CZECH AND SLOVAK REPUBLIC

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Abstract
Cultural norms, formal and informal norms, rules or institutions plays very difficult role in activities of every individual. This paper examined relation between economic freedom and corporations' output. The aim of the paper is to evaluate the relation for the Czech and Slovak Republic during the period. Degree of economic freedom represents two international well known organizations – the Fraser Institute and Heritage Foundation. Both of them have dealt with economic freedom for a long time. Corporation's output is represented by the share of sectoral gross value added on gross value added of total economy. Pearson's correlation coefficient was applied to examine the relation between those variables. No significant relation between economic freedom and corporations' output was found for the Czech and Slovak countries.

Keywords
Economic Freedom, Non-financial Corporations, Output, Trend, Correlation.

JEL Classification
C10, J47.

1 Introduction

Cultural norms and institutions are often believed to explain why certain countries grow and other remain poor (Landes, 1998). Williamson & Mathers (2009) confirmed that culture and economic institutions, specifically economic freedom, play a role in economic development. According to them economic freedom is relatively more important for growth than culture. In formal economy there are certain economic institutions that provide lots of functions in contrast to informal economy. Williamson & Mathers (2009) concludes that culture can be important for economic growth, however economic institutions supporting e.g. private property or rule of law are the basis for a country's economic growth.

Since the time of Adam Smith economists have pointed out that the freedom to choose and supply resources, competition in business, trade with others and secure property rights are fundamental factors for economic progress (North & Thomas, 1976).

The main goal of this paper is to find out relation between economic freedom and corporations' output in economy, especially in the Czech Republic and Slovakia during the selected period. One hypothesis is established: there is weak but positive relation between economic freedom and corporation's output.

The remainder of the paper is structured as follows. Section 2 briefly presents the conceptual link between economic freedom, corporations' output and economic growth. Section 3 deals with quantifying economic freedom and corporation's output; section 4 presents explored data and evaluating procedures, section 5 shows development of economic freedom and corporation's output for Czech economy, section 6 concludes.

2 Link between economic freedom, corporations' output and economic growth

Economic theory indicates that economic freedom affects incentives, productive effort, and the effectiveness of resource use. Baumol (1990) argues that under good institutional environments, individuals devote their time to developing their talents and engage in productive entrepreneurship. However, under poor institutions, individuals face different incentives and engage in unproductive

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entrepreneurship. Sobel (2008) empirically confirmed relationship between quality of institutions and entrepreneurship.

Some researchers (Vansay & Spindler, 1994) or (Nelson & Singh, 1998) suggest that economic freedom may be important in explaining cross-country differences in economic performance. Some studies confirm the positive link, e.g. Gwartney, Lawson and Holcombe (1999) or Panahi, Assadzadeh, Refaei (2014). Adkins, Moomaw and Savvides (2002) found that positive changes in economic freedom lead to economic growth, notwithstanding the level of economic freedom in the beginning of the growth period does not significantly contribute to explain growth.

De Haan and Sturm (2000) have constructed own indicator based on below mentioned indices. They found out greater economic freedom fosters economic growth; however the level of economic freedom is not related to growth. The similar conclusion is by (Justesen, 2008) who investigated the relationship and the causality also and argues that economic freedom (or some aspects) causes positively economic growth.

Similarly, Faria & Montesions (2009) studied the relation between economic growth, income level and economic freedom, they found out positive and significant relation between mentioned variables. Nyström (2008) explores the impact of economic freedom on entrepreneurship and asserts that smaller government sector, better legal structure and security of property rights, less regulation of credit, labour or business tend to increase entrepreneurship.

3 Measuring the economic freedom and the corporations' output

There are several possibilities to quantify economic freedom and corporations' output. The paper describes some of them provided by international institutions.

3.1 Concept of economic freedom and its measurement

The Fraser Institute and The Heritage Foundation deal with economic freedom. The *Fraser Institute* by means of Gwartney, Lawson and Block (1996) defines economic freedom for individuals when property they acquire without the use of force, fraud, or theft is protected from physical invasions by others and they are free to use, exchange, or give their property to another as long as their actions do not violate the identical rights of others. Gwartney, Lawson & Hall (2013) emphasize the crucial factors of economic freedom:

- Personal choice,
- Voluntary exchange,
- Freedom to compete,
- Security of privately owned property.

The degree of economic freedom is measured in five areas (Gwartney, Lawson & Hall, 2013):

- Size of government,
- Legal system and property rights,
- Sound money,
- Freedom to trade international,
- Regulation.

Each area includes sub-areas, for more information see Gwartney, Lawson & Hall (2013). The range of the index is from 0 to 10, where 10 denotes a greater degree of economic freedom.

The *Heritage Foundation* defines the economic freedom similarly to previous one. According to Miller et al. (2012) it 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 with that freedom both protected by the state and unconstrained by the state. In economically free societies, government allows labour, capital and goods to move

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freely, and refrain from coercion or constraint of liberty beyond the extent necessary to protect and maintain liberty itself.

The Heritage Foundation has calculated index of economic freedom and published its annual report with studies about economic freedom since 1995. Index consists of ten components:

- Property rights,
- Freedom from corruption,
- Fiscal freedom,
- Government spending,
- Business freedom,
- Labor freedom,
- Monetary freedom,
- Trade freedom,
- Investment freedom,
- Financial freedom,

which are grouped into four sub-groups:

- Rule of law,
- Limited government,
- Regulatory efficiency and
- Open markets.

For more details see Miller et al. (2012). The range of the index is from 0 to 100, where 100 indicate the maximum degree of economic freedom.

Countries with an index of economic freedom between:

- 0 – 49.9 are repressed,
- 50 – 59.9 are mostly unfree,
- 60 – 69.9 are moderately free,
- 70 – 79.9 are mostly free,
- 80 – 100 are free.

3.2 National economy and corporations

The economy of a country is the outcome of the activity of a very large number of units which carry out numerous transactions of various kinds for purposes of production, finance, insurance, redistribution and consumption (Eurostat, 1995). The national economy performance is examined by gross domestic product or gross domestic product per capita very often. National economy is by ESA 1995 (Hronová, et al., 2009) defined as the sum of resident institutional units.

Institutional units which have a similar type of economic behavior are grouped to institutional sectors. National economy consists of five resident institutional sectors (Eurostat, 1995):

- Non-financial corporations,
- Financial corporations,
- General government,
- Households,
- Non-profit institutions serving households.

The output of sectors is measured by gross value added (hereinafter GVA).

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4 Data and methodology

Used data and techniques are presented in this section.

4.1 Data

Both, the Fraser Institute's and the Heritage Foundation's Index of economic freedom (hereinafter FI EF or HF EF) was employed as a proxy variable of economic freedom by reason of different results. The Fraser Institute's Index of economic freedom is multiplied by 10 due to obtain the same range (0-100).

The ratio of gross value added of non-financial corporations to gross value added of total economy is applied as corporations' output (NFC).

Annual data were collected for the economies between 1995-2012 (HF EF), 2000-2012 (FI EF) and 1995-2012 (NFC).

4.2 Correlation

The correlation, i.e. strength of linear dependence between two variables *y* and *x* is measured by the Pearson correlation coefficient *r* in formula (1):

$$r_i = \frac{\sum\left(x_i - \bar{x}\right)\left(y_i - \bar{y}\right)}{\sqrt{\sum\left(x_i - \bar{x}\right)^2}\sqrt{\sum\left(y_i - \bar{y}\right)^2}} \tag{1}$$

where *y* and *x* represent variables and $\bar{x}$, $\bar{y}$ their mean values (Asteriou and Hall, 2007). Normal distribution and linearity should be fulfilled as well. The correlation coefficient (*r*) ranges from -1 to 1; 0 implies no correlation and -1 implies perfect negative strength of linear dependence, whereas 1 positive.

To avoid so called spurious correlation we need to find out the deterministic trend within the series. There are several trends, e.g. constant, linear (2), quadratic (3), exponential etc (Cipra, 2008). Then the residuals between original series and smoothed series are made, the Pearson's correlation applied (Cipra, 2008, Asteriou and Hall, 2007).

$$Y_t = \beta_0 + \beta_1 t \tag{2}$$

$$Y_t = \beta_0 + \beta_1 t + \beta_2 t^2 \tag{3}$$

where Y_t denotes variable at time *t*, β are parameters.

5 Empirical results

In this section there are indices of economic freedom, economic performance, ratios and correlations presented.

5.1 Economic freedom by Heritage Foundation

According to HF EF the Czech Republic's average value of the level of economic freedom is 68.4 which ranked the Czech Republic to moderately free countries. Minimal value (64.6) occurred in 2004 and maximal (70.9) in 2012. The Slovak Republic's average value of the HF EF is 63.4 which ranked it to moderately free countries as well as the Czech Republic. Minimal value (53.8) occurred

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in 1999 and maximal (70.0) in2007. The degree of economic freedom rose from 1995 to 2012 by 1.7% per year. Development of both countries is presented in Fig. 1.

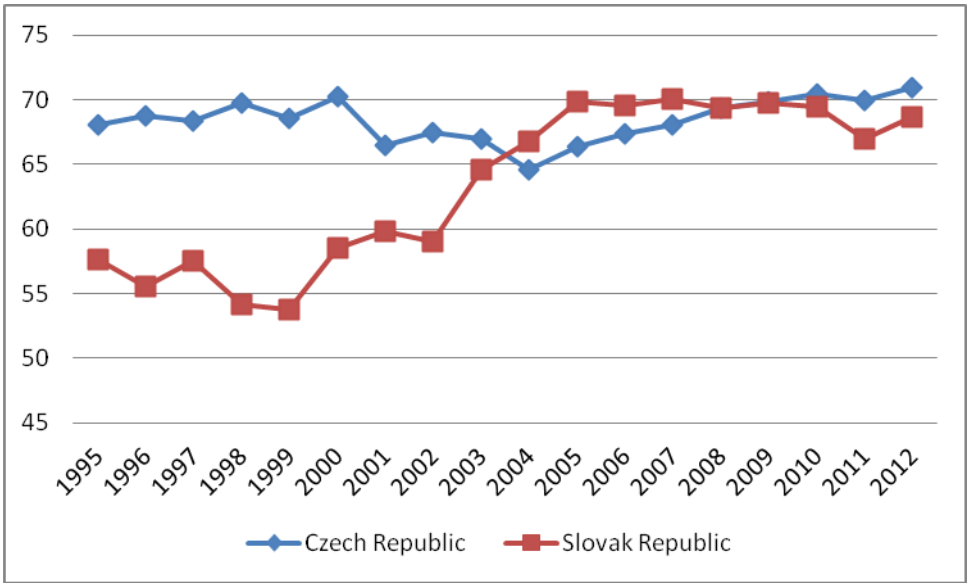

Figure 1. Heritage Foundation – Index of economic freedom (Source: Heritage Foundation)

5.2 Economic freedom by Fraser Institute

According to FI EF the Czech Republic's average value of the level of economic freedom is 70.4 while Slovak's average value of the level of economic freedom is a little bit higher 72.1. Czech's minimal value occurred in 2000 (65.3), Slovak's (62) in the same year. Czech's maximal value occurred in 2012 (73.8) and Slovak's (76) between years 2005 and 2009. The degree of economic freedom rose by 0.9% per year in Czech Republic and by 1.4% in Slovakia between 2000 and 2012. Values are showed in Fig. 2.

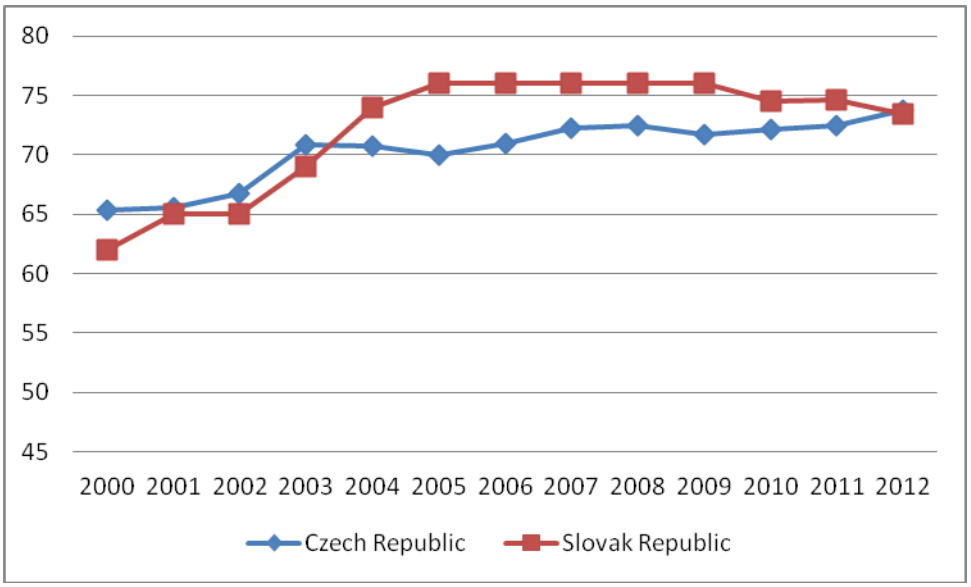

Figure 2. Fraser Institute – Index of economic freedom (Source: Fraser Institute)

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5.3 Corporations' output

The biggest share of GVA originates in non-financial corporations, around 62% in the Czech Republic and 54% in the Slovakia. The Czech's maximal share (65.8%) occurred in 2007 and minimal (58.3%) at the beginning of the period while the Slovak's maximal share (56.2%) occurred in 1996 and minimal (50.5) in 2009.

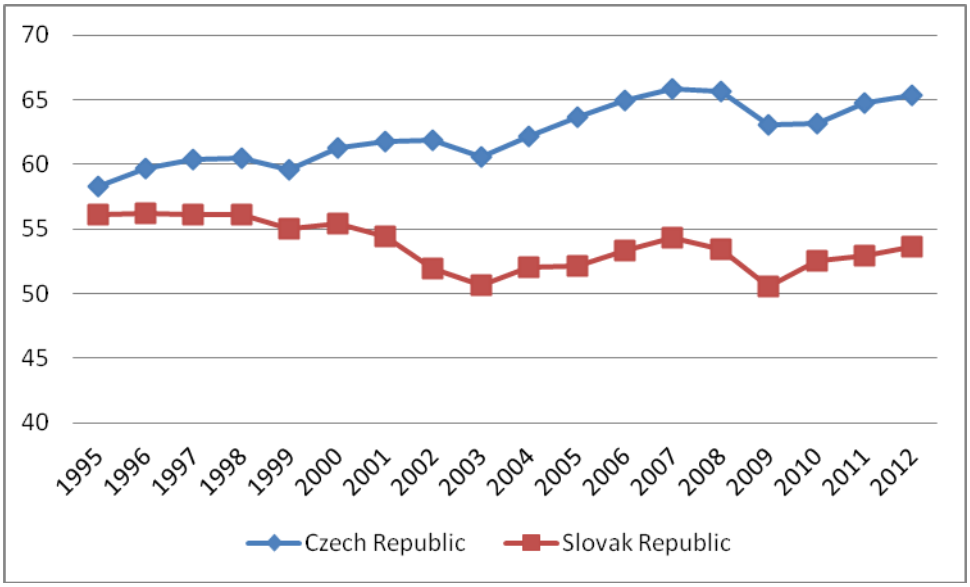

Figure 3. Non-financial corporations' output – (share of GVA of total economy, %) (Source: Czech statistical office)

The share of Czech Republic grew up by 0.6% per year while the share of the Slovakia fell by 0.4% yearly (Fig. 3).

5.4 Correlation

Some researchers applied different techniques to examine the relationship, e.g. correlation, regression analysis of panel data or cross-country. Haan & Sturm (1998) argue that the link between economic freedom and economic growth depends upon the measured use. Similarly suggestion noticed Panahi, Assadzadeh & Refaei (2014).

Due to deterministic trend within the series the residuals are made and then the correlation performed. Correlation coefficients of residuals between original and smoothed series are presented in Table 1.

Table 1. Correlation coefficients (*r*)

Corporations'output	HF EF	FI EF
Czech Republic	0.0096	0.1175
Slovak Republic	-0.3140	-0.2718

Source: own calculations.

Correlation coefficients implies almost no correlation, moreover coefficients are insignificant. It indicates that between economic freedom and corporations' output measured by the share of GVA is no relation. Hypothesis was not accepted for both countries.

6 Conclusion

This paper focused on relation between economic freedom and corporations' output in the Czech Republic and Slovakia. Two indices of economic freedom from two international institutes were

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employed: the Heritage Foundation and Fraser Institute. Corporations' performance was presented by the non-financial corporations, especially the share of their value added to value added of the total economy.

Pearson's correlation coefficient was used to measure the relation between sectoral performance and economic freedom. Coefficients indicate no relation between economic freedom and corporations' output. Hypothesis was not accepted for both countries.

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INFLUENCE OF MIGRATION ON THE LABOUR MARKET IN THE CZECH REPUBLIC

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Abstract
Migration is considered to be the indicator of effectiveness of labour market in developed economies. Through the labour market, it affects to the general development and competitiveness of the area. The arrival of new labour fills the gap in the labour market in the host area and decrease the unemployment rate in the source area. The flexible labour markets are also in the Lisbon Strategy of European Union considered as one of the indicators of competitiveness. The labour market in the Czech Republic was marked by significant changes in recent years, which also influenced the evolution of migration in the country. The Czech Republic became from transition country, target country, foreigners sought for long-term establishment. This effect was enhanced by the accession in to the European Union. The aim of this article is analyse the impact of international migration on the labour market in the Czech Republic after accession in to the European Union, when the republic accepted principles of the single European market and.

Keywords
Competitiveness, Labour Market, Labour Migration.

JEL Classification
F22, J61, R23.

1 Introduction

One of the basic prerequisites of economic development is a sufficient number of high-quality and qualified employees. The number of inhabitants on the given territory is determined by birth rate; nevertheless, the spatial movement of people is significant as well. European states have recently been facing a natural decrease in population. Therefore, the role of migration in the sense of population increase and alleviation of consequences of population aging has been increasingly more important and it has become an issue, which is being solved both on the national and international level, where the purpose is to integrate migration policy into the state population policy and to support an active role of the state in selection of emigrants.(Rabušic, Burjanek, 2003)

The significance of migration and its volume have been increasing since the second half of the 20th century. One of the reasons is the expanding globalisation and research and scientific progress, due to which migration (moving) has become more simple and available. In the European space, migration flows have been strengthened also by the common market of the European Union, when the member states agreed on freedom of movement of labour, capital, goods and services.

The issue of migration has a significant impact also on the Czech Republic, which has to solve effects and phenomena related to this process. Increase in migration in the Czech Republichas been very high in the last twenty years, the entire process was reinforced by the political system of the second half of the twentieth century, when both emigration and immigration flows were eliminated and strongly liberalised due to the transition to the market economy. Migration is also connected with the geographical position of a state and the Czech Republic, which issituated in the centre of Europe, is a state suitable for settlement of foreigners within the context of this assumption.

The process of spatial movement of population is perceived rather from the positive point of view with regard to its relation to development. This conclusion was confirmed for example by the study Glover (Glover,2001) performed in 2001, which states that the increase in population by 1 % will cause the increase in GDP by 1.25 – 1.5 %. Although migration affects the overall environment of the state, the most significant impacts can be seen in the fiscal balance of the country, macroeconomic indicators and labour market. (Rabušic, Burjanek, 2003)

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The purpose of this article is to analyse the impact of foreign migration on the labour market in the Czech Republicafter the accession to the European Union. The analysis will be performed for the period 2004 – 2011, when the number of working foreigners in the country significantly increased and their proportion in the labour market grew. The work will test the hypothesis that migration is an important indicator of the labour market of the Czech Republic, which contributes to increase in flexibility of the market and thus supports the overall economic growth.

2 Effect of migration on economic growth of a country

Benefits of migration for economic development became apparent and visible during the 20th century. The impact of migration on macroeconomic indicators, especially on GDP, follows from the positive perception of migration and is related to its impact on the economic development of a country. Migration is currently perceived as one of the factors contributing to the competitive ability of regions and it affects the development of a region (Lisabon strategy, 2010; Slaný, 2007; Wokoun, 2011). Together with the requirement on investment growth, release of the entrepreneurial potential and environmental sustainability, migration was called one of the priorities of economic development and a part of the competitive ability of the European Union. Migration is considered to be a determinant of competitive ability also bythe Yearbook of Competitive Ability of the Czech Republic (Ročenka konkurenceschopnosti České republiky). (Kadeřábková, 2009) Its positive impact was also mentioned in the Strategy Europe 2020, the purpose of which is to achieve economic growth by means of cooperation of the member states in fulfilment of the established objectives, while the emphasis is put above all on employment and support of an effective allotment of human resources, education, research, innovations (European Union, 2010)

The significance of migration is mostly seen in its effect on the labour market. Movement of labour force is considered to be the basic indicator of an effective operation of a labour market in the theory of economy. It is assumed that migration will represent the crucial source of labour supply and thus will fill the gaps in the existing labour markets. A. Slaný (Slaný, 2007) states that migration of labour force can have both a positive and negative impact on the local labour market. The character of the impact of migration on the labour market depends first of all on qualifications of the workers and on the character of the labour market in the target country.

If the immigrants are unqualified workers, who are no competition for local workers in the country, the effect of migration will be mostly positive. Immigrants will fill the gaps on the labour market, no pressure will be exerted on growth of wages. However, if the newly arriving workers compete with the local labour force, the consequences will be predominantly negative, labour supply will increase and the pressure on job positions and reduction of wages will increase. A special group on the labour market is represented by migration of highly qualified people. Arrival of educated and experienced people brings positive effects to the new country in the form of an inflow of new knowledge and experience. This phenomenon is often called "*brain gain*" in literature, meaning that the target state of the migrant gains a qualified labour force without having to expend money on education of this labour force.

Departure of highly qualified workers "*brain drain*" is a negative factor for the emigration country, as the country looses workers, who obtained education and experience in the given country. Brain drainis considered a negative effect of migration. A country expends financial resources on education of people, who subsequently leave the country and increase the productivity in another country. The negative effect of outflow of qualified labour force was confirmed for example by Özden, Bhagwati a Hamada, Miyagiwa, Galor and Tsiddon. Many studies dealt with the positive effect, for exampleBeine (Beine, 2001) came to the conclusion that migration has two impacts on development of the country of origin. The first one is support of education rate in the country, where the people study, because they expect a higher benefit. The second impact is only negative, it is departure of workers abroad. However, Beineindicates that both impacts cannot be assessed separately and both of them should be taken into consideration when evaluating the overall effect of migration. The

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negative effect related to brain drain represents a danger especially for developing countries, which have only limited amounts of human capital available. This problem was pinpointed for example by Penninx (Penninx, 1982), who understands migration as an outflow of labour force from peripheral regions, who subsequently do not have enough labour force to sustain development. The increasing importance of this effect was also mentioned in the analysis of migrating population by Docquier and Mafouk (Doucquier, Marfouk, 2006), who found out that the proportion of educated people in the migrating people is higher than the proportion of educated people in the total population. Qualified workers migrate above all from India, Mexico, Korea, Jamaica. According toVinokur (Vinokur, 2006), the losses could be compensated by remittances, return migration or creation of business networks.

3 Foreigners in the labour market after the entrance of the Czech Republic to the EU

Before the entrance to the EU, the Czech Republic had to harmonize also its rules with relevant legislation of the EU[1]. In context of our interest, the most important implementations were rules of free movement of people and consequently free movement of employees (e.g. also the question of accepting professional qualifications; this caused a frame for accepting certain foreign professional qualifications). In case of employees from other countries, it was however necessary to implement certain procedures and legal provisions (e.g. "green card program"). The Czech Republic had to reinforce the check of migration to find out that immigrants will be treated according to standards and requirements of the EU. The most significant shift was in connection with law nr. 326/1999 of foreigners´ stay in the Czech Republic (law on foreigners) and law nr. 325/1999 of asylum (law of asylum). Both laws were approved in 1999 and came into force in January 2000. The mentioned provisions influenced significantly the migration policy of the Czech Republic and foreigners´ employment. After the entrance of the Czech Republicto the Schengen Area, the Czech labour market became a part of the unified market enabling residents of the EU a free entry to the labour market of any member state and Czech citizens gained the right to enter any labour market of the EU member state (Schengen Borders Code, Regulation of the European Parliament and European Council (ES) nr. 562/2006 from 15th March 2006 which sets the Union codex of rules regulating cross-border movement of people).

In spite of some predictions which predicted significant growth of unemployment after the entrance of the Czech Republic to the EU, this remained without significant changes. Before the entrance to the EU, the general rate of unemployment in the Czech Republic was at the average 8 %, in 2004 it increased to 8.3 % (as compared to the average of 8.5 % in EU-15) and it has gradually decreased during last years. In 2008 it decreased to only 4.4 – the lowest value since 1996. In the same year, employment in the Czech Republic reached 66.6 % and exceeded slightly the unit average of 66.3%. The level of labour participation in the Czech labour market in the period 1993 – 2012 is depicted in the following graph (Fig. 1). It is a rate of employed people on the total number of inhabitants at the age of 15-64 years. It expresses the rate of people´s participation in the labour market. Decrease of this indicator is obvious till 2004. It was caused mainly by the increasing number of students at universities. In 2004, there was a severe change in development of this indicator. The main reason of its increasing tendency was opening of borders of the Czech labour market and increasing number of foreigners working in the Czech Republic. The second break came in 2008 due to the economic crisis. States had to adopt policy measures to alleviate decline in employment and a sharp drop in unemployment.(Horská, 2012)

[1] Employment of citizens from member states of the EU follows Regulation of the Council nr. 1612/68/EEC of free movement of employees within the Union, direction nr. 90/365/ECC of the right for stay of an employee or a self-employed person after termination of his/her labour activity and Regulation of the Commission of ECC nr. 12551/70 of employees´ right to stay in a member state after they were employed in this state.

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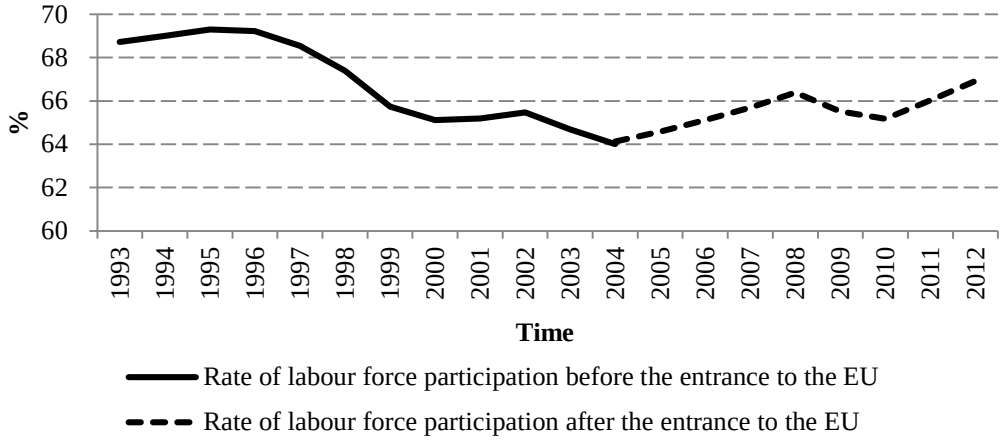

Figure 1. Rate of labour force participation (Source: own elaboration according to the Czech Statistical Office)

Significant increase of the number of foreigners after 2004 is obvious from the following graph (Fig. 2) which depicts development of the number of foreigners registered at employment offices and working thanks to trade permission since 1997. It is obvious from the graph that while the number of foreigners registered by employment offices of the Czech Republic has increased since 2008 when their status reached its maximum of 78.7 % (it was a record number of 284 551 people), the number of foreigners working thanks to trade permission has slightly increased. This increase was caused mainly by the fact that many foreigners who lost their job started to enterprise in the Czech Republic. According to actual data (2011), the number of foreigners registered by employment offices is 217 862 people, the number of self-employed people increased to 93 059. After the entrance of the Czech Republic to the EU, the rate of foreigners from countries of EU-27 increased to 56.1 %. Mainly citizens of Slovakia (54 %), Poland (9.8 %), Bulgaria (3.7 %) and Germany (2.2 %) partake significantly in the total number of employed foreigners. After the entrance of the Czech Republic to the EU, decrease of employed foreigners from the third countries is obvious (altogether 43.9 %) but the dominance of citizens from Ukraine (31.7 %) and Vietnam (14.8 %) continues. It is possible to notice quite different development of self-employed foreigners where citizens from the third countries dominate (altogether 73 107 people in 2011). From the viewpoint of citizenship, citizens from Ukraine (36 %) and Vietnam (31 %) dominate. Slovaks (12 %) dominate among the self-employed foreigners from the EU countries. From the viewpoint of employment classification (KZAM/CZ-ISCO), the highest number of foreigners is employed in the category "General and non-qualified workers" (over 55 % come from the third countries), then in the category "Operators of machines and appliances, assemblers" and "Craftsmen and servicemen" (citizens of the EU dominate however in this category, nearly 76 %). It is worth noting that also numbers of employed foreigners in the category "Specialists – scientific and head workers" increase continually (citizens of the EU represent 75.3 %).

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Figure 2. Development of foreigners in the labour market of the Czech Republic (Source: own elaboration according to the Czech Statistical Office)

4 Analysis of the number of foreigners on the labour marketin the Czech Republic

The Czech Republicis a country sought after by migrants and the proportion of foreigners in the labour market keeps growing. Its impacts affect conditions on the labour market, which is considered a significant factor of competitive ability. Analysis of their effects on the labour market will be performed with the use of multiple regression analysis, the subject of which is to express the effect of independent indicators on the dependent variable.

Indicators, which will be included in the analysis, were chosen on the basis of the approach of Slaný (Slaný, 2007), who dealt with labour market and analysed its impact on the competitive ability of economy of the countries of the Visegrad Four. He claims that the main factors determining the labour market are the extent of work participation (proportion of labour force in the total number of inhabitants in the age group 15-64), employment rate, average gross monthly wages, level of education (proportion of university educated people in population and the proportion of people with elementary education and without education), the number of business subjects and migration (number of foreigners on the labour market and the number of employed persons on the labour market).The labour market will be presented by means of the GDP indicator per 1 employed person, which expresses the performance of economy related to the number of labour forces. The data will be based on the statistical yearbooks of the Czech Statistical Office.

The result of the multiple regression analysis is determination of indicators, which have a statistically significant impact on the change and development of the dependent variable and determination of the extent of impact of these indicators. The analysis tests the hypothesis H_0: the indicator is significant for development of the dependent variable with regard to the alternative hypothesis H_1: indicator is not statistically significant. The decision, where the null hypothesis should be accepted or refused, takes place on the basis of comparison of p-value and confidence level α, which was selected to be at the level of 0.95 for this model.

The general model of linear multiple regression is given by the equation (1): (Hindls, 2007)

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_p x_p + \varepsilon \quad (1)$$

where y is dependent variable, x_1, x_2, …, $x_p$are independent variables and the parameters $\beta_0, \beta_1, \beta_2, \ldots, \beta_p$are coefficients given by the regression function, which express the impact rate of the variable x on the dependent variable, $\varepsilon$is residual.

Multiple linear regression is based on the assumption that the data are not multicolinear and autocorrelated. The assumption of multicolinerarity was verified by means of the correlation matrix.

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On the basis of the data results, the indicator of the number of employed persons,which was strongly correlated with the number of business subjects (correlation coefficient > 0.90), was excluded from the analysis. Autocorrelation was tested by means of Durbin Wats test. The following Table 1 summarises the conclusions of the multiple regression analysis. On the basis ofthese results, we can say that the most significant parameters affecting the productivity in the given region are unemployment rate, number of employed persons and the number of foreigners on the labour market.

Table 1. Results of multiple linear regression

N=112	Results of regression with the dependent variable: GDP per 1 employed person (Table1) R= ,89556823 R2= ,80204245 Modified R2= ,78871838 F(7,104)=60,195 p					
	b*	Dev. error from b*	b	Dev. error from b	t(104)	p-value
Abs. number			-101918	338031.3	-0.301	0.763
Work participation rate	0.032	0.044	41	56.0	0.738	0.461
Employment rate	**0.160**	**0.072**	**9385**	**4223.5**	**2.222**	**0.028**
Average gross monthly wages	0.019	0.100	1	4.4	0.197	0.844
Proportion of persons with elementary education in the total number of population	0.081	0.093	405417	468082.4	0.866	0.388
Proportion of people with university education in the total number of population	0.174	0.121	597494	415778.5	1.437	0.153
Employed foreigners	**0.585**	**0.133**	**4**	**0.8**	**4.391**	**0.000**
Number of business subjects	**0.157**	**0.061**	**458**	**177.7**	**2.576**	**0.011**

Source: my own elaboration.

The number of foreigners on the labour market was considered a significant factor in the statistics, and it is related to the development of the region and affects its productivity. In quantitative terms, the growth of the number of foreigners on the labour market by 1 % represents the growth of GDP by 0.585 % per an inhabitant (Fig. 3).

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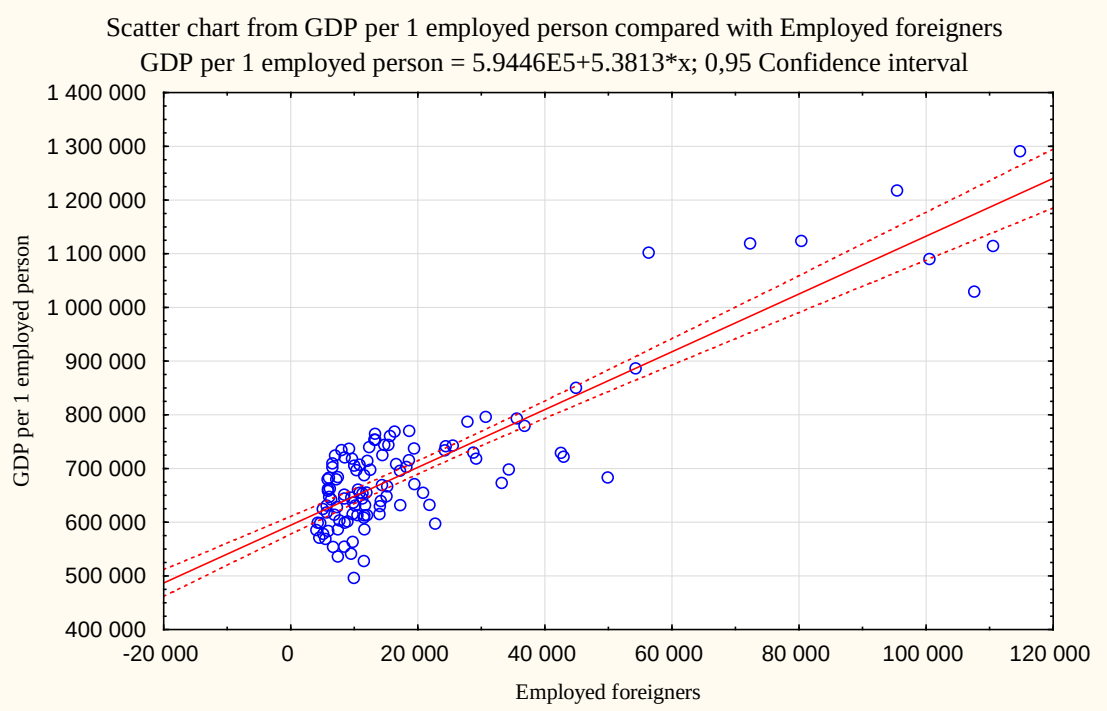

Figure 3. Relationship of the number of employed foreigners and GDP/employed person (Source: own laboration)

Model determination index is 0.802. The reason can be the number of factors entering the model. Productivity of the region expressed by means of GDP per 1 employed person will be affected both by labour market factors and other economic or non-economic indicators. The suitability of the use of the model for description of the situation on the labour market and determination of the impact rate of the individual factors were subsequently verified by an analysis of residuals, which explores the normality of division of probability of the residuals. The model can be considered reliable, if the normal division of probability exists. The condition of normality of residuals for this analysis was confirmed, as is shown by the chart on the Fig. 4.

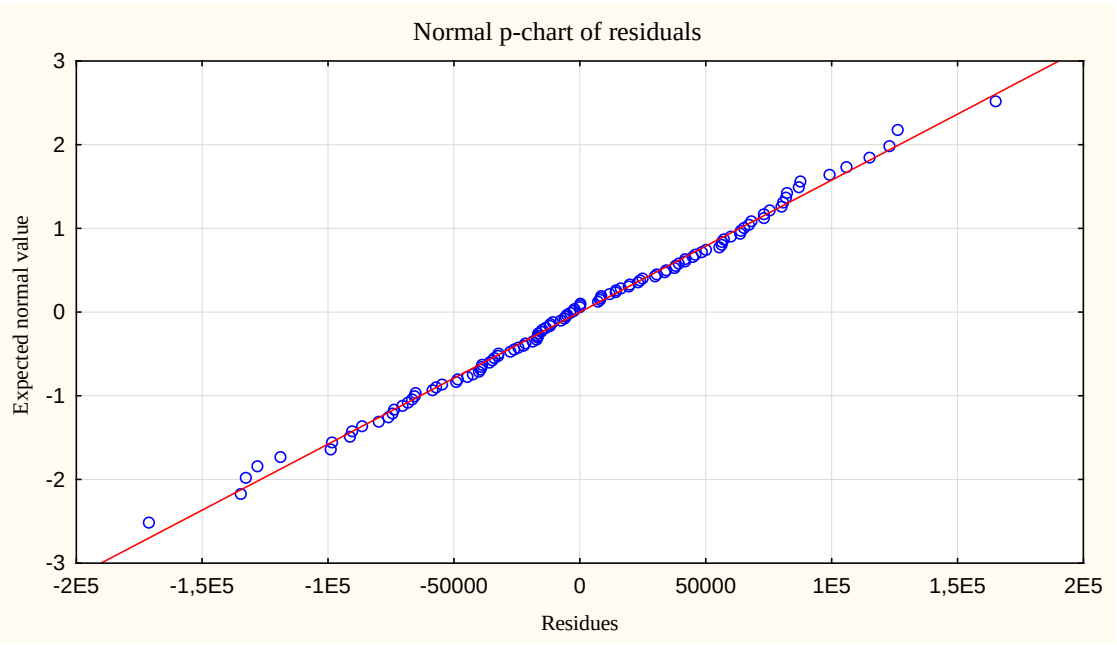

Figure 4. Verification of reliability of the model of multiple regression (Source: own elaboration)

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5 Conclusion

The impacts of migration on economy of the state of origin and of the target state represent a complex network of relations and connections with many factors, where one cannot clearly determine, if the impact is positive or negative. Migration brings many benefits both for the region of origin and for the target region, but it is also necessary to take into account the costs of this process, whether it concerns costs of individuals or costs born by the entire society. The total effect of migration is given by the difference between the positive and negative effects. Migration in advanced states is usually perceived as positive and is often supported. This is also the case in the Czech Republic, which has experienced a significant growth of the number of foreigners during the last 20 years and nowadays, foreigners are an important part of the labour force in the country.

The aim of the article was to analyse the effect of migration of labour force on the labour market. Despite the growing number of immigrants after accession to EU, the Czech society does not perceive immigration as a problem. The initial fears that the unemployment rate would be significantlyincreased have turned out to be unjustified. Although the unemployment rate slightly increased after accession to EU, its level remained under the average value in EU and it has been even decreasing in the recent years. The article tested the impact rate of labour migration on the labour market in the Czech Republic. Seven indicators, which characterised both labour demand and supply, entered into the analysis: labour productivity, education level of population, unemployment, number of business subjects and migration. The impact of migration in the context of the selected indicators by means of multiple regression analysis was found to be statistically significant and its impact rate is the highest one when compared with other indicators.

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NON-TRADABLE GOODS IN CATCHING-UP EUROPEAN COUNTRIES – AN INSTITUTIONAL PUZZLE?

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Abstract
This text aims to shed more light on the problem of delays and divergence tendencies in the process of real convergence compared to price level convergence in the case of publicly funded and governed goods and services (merit goods) in selected new EU member states. Since this topic is only briefly overviewed in Égert (2007), whose study focuses mainly on market goods and services, this text examines changes in real volumes and price levels for non-market goods and services. Given data limitation and regional heterogeneity, the focus is on the period between 1999 and 2012 and four selected CEE countries (the Visegrad group). Our preliminary results reveal that there were at least two (three) main tendencies similar across the group of countries during the aforementioned period: a rapid catching up process in the pre-EU period (both real and nominal convergence), some sort of an 'EU effect', followed by differentiation resulting from heterogeneous impacts of the on-going sovereign debt (financial) crisis on the chosen group of CEE countries.

Keywords
Economic Convergence, Price Dispersion, Regulation, Public Sector, CEE Countries.

JEL Classification
E31, F15, H42, H51, H52.

1 Introduction

A group of Central and Eastern European countries (CEE) joined the European Union in 2004. Overall convergence processes (real and nominal) of these economies has been analysed and are well documented in the literature. On average, GDP of CEE countries has grown faster than EU average along with faster growth of comparative price levels (see for example ECFIN, 2012; Crespo-Cuaresma et al., 2012; WB, 2013). The relatively fast and smooth process of real convergence has enabled to accumulate enough funds to be utilised in expanding public (by public funds supported) production of goods and services (so-called merit goods or in our case non-tradable goods). As a result, visible changes had been seen but they had not followed `a standard path' but had shown significant delays and even divergence tendencies even before the sovereign debt crisis started in 2008.

Effects of the on-going debt crisis have been visible in many aspects of everyday life and (economic) indicators. It has affected public finance across EU countries in a differentiated manner (for example as higher fiscal deficits and growing governmental debts) and that has already resulted in approving more or less draconian measures in order to deal with the recent economic slowdown. As an illustration, the most noticeable impact (in the short run) of the Great Recession on the process of real convergence has been a significant drop of GDP per capita growth rates and GDP levels or in the most benign scenario only a (significant) reduction in the speed of convergence. There are many reasons for the existence of many simultaneous influences that may work cumulatively, which further complicate any empirical analysis. Moreover, the 'real' long run impacts are yet to be seen as some authors argue that one of the effects of the financial crises will be on potential product (see e.g. Laibson and Mollerstrom, 2010; Chauvin et al. 2011), while other emphasise other factors that the crisis itself (e.g. for the US economy see Fernald, 2012). Nevertheless, there is still a large amount of uncertainty about the current financial crises, spillovers and methods of overcoming some of its consequences, etc. (see Classens and Kose, 2013 or Goldstein and Razin, 2013).

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Since the effects of the crisis in many aspects resemble the beginning of transformation processes in the early 1990's, many CEE governments have been prone to use similar measures to deal with its consequences. That is, in an attempt not to change prices in state governed and state regulated sectors dramatically but to fulfil the need to stabilise public finances at the same time or at least to put a cap on the total expenditures to keep them within (for some CEE already strictly binding) budgetary limits. In addition, one has to also consider the fact that there has been a change in the conduct of fiscal policy and increased emphasis on the stabilisation function. However, such a change limits for a government available fiscal space, already reduced significantly in the wake of the crisis (mainly due to problems of financial institutions). Political settings may then impose a pressure to increase the quality of public services through institutional and other reforms (and hence increase CPL) which would not be possible without compromising governmentally funded volume (and hence increasing unemployment or public financial participation).

Most of the literature on merit goods has studied problems associated with the topics stemming from the public economics (such as their provision, external effects, funding, etc. see Musgrave, 2008). There have been a very limited number of studies primarily focused on the price/quality relationship for non-tradable goods in CEE countries but for Égert (2007) whose study presents some empirical evidence and discusses the problem in general terms. An early attempt to remedy this was done by Žďárek and Šindel (2007) who analyse patterns by sectors in CEE countries. However, mainly due to data availability, they analyse tradable and non-tradable goods in the EU-25 without further (detailed) decompositions. Moreover, their analysis could not fully capture effects of the 2004 enlargement of the European Union and prospects for new EU countries. This text is an attempt to show some more evidence and verify tentative hypotheses utilising longer and more detailed time series on selected non-tradable goods for a narrower and more coherent group of CEE countries, the Visegrad group (V-4) of countries.[1]

The remainder of the text is structured as follows: in the second section presents main theoretical concepts, briefly reviews literature and offers some explanations for observed differences. The third section is fully aimed at examining reasons for differences in non-tradable (merit) goods cases. The next section shows empirical evidence when searching for explanations, and the fifth section concludes and lists potential ways for future research.

2 Theoretical Foundation and Its Empirical Support

The European Union enlargement took place in 2004, followed by two more waves in 2007 and 2013, and presents an important step towards more close Europe-wide integration. There have been effects on both convergence processes (real and nominal) of new economies already analysed and well documented in the literature.

2.1 A brief review of literature and main theoretical concepts

One of the most important points is, that on average GDP of CEE countries has grown faster than EU average along with faster growth of comparative price levels (CPLs), see for example ECFIN (2012); Crespo-Cuaresma et al. (2012); WB (2013). An illustration of both processes in V-4 and in Slovenia is in Figure 1.[2]

[1] Šaroch et al. (2010) examined changes in non-tradable goods in the light of public debts.

[2] Similar tendencies are visible for individual components of GDP such as actual individual consumption ("household consumption") or gross fixed capital formation. Since Figure 1 is a bird's-eye view on both convergence processes, a more long-run view is in the Appendix (Figure 1A).

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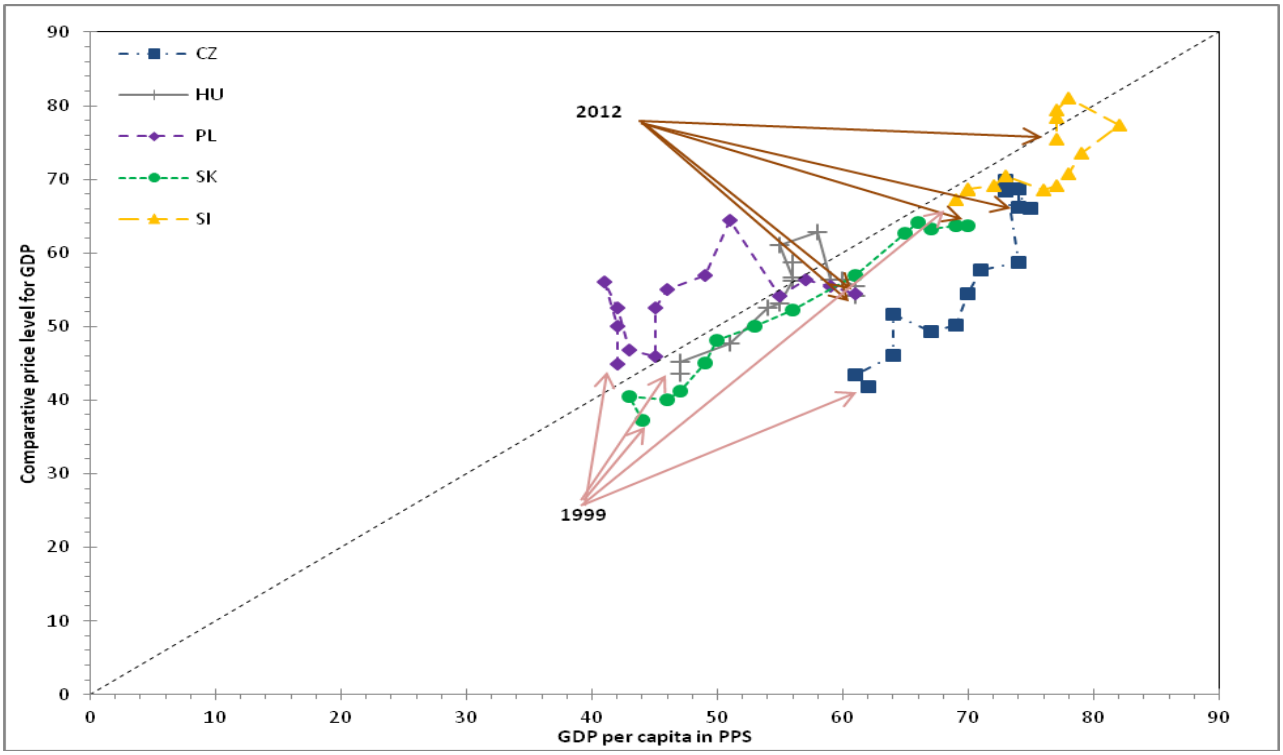

Figure 1. Real and nominal convergence in the V-4 countries and Slovenia, 1999–2012 (Source: authors' calculation based on Eurostat, 2014)

Both anecdotal and rigorous empirical evidence shows that there is a relatively stable linkage between GDP per capita and a measure of the aggregate price level for GDP (comparative price level) across countries of almost all levels of economic development. Narrative economists explain this phenomenon of economic convergence through the Harrod-Ballassa-Samuelson (HBS) effect (the so-called supply-side effect, see Balassa, 1964 or Samuelson, 1964 or Lein-Rupprecht et al., 2007). More recent approach has been proposed by Rogoff (1996), who illustrates the dynamic nature of purchasing power parity (PPP) theory while utilising indices such as the Big Mac Index or the dynamic Penn effect outlined in Ravallion (2010); for an application in the CEE region see Staehr (2011).

Over last decades, macroeconomists have substantiated and empirically documented the B-S effect, closely following and empirically investigating individual phases of the European monetary union project. In the beginning of the 1990s, there were a large number of questions as to how price levels in the Single Market and/or coupled with a single currency would interact with each other under the assumption that a common currency was implemented.[3] Another reason for trying to shed more light on the phenomenon was the on-going convergence of both newly accessed and EU candidate countries. The on-going process of integration leads to relatively fast convergence of tradable goods, largely caused by arbitrary forces (for some early evidence for EU countries see Faber and Stockman, 2007 or Dreger et al., 2007, an example of counterevidence for an example of tradable goods – cars – can be found in Lutz, 2004).[4] However, the convergence process of non-tradable

[3] That seems to be a reason for a large numbers of research projects and for regular price assessments that have been carried out by the EC since the early 2000s (e.g. personal cars). An updated version of such an assessment is EC (2006) that lists a number of problems and shows room for price convergence.

[4] On the other side, an alternative hypothesis has been put forward that the increased intra-EU trade will mitigate or even reverse price convergence (due to the effect of specialization and/or polarization), and therefore it will lead to more diverse national price levels, for details see Baldwin (2006). In addition, one should not forget the influence of factors such as these linked to the Great Recession (and/or specifically to the EU sovereign debt crisis).

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goods[5] could exhibit several forms, which cannot be easily explained by the HBS (supply-side) effect.[6]

On the contrary to the views of Balassa and Samuelson from the mid-1960s (when nominal exchange rates were almost exclusively fixed as a part of the Bretton-Wood system), the situation of last more than two decades has been different and more complex (see Šaroch, 2003; Égert, 2007; Komárek et al., 2010). The convergence of comparative price level can be achieved not only through selective inflation differentials in non-tradable sectors, but also through the so-called exchange rate channel. The pursuit of either channel or their combination can have troublesome consequences if macroeconomic policies are not very well aligned. Komárek et al. (2010) points out that CPL convergence realised/channelled/through the inflation channel could only lead to low interest rates and hence in the built-up of internal and external imbalances, rendering the economy particularly vulnerable to turbulent times or at the time of a crisis (op. cit., p. 88). On the other hand, Šaroch (2003) argues that a mismatch between short-term and midterm productivity growth rates in the tradable goods sector and nominal exchange rate fluctuations may emerge. Competitiveness of various industries is based on (changing) market structures. Therefore, competitiveness of these industries may differ substantially for the economy as a whole. Additionally, it depends on the type of competition (price or quality) within the tradable goods industry (Šaroch, 2003). Égert (2007) lists potential factors affecting price levels[7] and argues that convergence of comparative price level based solely on a nominal trend appreciation could result in "a bumpy road" (ibid., p. 35).

Both real and nominal convergence are affected by a wide range of factors that are associated with domestic (country-specific) environment including Among others, macroeconomic policies, the phase of a business cycle (see Čihák and Holub, 2001, 2003, 2005; Égert, 2007), changes in the external environment such as preparations for an EU accession or the Single Market Programme), in particular, the effects of the on-going economic globalization such as outsourcing, reallocation of production (changes in production chains) within and outside the EU, see Alho et al. (2008). In addition, Čhák and Holub (2005) also argue that real convergence is the outcome of endogenous corporate investment in production quality that affects the ratio of capital allocated in tradable and non-tradable sectors, as well as the size and the ratio of productivity in tradable and non-tradable industries. Convergence in non-tradable sectors is believed to be much faster after the higher level of real convergence is achieved.

2.2 What causes the difference in Price Levels and Internal Structure of Relative Prices?

In spite of the quite good level of current understanding of the underlying mechanisms of relative price adjustments (convergence), the process of removal of existing price gaps is never complete or total. There are several factors which could explain why goods baskets in similar economies show even significant differences in CPL as well as in relative prices for long periods of time. The effects associated with industry or market composition were already mentioned. There are other related to different consumer preferences and taste that are behind diverse price and income elasticity; similarly,

[5] This term is used in a broad sense, that is all the non-tradable goods and services are included.
Goods known or labelled as non-tradable goods are those, whose price levels are mainly determined by domestic determinants such as taxation (mainly VAT, excise duties), wages, regulation and trade barriers. Empirical evidence in this case has been rather scarce and ambiguous.
However, there is no exact definition of tradable and non-tradable goods that may thus offer a potential explanation for those results. A definition of "non-tradable" is for example given by the World Bank that uses the label non-tradable for goods and services including energy, housing, public utilities, services and transport (see WB, 1991). These are viewed as a result of natural characteristics, trade restrictions and/or trade costs.

[6] Latest research however reveals that the law of one price does hold in currency unions (a variety of differentiated goods at least for large (international) companies). Its violation can be attributed to the very existence of various currencies, not only to the existence of exchange rate volatility, for details see Cavallo et al. (2014).

[7] For a modification reflecting other possible factors due to the Great Recession and/or the on-going process of globalization of economic activities, see Žďárek (2013).

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the different size of local markets, the existence of economies of scale and scope, varying taxation, buying and purchasing power of companies and the nature of competition (see Brinkman, 1999).

Almost all these factors affect the so-called transaction costs and consequently the theoretical scope for arbitrage processes. Formally, drawing upon Égert (2007), the final price of a good or service i (P_i) is given:

$$P_i = [\theta P_i^T + (1-\theta)P_i^{NT} + f(C(.))](1+\varphi), \quad (1)$$

where P_i^T is the θ share of the price of utilised tradable goods for i, P_i^{NT} is the (1- θ) share of the price of utilised non-tradable goods for i, $f(C(.))$ is the function of other costs explained in the main text and (1- φ) is the effect of taxation. Assuming that prices of tradable goods do not show a clear trend, almost the entire price change is given by non-tradable goods (i.e. wages rises as their main determinant) and other costs that can be also mitigated by productivity increases and improvements, leaving aside the hard-to-predict changes in taxation.

While the former can be at least partially remedied by some sort of anti-monopoly policy (regulations trying to restore free markets for as many goods and services as possible),[8] the latter (preferences, `searching & matching costs', cost of transport, packaging, the size of a market, etc.) are mostly pre-determined (consumers' taste, the prevalence of home bias in consumption, levels of utilised technology, etc.). In addition, a very specific subset of non-tradable industries operates in sectors with prices regulated by governments or state-provided services.

Before embarking on a further analysis, it is advisable to briefly define the term regulated prices (of goods and services) mentioned throughout the text. Égert (2007, 2010) offers examples of some definitions. Firstly, ECB (2003) works with a narrow definition reflecting the consumer price basket (HICP). It consists of health services (three items), services of waste industry (two items), personal transport (trains), postal services, education and social protection (for details see op. cit.).[9] Lünneman and Mathä (2005) proposed adding cultural services and another form of personal transport (bus) to the aforementioned list.[10] Due to particular characteristics of housing markets in the CEE region, rents should be part of the group. The broadest definition (the widest according to Égert, 2007) should be completed with market services such as broadly defined energy prices mostly for households (heat, gas, oil, etc.).

However, literature has focused on the so-called market services, that is, services where market forces (of demand and supply) lead to creation of market prices. Conversely, there has been hardly any study examining the particulars of markets of regulated (administered, administered) goods apart from selected utilities (energy, etc.) and/or goods.

3 Price Development in State Governed Sectors

Price increases of government-provided services can be motivated by the efforts to align prices with real cost (Mandel and Tomšík, 2008, pp. 7). However, the actual stimuli may be driven by current fiscal policies and existing budgetary constraints. On the other hand, lower prices for government-provided services (also called `merit goods', for details see Musgrave, 2008) such as education and healthcare could be also driven by the effort to maintain governmental expenditures low, as any form

[8] The question is how efficient these interventions are and whether their effects are Pareto improving as some schools of economic thought argue.
[9] Eurostat (2014) classifies 10.7% of the Czech HICP basket prices as administered prices, compared to 8.2% of the Slovenian and 23.9% of the Slovakian basket (min - max) for the group of CEE countries. Their share in the Czech CPI stands currently at 18.7%.
[10] One could also think of another type of personal transport (boat) that is supported but it is not so prevalent across CEE or EU countries.

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of public financial participation is politically unpopular.[11] Despite the fact that maintaining unreasonably low prices could then lead to reduction in quality or availability of those services. Consequently, the increasing availability of them while maintaining (more realistically trying to maintain) the scope and scale of government-provided services unchanged would result in immanent quality decrease. In fact, early evidence shown in Égert (2007) confirms that inflation for state-regulated prices in the CEE region was higher than for other items. However, this pattern seems to have ceased to exist due to a large number of external shocks affecting agricultural and energy prices since 2005.

While in market sectors with regulated prices such as utilities, telecommunications or energy the scope of services is primarily not regulated and the industries are rather capital intensive, for state-provided services the government introduces regulatory frame for both prices, and scale and scope and in addition, these sectors are generally labour intensive. Other problems and/or consequences are these:

a) substantial irregularity of price changes (adjustments) resulting in large swings of prices from year to year (and thus inflation rate with consequences for the conduct of monetary policy);[12]
b) existence of noneconomic influences and cycles (adjustments taking place after an election are more likely than before, adjustments happening at the beginning of a year, irreversibility of some measures);
c) persistence of main patterns (any policy cannot be changed/modified easily and/or a change of ownership does not result in restoring market competition in the previously regulated market);
d) existence of buffers (the roots for this pattern can be traced back to the beginning of CEE transformation processes – in the early 1990s – when regulated prices assisted in keeping down higher inflationary pressures. As a result of price controls the gap between regulated and market-driven prices has widened);
e) political process (a lack of clearly set rules increases uncertainty and limits the scope for medium and long-run calculations and business plans and thus hinders necessary investments);
f) cost pressures (price stability in state-provided and regulated services curbed inflation in early phases of transformation processes; however, providers were forced to prefer current expenditures over medium and long-run capital investments resulting in inevitable capital obsolescence. Subsequent relatively rapid rise of state-provided and regulated prices reported by Égert (2007) could be viewed as the consequence of earlier underinvestment);[13]
g) measurement issues (since an overwhelming majority is in the form of services, questions such as output and its measurement, efficiency and quality improvements arise as inputs are mostly based on competitive prices but outputs are not);
h) external effects (one of the main characteristics of merit goods is the existence of spillovers).

3.1 Hypotheses to be tested

There are many potentially testable hypotheses in the first round when trying to familiarise ourselves with main observed tendencies and trends:

a) The pressure to cap governmental expenditures and increase availability of state-governed services led to relatively low wages and service quality in education and healthcare sectors.
b) Price and institutional convergence in education and healthcare sectors will be possible only if the scale and scope of services will be reduced or individual participation will increase.

[11] The key characteristic of merit goods is that their production (consumption) leads to external effects (positive/negative) that are not captured by per se economic subject causing them (do not enter their budget constraints, utility functions) but are spread over the society as a whole.
[12] Recent events in the Czech Republic seem to be an interesting example.
[13] Naturally, investments need to be different across industries (leaving aside market sectors, ranging from very low for some cultural services to possibly prohibitively large in case of healthcare).

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In order to test these hypotheses, data from Eurostat will be utilised (per capita expenditures and comparative price levels for health and education sectors). There are additional datasets available such as the number of practicing physicians or student-teacher ratio, expenditures in both sectors, etc. Due to space dimensions, the main focus will be on presenting main trends and rather brief comments on trends in the underlying data.

4 What the data seem to be telling us?

Stylized facts seem to be of rather simple nature. In accordance with the conventional theory-based assumptions (HBS), lower CPLs are typical for less integrated and less developed countries due to lower prices of services.[14] Conversely, prices of raw materials and (some industrial) goods are comparable and almost follow the relative version of purchasing power parity theory. Since prices of tradable goods in more developed EU countries have been almost aligned and hence not growing, exchange rate appreciation in less developed countries may result even in absolute reduction of prices within those economies (deflation pressures).

4.1 Convergence in Tradable Sector

The sole central bank in CEE countries, which focused closely on pricing in tradable and non-tradable sector and published their time series, was the Czech National Bank (until 2006, when the bank stopped focusing on distinctions between tradable and non-tradable prices, or until 2010, when it stopped publishing the underlying time series as a part of the Inflation Report). Since a consensus regarding the definition of tradable prices has not been reached in the literature yet and due to data limitations for underlying time series, as a proxy for tradable goods, some (main) price indices (HICP based) are utilised. (Due to space limitations selected time series are shown only for the Czech economy (Figure 2 below).)

It can be seen that prices of tradable goods approximated by the price index of industrial goods have been relatively stable, most of the time below the overall inflation after 2000. Conversely, other components of tradable goods such as food and energy prices showed large swings with several peaks since the beginning of 2000. While food prices were on a rise due to the structural factors throughout the EU in the period, energy prices showed significant volatility with several large swings (mainly after 2005) even surpassing growth rates of administered prices.[15] Conversely, prices of other tradable components (non-food items such as non-energetic industrial goods) were decreasing during some periods and their spikes were modest throughout the period due to the international price arbitration.[16] Until recently a continuing trend (nominal) appreciation of the Czech currency and the overall tendency of prices of tradable goods to decline in other European markets were the key causes of price arbitration.

[14] See some early evidence in Balassa (1964) or Samuelson (1964); for EU countries see CES VŠEM (2011).
[15] This is a time series captures changes both in fully or mainly administered prices. A disaggregated view to see the effects of irregular price changes, together with time series for all services and communications are shown in the Appendix (Figure 2A).
[16] Similar behaviour was observed in other CEE countries, for example in Hungary or Poland. Due to space limitations we do not show these figures in this text.

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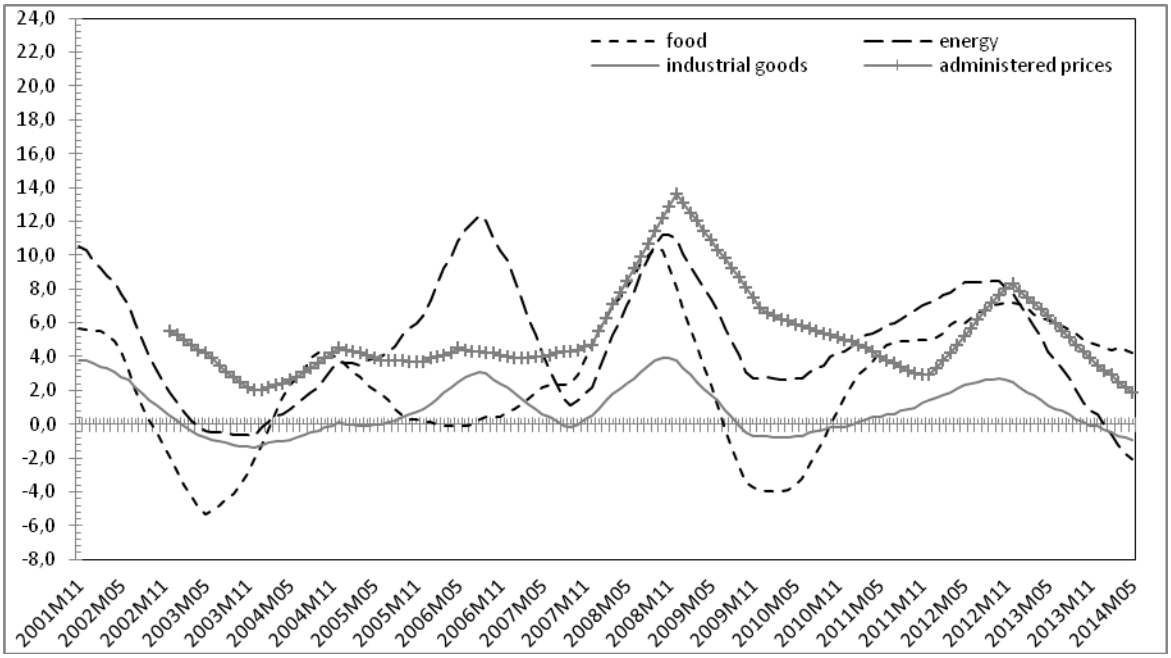

Figure 2. HICP indices of tradable goods and administered prices in the Czech Republic (12M av. rate of change), 2001:11–2014:5 (Source: Eurostat (2014a), own adaptation)

4.2 Convergence in State Regulated and State Governed Sectors

Comparable data from international organisations and statistical offices such as Eurostat, OECD, UNCTAD, and the World Bank offer a colourful picture of real expenditures per capita and comparative price levels for 'production' in non-tradable sectors. Since the focus is 'production" that can be simultaneously labelled as merit goods, the choice was given for healthcare and education. The underlying theory (HBS) says that if real and nominal changes were aligned, a country would show a path along a 45 degree line that represents no-difference situation, that is, the diagonal line is where partial CPL and volumes meet. The trajectory of a typical sector convergence moves the economy along the diagonal. The space below the diagonal means that the sector volume is larger than it would correspond to its price level (higher productivity) and vice versa. However, the available data correspond to a large extent to our description presented above.

Volumes of healthcare services provided across most of the CEE countries have been rising since 1993 (1996).[17] In the Czech Republic the volume of services per real expenditure was declining between 1999 and 2006 and since then it has not shown a clear tendency (oscillating around the value of 80 for EU-15 = 100), see Figure 3. Even the period of the sovereign debt crisis did not change much on that. Conversely, CPLs were rising until 2008 when the still on-going period of stagnation has started (around 50). Since input costs, including labour costs increased significantly over the period, convergence seems to have been delayed (i.e. healthcare remained below the 45 degree line, the shown as a dashed line in Figure 3).[18] Hand in hand with increasing quality and wages in health

[17] Values of real expenditures and CPL for the group of CEE countries for 1990, 1993 and 1996 are not fully comparable with values after 1999 (due to various methodological issues) but they are shown in the Appendix. In some cases are not available and therefore, therefore our focus is on changes after 1999 when Eurostat started publishing comparable time series.

[18] To illustrate the evolution of costs, Eurostat data show that some CEE countries, for example the Czech Republic, Hungary, and Poland have had more physicians per 100.000 inhabitants than Austria. The number is comparable to that of Germany, which is the European leader in relative headcount of physicians. In the future, the V-4 may face a decline in the number of practicing physicians as the pressure for quality may outweigh the political importance of volume or prices will have risen significantly so that it will not pay off to realise health-check travels to these countries increasingly popular in past years. A similar situation has been for dental services in the Czech Republic – the number of dentists may be too high for the purchasing power if dental care follows the anticipated path of price level convergence. The other two

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care, the volume of provided services has been decreasing since the end of 1990s.[19] However, individual adjustment paths have been very diverse. It has been observed that in services (Égert, 2007) the convergence trajectory is approaching the 45° line from below. Therefore, the convergence trajectory both for healthcare and for education sector resembles the (inverted) capital letter L.

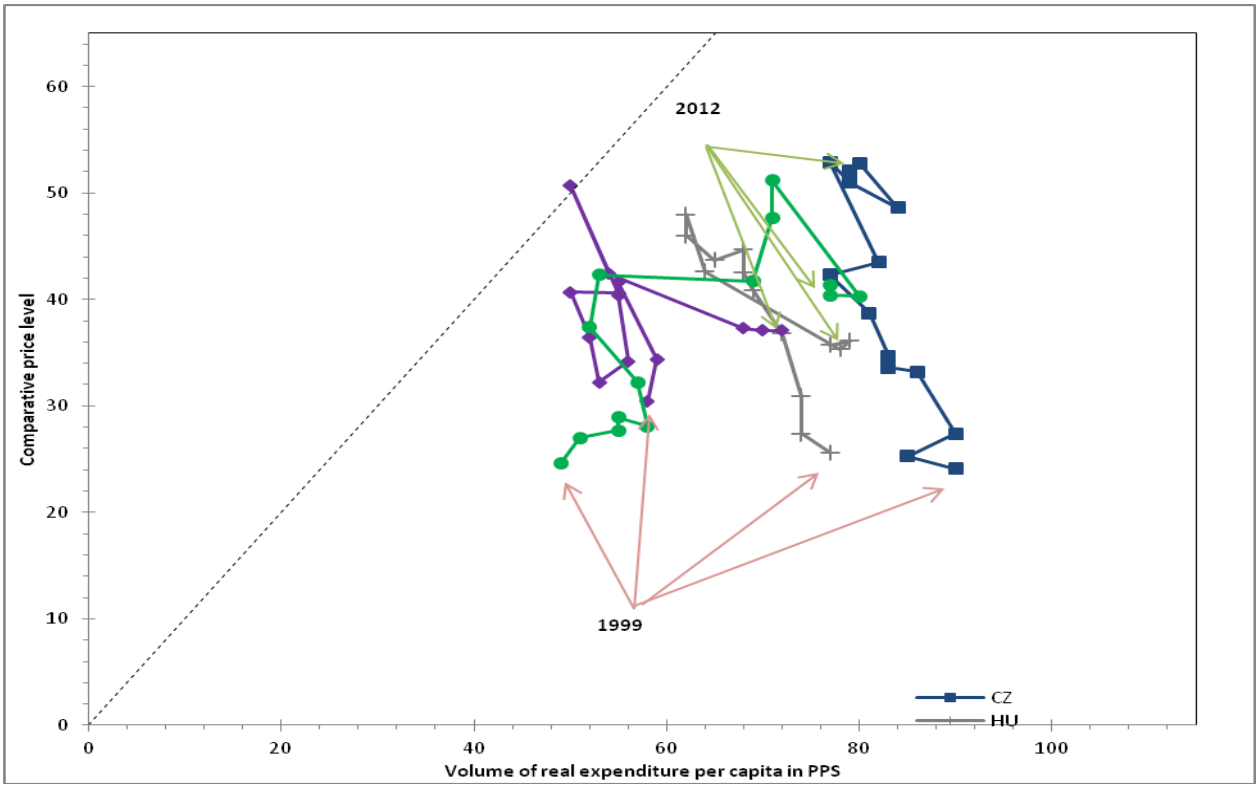

Figure 3. Real expenditure per capita and CPL in the health sector, 1999–2012, EU-15 = 100 (Source: Eurostat, 2014)

A similar pattern can be identified in the data for V-4 countries, where the convergence process of CPL in healthcare reduces the volume of services, but in education price increases do not reduce the amount of service. Convergence in CPL in education has been lagging behind significantly more than that in healthcare (see Figure 4 below).

As already mentioned, the latest available data for education show some differences compared to those for healthcare. Firstly, they do not show the same (diverse) pattern as the data for healthcare – at first a decrease and then an increase followed by another decrease after 2004, an almost identical pattern across all CEE countries.[20] Secondly, the comparable price levels remain traditionally lower (less inflated) in education than in healthcare. Thirdly, education can be considered even less internationally tradable (domestically biased). Its local qualitative standards can be linked to international benchmarks to a lesser degree creating a barrier to spillovers of "new technologies" and quality standards compared to healthcare despite recent trends such as the OECD triennial assessment

countries have showed lower numbers of dentists compared to Austria: Poland (around three fifth) and Hungary (almost equal). Interestingly, Slovakia matched the Czech path almost perfectly until 2006/2007 and since then it has been "diverging".

[19] The Czech path was somewhat specific compared to some CEE countries, for example Poland and Slovakia (both showed increases in prices and volumes). The data indicate a similar development for Slovenia (not shown) and partially for Hungary.

[20] There seems to have been a sort of EU entry effect that has triggered a different dynamic after 2004. A tentative explanation we put forward rests upon the existence of effects of deeper integration and further removal of barriers in the enlarged EU.
This empirically observed pattern leads us one of the hypotheses formulated in the project.

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(PISA), see OECD (2014). Finally, the impact of education is assumed to be visible in the long run and therefore, it can be rather difficult to assess its immediate effects.

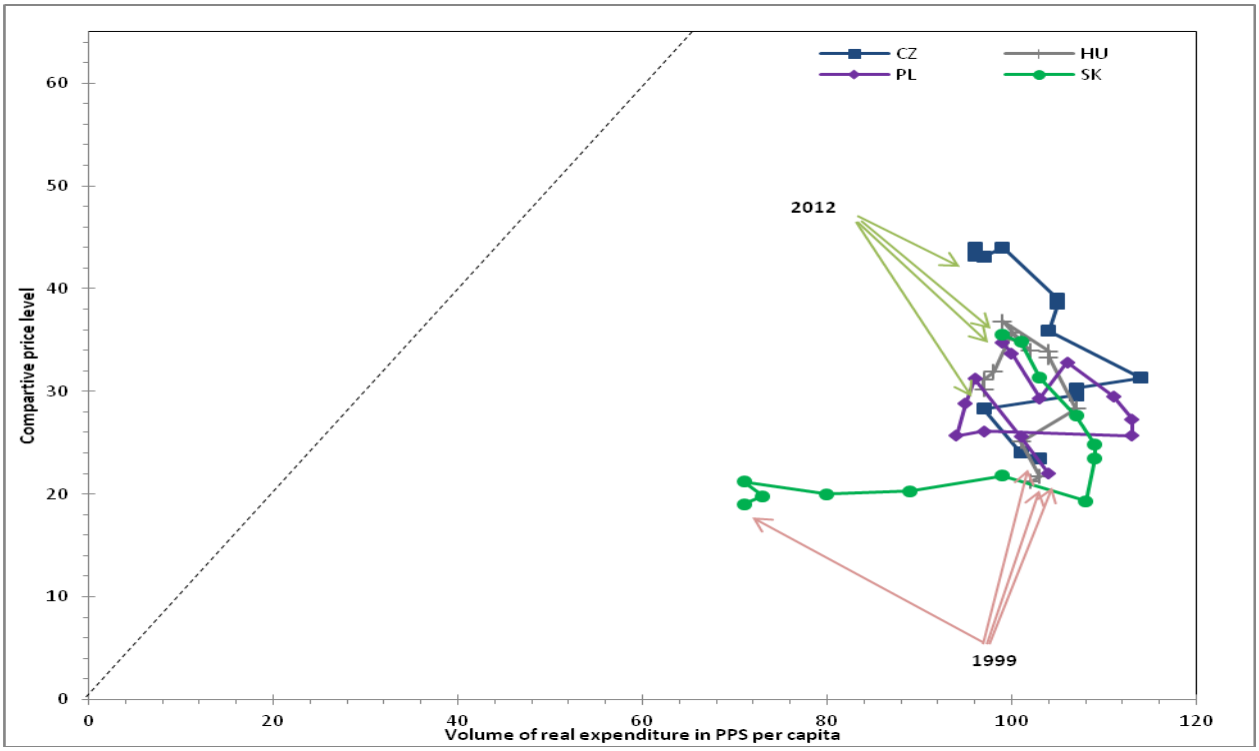

Figure 4. Real expenditure per capita and CPL in the education sector, 1999–2012, EU-15 = 100 (Source: Eurostat, 2014)

Some signs of the decreasing quality of education may be documented for example in a reduction of the intensiveness of educational process. Teachers need to be in the classroom and care for their pupils and students. Student to teacher ratio (i.e. the availability of a teacher for students of all levels) grew across V-4 (CEE) countries and hence the intensiveness of education decreased (probably the most rapidly for tertiary education due to a large gap compared to old EU members in the 1990s) even though recent statistics have shown some improvements at least for some V-4 (CEE) countries, for details see OECD (2013).

Apart from the statistics related to the physical number of workers in both sectors, one can also use data on expenditures of the general government by sectors (COFOG).[21] These data are presented in Table 1 together with the EU-15 average. In the case of education one sees relatively stable expenditure ratios with an increase around the year of EU enlargement (however, see also the relative levels in last columns of the table), followed by oscillations (decreases) since then. While expenditures in Hungary and Poland were above the EU-15 level for most of the time, the Czech and Slovak expenditures were below. Conversely, in the case of health expenditures, the Czech ones were above the EU-15 level for almost the whole period, the Slovak shares started increasing around 2004 with a peak in 2009 with a significant drop afterwards. Expenditure shares in Hungary and Poland were relatively stable but well below the EU-15 level.[22] The spillover effects of the on-going sovereign debt crisis in CEE countries have been reflected in expenditures in both sectors since 2008 in a differentiated manner.

[21] This national account category (the institutional sector government, S.13) includes both expenditures of central and state governments, and local governments and social security institutions (health insurance companies).
[22] Some of the observed changes stem from changes in financing schemes and thus classification of expenditures as COFOG in the national accounts. It is interesting from this point of view that Czech reform of the health system did not lead to in significant changes, while the Slovak reform did.

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Table 1. Total general government expenditure (% of GDP)

education															Average	EU-15 = 100		
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	(1999–2012)	1999	2004	2012
EU-15	5.0	4.9	5.0	5.2	5.3	5.2	5.2	5.1	5.1	5.2	5.6	5.5	5.3	5.3	5.2	100	100	100
CZ	4.2	4.3	4.3	5.1	5.0	4.6	4.6	4.7	4.5	4.5	4.8	4.8	4.9	4.8	4.6	84	88	91
HU	5.2	5.2	5.3	5.7	6.2	5.8	5.8	5.8	5.5	5.2	5.3	5.7	5.2	4.8	5.4	104	112	91
PL	..	..	..	6.1	6.1	5.7	6.1	6.0	5.7	5.7	5.6	5.6	5.5	5.5	5.8	..	110	104
SK	3.3	3.6	3.2	3.6	4.3	3.9	4.0	3.7	3.9	3.5	4.3	4.5	4.1	3.8	3.8	66	75	72
health																		
EU-15	6.0	6.2	6.3	6.5	6.6	6.7	6.8	6.9	6.8	7.1	7.7	7.6	7.5	7.5	6.7	100	100	100
CZ	7.0	6.7	7.0	7.2	7.4	7.0	6.9	6.9	6.9	6.9	7.7	7.8	7.8	7.8	7.1	117	104	104
HU	5.1	5.0	4.9	5.5	5.7	5.5	5.6	5.6	5.0	4.9	5.1	5.1	5.2	5.3	5.3	85	82	71
PL	..		..	4.4	4.3	4.2	4.4	4.6	4.5	5.0	5.1	5.0	4.7	4.6	4.6	..	63	91
SK	5.4	5.2	4.9	5.0	6.5	4.7	4.8	5.8	6.4	7.0	7.8	6.4	6.0	6.2	5.8	90	70	83

Source: Eurostat (2014b), own calculations.

5 Conclusion and further research

The text presented some evidence on real and nominal convergence in the V-4 countries, adding to a long list of contributions on this topic. Nevertheless, a special attention was paid to the long-term real convergence of goods that are still in a significant way state-governed, regulated and/or guaranteed creating limits for market (competition) forces. The analysed services are also labelled merit goods (such as education and healthcare). Since being classical examples of non-tradable goods, they are often excluded from empirical exercises (one exception being Égert, 2007). The data reveal that these goods showed different adjustments paths compared to tradable goods exposed to an increased competition pressures after the EU enlargement in 2004. Since both service sectors are deemed non-tradable, it is expected that the process of real convergence is delayed. Such a delay can be theoretically attributed to the Harrod-Balassa-Samuelson effect.

Since governments tend to pursue rather contradictory goals such as increases in scale, scope, and/or quality of those services while keeping governmental expenditures as low as possible, there exists an obvious trade-off. The data reveal that until end of the 1990s, for all the V-4 countries – the Czech Republic, Slovakia, Poland, and Hungary – price levels had been relatively low or even divergent while volume indicators had grown substantially, faster than in EU-15 countries. In the first decade of the 21st century, the trend was either halted or reversed, particularly in the aftermath of the sovereign debt crisis. Alignment of CPLs by sectors went along with volume decrease (healthcare) or volume stagnation (education). This trajectory may be described through the Harror-Balassa-Samuelson methodological approach as a reverse L-shape.

When searching for explanations for the past behaviour, apart from financial crisis links, another set of effects seems to be associated with the on-going process of (economic) integration in the EU and/or the process of globalization. Both processes have resulted in a more transparent (competitive) environment that puts additional limits on the supply of non-tradable goods and at the same time, it generates a structurally different demand for goods. Public sector (guided by ruling political parties) has to respond to both tendencies accordingly; otherwise a new election is expected to bring about a "political change". A further incentive to change a government's policy is linked to empirical studies showing negative effects of large governments in general but do find positive effects of public spending on education. Thanks to a lower quality and lower efficiency of CEE governments compared to EU-15 (see WB, 2011); there is a large room for improvements that will necessarily require 'adjustments' in policies. These changes should be based on solid ground, that is, the need for good understanding of policy effects and their implications is more than desirable.

As it was mentioned several times throughout the text, there have been a very limited number of studies focused on the price/quality relationship for non-tradable goods in transition countries. Most of the literature on merit goods has studied problems associated with the topics stemming from the

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public economics (such as their provision, external effects, funding, etc. see Musgrave, 2008). One of the very few exceptions is Égert (2007) who shows some empirical evidence and discuss the problem in general. Another early attempt to analyse patterns by sectors in CEE countries was Žďárek and Šindel (2007). However, mainly due to data availability, they analysed tradable and non-tradable goods in the EU-25 without further decompositions when examining effects of the 2004 enlargement of the European Union and prospects for new EU countries.

In the future, we want to expand on the work of Égert (2007) providing both an extension of his theoretical and empirical work to a broad range of non-market services because of many theoretical questions to be answered that include the thorough investigation of principles behind empirically observed slowdowns and/or divergent trajectories in the case of public goods and services in transition countries (both underlying mechanisms and repercussions). In addition, one may think of effects related to the strong need to consolidate public finance across EU countries (to bring them on a sustainable path) nowadays and price convergence in public sectors may be both interconnected and may pose a serious challenge for a further (deeper) integration process of new EU members into the common economic environment in the globalized world. However, such extensions will not straightforward due to problems both with theoretical definitions of key variables and with data for an empirical investigation such as suitable measures of government quality that would capture the essence of underlying changes in governmental policies and therefore their effects on economic outcomes.

6 Acknowledgement

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Appendix

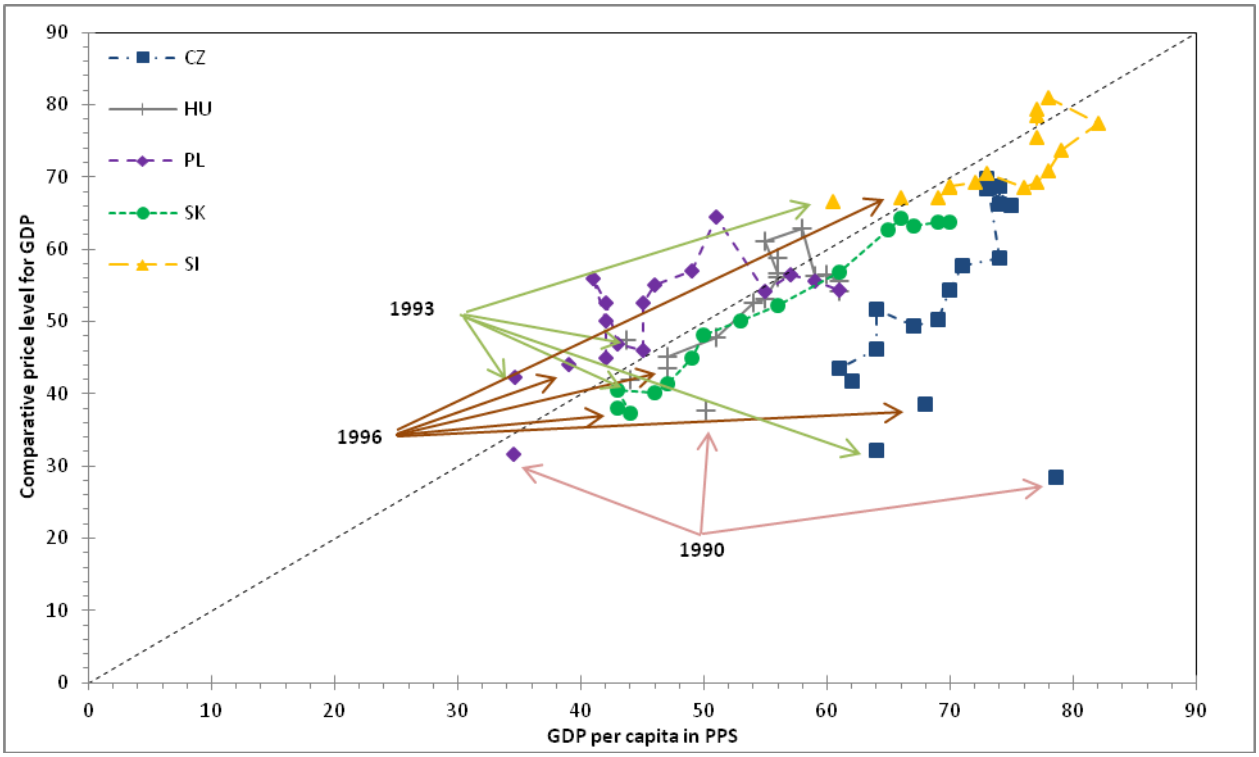

Figure 1A. Real expenditure per capita and CPL in the health sector, 1990–2012, EU-15 = 100 (Source: own calculations based on data from UNECE (1994, 1997), OECD (1996, 1999), Eurostat, 2014)
Note: data for Slovenia since 1991.

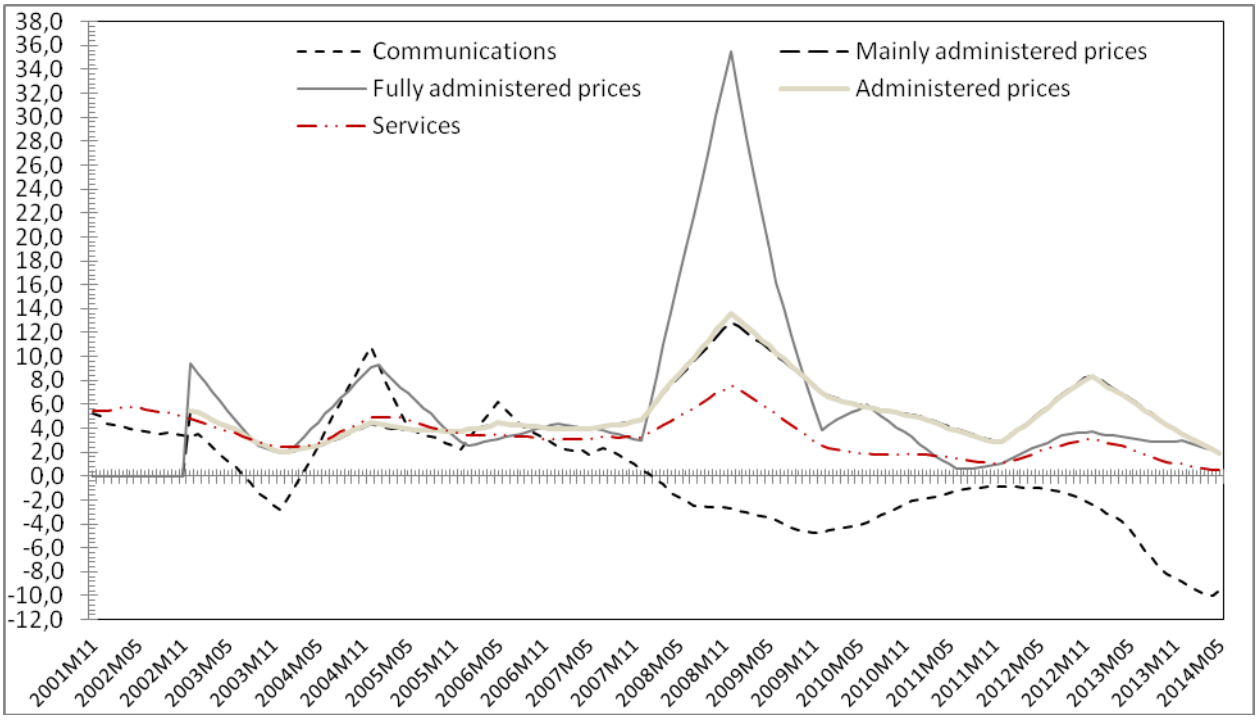

Fig. 2A. HICP indices of services (excluding goods), administered prices (fully and mainly) in the Czech Republic (12M av. rate of change), 2001:11–2014:5 (Source: Eurostat (2014a), own adaptation.)

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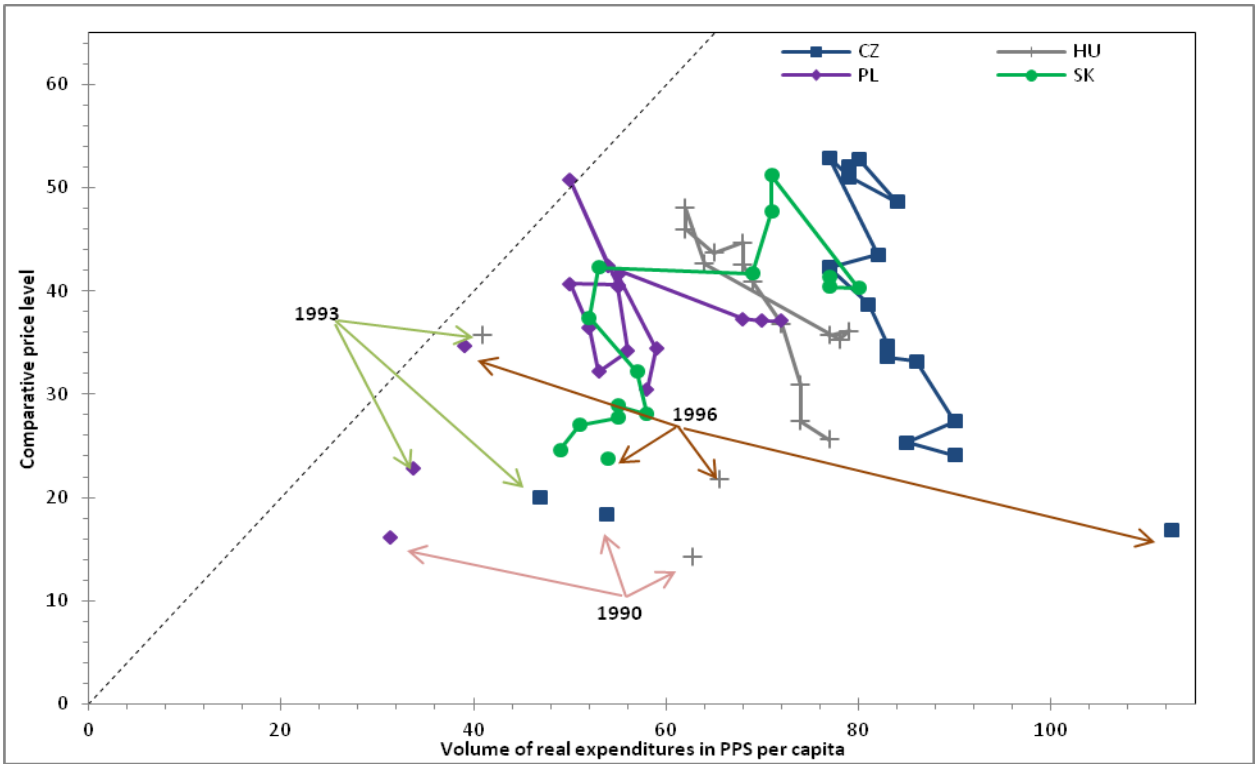

Figure 3A. Real expenditure per capita and CPL in the health sector, 1990–2012, EU-15 = 100
(Source: own calculations based on data from UNECE (1994, 1997), OECD (1996, 1999), Eurostat (2014))
Note: data for Slovakia since 1996.

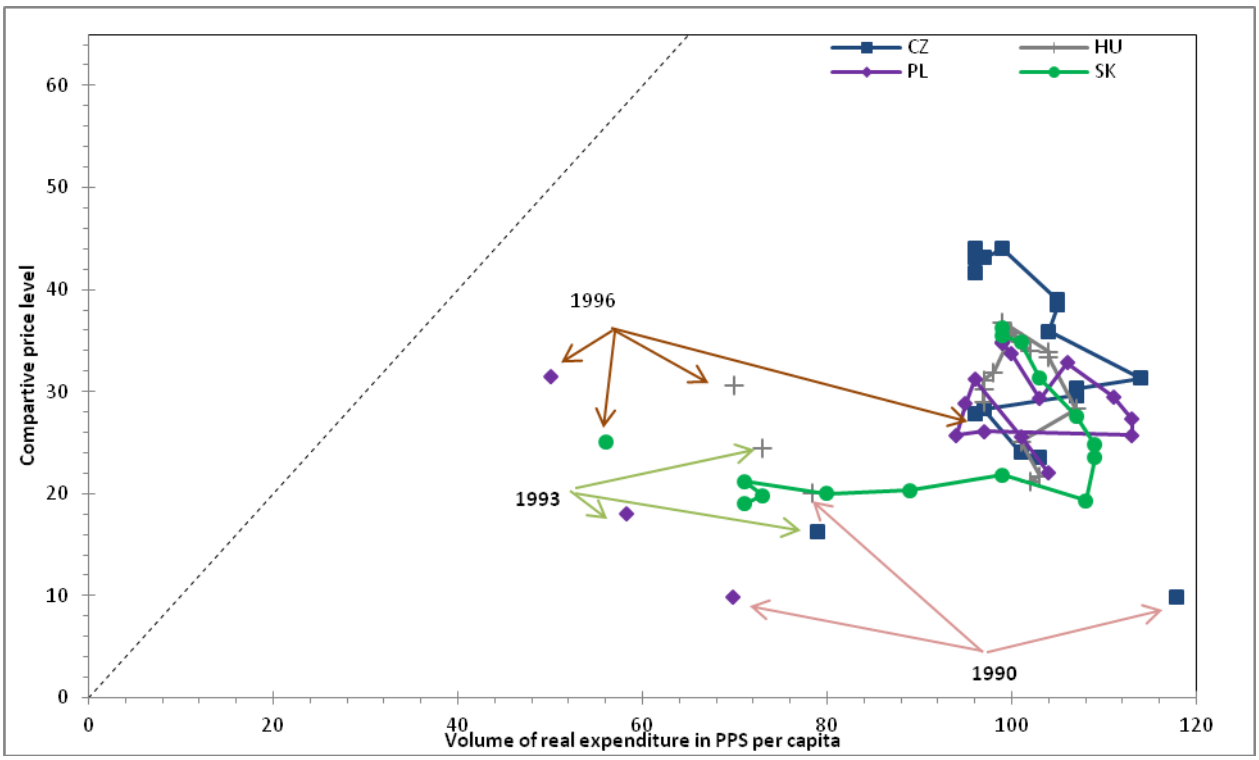

Figure 4A. Real expenditure per capita and CPL in the education sector, 1990–2012, EU-15 = 100
(Source: own calculations based on data from UNECE (1994, 1997), OECD (1996, 1999), Eurostat (2014))
Note: data for Slovakia since 1996.

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THE COMPETITIVENESS OF SMALL AND MEDIUM-SIZED ENTERPRISES IN RETAIL

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Abstract
The small and medium-sized enterprises are very important part of economy. In last year the number of these companies stagnated, not only in the retail. This paper is focused on retail in Moravian-Silesian Region. The aim of this paper is firstly to determinate the theoretical bases and selected aspects of competitiveness of retail in Moravian-Silesian Region and secondly to analyse steps, which help to improve the competitiveness of chosen enterprises. The marginally part of this paper are the concepts of support for small and medium-sized enterprises in the Czech Republic and Moravian-Silesian Region. The conclusions are relating to problem areas, for example finance, access to information, using of technologies, legislation, a taxes, an innovations and so on.

Keywords
Competitiveness, Small-sized Enterprises, Medium-sized Enterprises, Retail.

JEL Classification
L26, L81, D11.

1 Introduction

The importance of small and medium-sized enterprises for the national economy is key. Many authors MSP called the driving force of business, growth, innovation and competitiveness. SMEs in the store, whether in retail, wholesale and foreign trade has its tradition, however, increasing the concentration of business activities in the last century, the internationalization of manifesting the onset of large-size units and a fundamental change in consumer behaviour were very much touched to SMEs. The aim of this paper is firstly to determinate the theoretical bases and selected aspects of competitiveness of retail in Moravian-Silesian Region and secondly to analyse steps, which help to improve the competitiveness of chosen enterprises. The importance of competitiveness small and medium-sized businesses realizes the representatives of national governments and representatives of the European Union. SME support not only funds but also counselling, or even legislative changes to streamline the work of small and medium-sized businesses. Competitiveness is one of the key concepts of contemporary economics. For its evaluation, there are a number of indicators. A complete set of these indicators provides The Global Competitiveness Index published by the World Economic Forum.

2 The importance of small and medium-sized enterprises

Lengnick-Hall a Beck (2011) explain, that in turbulent, surprising, continuously evolving marketplace environments only flexible, agile, and relentlessly dynamic organizations will thrive. In fact, firms often must be able to move beyond survival and actually prosper in complicated, uncertain, and threatening environments. Unstable environments create frequent challenges and even relatively stable marketplaces experience occasional jolts or undergo periodic revolutionary shifts. Resilient firms actually thrive and become better in part because they faced and overcame serious challenges. Similar to a firm's efforts to encourage strategic flexibility (i.e., the ability to change direction on short notice at low cost), efforts to build a capacity for resilience presume that change and surprise can be sources of opportunity as well as signs of potential threat, but that to capitalize on these opportunities often requires organizational transformation.

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SMEs are an important market sector of the economy. They can be described as the driving force of business, growth, innovation and competitiveness. Significantly contributes to the creation of employment and GDP. The European Union attaches MSP important social, political and economic role, both in terms of their number, providing jobs, social stability and dynamics of innovation development. The European Commission has defined criteria for SMEs that shown in the following table (Záboj et. al., 2011, pp. 13).

Table 1. Defining criteria of SMEs

Category of enterprises	Number of employees	Annual turnover mil. €	Annual balance sheet total mil. €
Micro enterprises	< 10	≤ 2	≤ 2
Small-sized enterprises	< 50	≤ 10	≤ 10
Medium-sized enterprises	< 250	≤ 50	≤ 43

Source: Záboj et al., 2011, p. 13.

In the Czech economy, the position of SMEs in the last decade was relatively stable. The following table shows the number of SMEs in the Czech Republic, in Moravian-Silesian Region in year 2005 and 2012, and the evolution of the number of employees currently in small and medium-sized enterprises and micro-enterprises. However, most businesses said it has no employees, it could be concluded that these entities consist mainly of small traders. The trend is the growth of these enterprises. Of course, the highest number of firms is located in the regional centre, in Ostrava, which could be seen in Table 2.

Table 2. Economic entities in MSR in 2012 and 2005 according to number of employees [1]

	Total	NI	Without employees	Micro	S	M	L
2012							
Moravian-Silesian Region	244750	143149	74883	21356	4144	979	239
Bruntál	19232	11294	6011	1513	329	73	12
Frýdek-Místek	41481	23349	13276	3905	737	173	41
Karviná	40478	24672	11686	3371	551	164	34
Nový Jičín	29959	17537	9576	2249	466	102	29
Opava	36710	21145	11917	2849	646	128	25
Ostrava-city	76890	45152	22417	7469	1415	339	98
2005							
Moravian-Silesian Region	229242	137860	65218	20304	4617	1048	96
Bruntál	18944	11119	5712	1593	401	106	6
Frýdek-Místek	40549	24120	11615	3736	869	182	15
Karviná	40097	25792	9999	3448	661	166	23
Nový Jičín	29369	17403	8887	2405	524	126	12
Opava	34312	19921	10586	2885	746	151	11
Ostrava-city	65971	39505	18419	6237	1416	317	29

Source: CSO.

[1] NI - not identified number of employees, Micro enterprises, S – Small-sized, M-Medium-sized, L-Large enterprises.

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2.1 Small and medium-sized business in retail

Business belonged in the past to sectors where small business predominated, shops and tradesmen formed the typical atmosphere of settlements. The increasing concentration of business activities in the last century, the internationalization of manifesting the onset of large-size units and a fundamental change in consumer behaviour is dramatically affected mainly SMEs. Czech consumers prefer large business units (Mulač and Mulačová, 2013, pp. 50). Turnover of enterprises with more than 250 employees reach nearly 50 percent of all retail sales units. More than a quarter of the sales are then tradesmen with up to 9 employees.

Store in an eider sense is understood as an activity which consists in the purchase and sale of goods. In the closer sense, we understand the business, as an institution, ie., That the trader will be considered for those entities in which the predominant business activity. Trading is focused on two main areas, namely business to consumer goods (B2C) and business goods to businesses (B2B) (Mulač and Mulačová, 2013, pp. 20-21). Business has in the national economy several roles, trade acts as an intermediary, as a barometer of economic health, is in direct contact with the consumer, exceptional is the importance of living labour and has the specifics of the performance, where the main problem is their measurability (Zamazalová, 2009, pp. 14).

When we look to trade with middlemen business perspective, it can be divided on retail, wholesale and foreign trade. The retail business consists of buying goods from wholesalers or from the producer and its subsequent sale to the final consumer without further processing. The challenge therefore is purposeful retail concentrations of selected goods into one logical unit, thus making such offer goods that corresponds in terms of space, time, type, quantity, quality and price level requirements of the demand side that is the ultimate consumers. The retailer operates as an intermediate in the flow of information between producers and consumers (Mulač and Mulačová, 2013, pp. 23).

According to Kotler (2007, pp. 542) retail business includes all activities associated with the sale of goods or services directly to final consumers for personal, non-commercial use. Retail is any business enterprise whose sales volume comes primarily from retailing. Any company selling to end users, whether they are producers, wholesale or retail, is engaged in retail activities. No matter how good or service sold (a person, by mail, telephone, or the Internet) or where they are sold (in store, on the street or in consumers' homes.

The following table shows the development of businesses in the Moravian-Silesian Region since 2009, and excludes those working in retail. The highest number of retail operators acting course in the regional centre, and the lowest in the District of Bruntál. Even though the absolute number of businesses increased in recent years, in retail it was quite the opposite. This decrease is quite significant; there was a decrease of 38%. This is associated with a decrease in the number of jobs in retail. The situation in the Czech Republic has developed differently; the absolute number of enterprises in retail trade grew slowly until 2011, and then began to decline.

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Table 3. The development of number economic entities in MSR

	MSR Total	Districts					
		Bruntál	Frýdek-Místek	Karviná	Nový Jičín	Opava	Ostrava - city
2013 Economic entities	248 500	19 587	42 740	40 912	30 530	37 698	77 033
Relative value (%)		7.88	17.20	16.46	12.29	15.17	31.00
Retail	24 548	1 694	4 028	4 768	2 633	3 554	7 871
Relative value (%)		6.90	16.41	19.42	10.73	14.48	32.06
2011 Economic entities	248 824	19 472	41 684	42 469	30 324	37 310	77 565
Relative value (%)		7.83	16.75	17.07	12.19	14.99	31.17
Retail	32 428	2 163	5 177	6 715	3 449	4 379	10 545
Relative value (%)		6.67	15.96	20.71	10.64	13.50	32.52
2009 Economic entities	241 103	19 215	39 540	42 057	29 517	35 831	74 943
Relative value (%)		7.97	16.40	17.44	12.24	14.86	31.08
Retail	39 776	2 815	6 296	8 396	4 259	5 109	12 901
Relative value (%)		7.08	15.83	21.11	10.71	12.84	32.43

Source: CSO.

The Table 4 shows us the selected indexes of development in retail in Czech Republic, in time period 2005-2012. Only the average monthly gross pay grows steadily, other indexes are changeful.

Table 4. Selected indexes of retail in Czech Republic

Index	Unit	2005	2006	2007	2008	2009	2010	2011	2012
Number of active entities		123 207	120 561	121 141	122 966	128 586	129 179	136 364	132 136
Number of employed persons	per.	355 028	347 736	350 798	358 545	362 910	356 293	362 558	357 826
Average monthly gross pay	Kč	12 688	13 270	14 599	15 863	16 092	16 419	16 995	17 433
Total sales	mil. Kč	777 922	834 196	903 232	982 663	898 062	897 126	927 937	932 166
Added value	mil. Kč	96 277	108 186	118 806	127 516	116 415	117 443	119 282	117 082

Source: CSO.

The following table shows the household expenditure MSR´s inhabitants in 2013. As shown table, the most expensive rent and energy are, up to 23% of its expenditure. Expenditure on food and non-alcoholic drinks are in second place, people spend a fifth of wages just for the food. The smallest part of their funds MKR´s residents spend on education, and only 0.4%.

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Table 5. Household expenditures in MSR in 2013

MSR 2013	Kč	%
Total	129 904	100.0
Food and non-alcoholic beverages	24 720	21.0
Alcoholic beverages, tobacco	3 504	3.0
Clothing and footwear	5 070	4.3
Housing, water, electricity, gas and other fuels	27 130	23.0
Furnishings, household equipment and routine household maintenance	7 199	6.1
Health	2 992	2.5
Transport	12 527	10.6
Communication	4 578	3.9
Recreation and culture	10 340	8.8
Education	480	0.4
Restaurants and hotels	5 553	4.7
Miscellaneous goods and services	13 607	11.6

Source: CSO.

In MSR lives 1,220,685 citizens, the density is 222.2 inhabitants per km^2. Sales area per 1000 inhabitants in MSK is more than 200m^2. Nearly ¾ consists of hypermarkets, discounters are in MSK represented less than in other regions of the country. This corresponded to the buying habits of inhabitants, most realized the purchase of food just seems to hypermarkets, followed by the small shops of tradesmen, other formats or discount are not as widespread as in other regions. However, the trend is reinforced by the expansion of discount stores and hypermarkets and shift to cities with less than 15 thousand inhabitants. As mentioned above, one fifth of household expenditure is spent on food and non-alcoholic beverages will hereafter be taken into account especially the retail sector in the food industry.

3 The competitiveness SME in retail

The result of competing is a reasonable allocation of competing objects among competitors. If the results are not mutually satisfactory, competition will continue. Based on these dimensions, each competitors try to develop their competitive ability by improve their capabilities and products or services to reach desired competitive objects. Repeated competition among competitors will reach point that called competed results. So, each competitor develops their own specific competitiveness (Utami, Lantu, 2013, pp. 309).

The competitiveness can be viewed from multiple angles. European Commission Action Plan identifies five sub-factors to enhance the competitiveness of businesses in the retail sector. Meaning: *Consumer empowerment, Improved access to more sustainable and competitive retail services, Fairer and more sustainable trading relationships along the retail supply chain, More innovative solutions, Better working environment*[2].

Consumer empowerment – aimed at greater transparency for consumers when due to greater awareness will be supported in their purchases more qualified to decide which will also contribute to sustainable consumption and compliance with certain ethical aspects. Information should be transparent for the consumer, comprehensive, reliable and easily accessible. The consumer is informed not only about products and services, but also of their rights.

Access to More Competitive Retail Services - introducing procompetitive measures, in particular those linked to e-commerce, would help strengthen the Single Market, especially for SMEs.

[2] Setting up a European retail action plan.

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Advanced electronic trading is an opportunity for small and medium-sized enterprises, which could using a very low investment to expand into foreign markets.

Developing a More Balanced Business-to-Business Food and Non-Food Supply Chain – this is primarily the elimination of unfair trade practices, which are primarily SMEs touch, as unfair competition are often used to the detriment of smaller and therefore weaker companies.

Developing a More Sustainable Retail Supply Chain – emphasis is placed on optimizing the impact of the retail and wholesale trade in the EU on the environment (ie, reducing the amount of food waste, removal of unnecessary packaging and promotion of sustainable sources).

Developing More Innovative Solutions – traders are major innovators immediately respond to consumer trends, and take advantage of new technologies in the supply chain. In the business sector, small and medium-sized enterprises have very important role in ensuring the availability (in terms of space, time and scope) products and services for consumers. Given that in the case of trade in these sectors focusing on customers, allows a thorough knowledge of the market for small and medium-sized businesses to quickly identify areas in which new technologies could help to fulfil consumer demand. In addition, due to their organizational flexibility, small and medium-sized enterprises are able to easily develop new products or services or change existing ones, to best meet the needs of consumers[3].

As stated Spilková (2012, pp. 121) and in the Czech Republic is new trend of spending free time shopping, the leisure or fun shopping. When customers other than the purchase of goods and services sought in shopping malls leisure time and thus digested for them can become a lifestyle. In particular, young people are searching for these activities and many shopping centres are aware of the purchasing power of youth and tries to accommodate and support their activities. The importance of lifestyle in shopping behaviour is confirmed by Barta et.al. (2009, pp. 70). According to them, we live in a period that sociologists called a period of social anomie. A period when traditional values and social norms or cease to apply the new value and prestige relations are still in the making, and some people actually do not know what or who should adapt or not to adapt want.

As already mentioned, consumer behaviour is changing, SMEs due to its size and proximity to the consumer could respond more flexibly. One of the emerging trends in the Czech Republic is the abandonment of large shopping centres and return to smaller specialized shops in city centres. The MSR is still this trend did not develop, but examples might go as Prague or Brno.

The city centre revitalization and ‘‘urban renaissance’’: these measures were usually adopted and developed by local authorities, mainly with a view to physical interventions, with a special interest in pedestrian precincts, lighting, safety, and street furniture. Later, these projects and actions were part of more ambitious urban programmes within the framework of more strategic, integrated regeneration efforts which generally targeted central areas and other special spaces (such as waterfronts), thereby presupposing a significant link between the detail system and the vitality of the city (Fernandes, Chamusca, 2012, pp. 175).

As mentioned above, the MSR has a relatively dense network of retail. Marketers must look for a competitive advantage. However, the trend in recent years is searching for quality products and services, price plays an important role already. A Finnish study showed that even security when shopping could be a competitive advantage. Surveillance divided into formal and informal, and depending on how it is perceived by both customers and employees (Kajalo, Lindblom, 2010).

Informal surveillance f.e.

- restroom doors should be virble from main pedestrian areas and away from outsider exits;
- parking areas should be well lit;
- loading areas should not create dead end alleys or blind spots;
- all levels of the parking garage should be visible from the street or grand floor with high intensity lifting to minimize hiding places (Kajalo, Lindblom, 2010, pp. 301).

[3] Setting up a European retail action plan.

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Formal surveillance f.e.

- well-lighted parking lots;
- frequent security patrols in the parking lot;
- frequent security patrols imides the shopping centre;
- the use of CCTV surveillance systems (Kajalo and Lindblom, 2010, pp. 302).

3.1 Support of competitiveness SMEs in Czech Republic

Support for small and medium businesses not only in retail is for the above reasons for each economy important. The key position of SMEs demonstrates union and state efforts made to encourage these companies.

Before we look at the basic strategic planning documents, see position of Czech. In The Global Competitiveness Index 2012-2013, the Czech Republic ranked 39 positions (144 countries) and so offended by one position compared to the previous assessment - 38th place (142) and 36th (139) in 2011. The most problematic factors for doing business are in CR: Corruption, Inefficient government bureaucracy, Tax regulations, Tax rates and Access to financing.

The components are grouped into 12 pillars of competitiveness: Institutions, Infrastructure, Health and primary education, Macroeconomic environment, Higher education and training, Goods market efficiency, Financial market development, Technological readiness, Labour market efficiency, Market size, Innovation, Business sophistication.

The following table (Table 6) shows the rank and points earned in each pillar of the GCI. It is clear that the institutional framework and the efficiency of the labour market are rated very poorly. These two pillars are for development of small and medium-sized businesses are crucial.

The institutional environment is determined by the legal and administrative framework within which individuals, firms, and governments interact to generate wealth. The quality of institutions has a strong bearing on competitiveness and growth. The role of institutions goes beyond the legal framework. Government attitudes toward markets and freedoms and the efficiency of its operations are also very important: excessive bureaucracy and red tape, overregulation, corruption, dishonesty in dealing with public contracts, lack of transparency and trustworthiness, inability to provide appropriate services for the business sector, and political dependence of the judicial system impose significant economic costs to businesses and slow the process of economic development.

Labour markets must therefore have the flexibility to shift workers from one economic activity to another rapidly and at low cost, and to allow for wage fluctuations without much social disruption. Efficient labour markets must also ensure a clear relationship between worker incentives and their efforts to promote meritocracy at the workplace, and they must provide equity in the business environment between women and men.

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Table 6. The Global Competitiveness Index 2012–2013

Pillar	Rank	Points
1. Institutions	82	3.67
2. Infrastructure	38	4.81
3. Macroeconomic environment	42	5.19
4. Health and primary education	53	5.87
5. Higher education and training	38	4.87
6. Goods market efficiency	41	4.53
7. Labour market efficiency	75	4.32
8. Financial market development	57	4.25
9. Technological readiness	31	5.06
10. Market size	40	4.51
11. Business sophistication	35	4.45
12. Innovation	34	3.81

Source: The Global Competitiveness Report 2012–2013.

The fundamental strategic document for the preparation of this programming period of cohesion policy of the EU's business concept is to support small and medium-sized enterprises for the period 2014-2020. This document sets out the priorities and the tools to achieve them including the general definition of supported sectors. Targeting is to strengthen of competitiveness. The new operating program based on this concept is called the Operational Programme Enterprise and Innovation for Competitiveness. The aim of the program is to achieve a competitiveness and sustainable economy based on knowledge and innovation. The basic concept of the strategic priorities is:

Priority 1: Improving business environment, business development services and training for entrepreneurship

Priority 2: Business development based on the support of research, development and innovation, including innovation and business infrastructure

Priority 3: Supporting the internationalization of SMEs

Priority 4: Sustainable energy development and energy innovation[4]

Another document is the Action Plan for retailers, on January 31, 2013 published by the European Commission. Action plan for retail should contribute to the creation of a single market in retail; provide five priority areas for the development of the Commission's activities focus: Consumer empowerment, Improved access to more sustainable and competitive retail services, Fairer and more sustainable trading relationships along the retail supply chain, More innovative solutions, Better working environment[5]**.**

Support for SMEs takes place on multilevel, of course, are generally granted to small and medium-sized businesses various forms of support, partly informational, material and financial. Organizations that provide support for SMEs could be divided into government, non-governmental and financial institutions. The government organizations include CzechInvest, CzechTrade, the Regional Advisory and Information Centre (RAIC) and the Centre for Regional Development. NGOs are the Agrarian Chamber, Chamber of Commerce, the Association of Small and Medium-sized Enterprises and Crafts CZ and Confederation of Commerce and Tourism. Support from financial institutions flows mainly from the Czech-Moravian Guarantee and Development Bank (Mulač and Mulačová, 2013, pp. 52-53).

[4] http://www.businessinfo.cz/cs/clanky/koncepce-politiky-msp-2014-2020-27913.html [2014-06-23].
[5]http://www.mzv.cz/representation_brussels/cz/udalosti_a_media/akcni_plan_pro_podporu_maloobchodu.html [2014-06-29].

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International Competitiveness Strategy of the Czech Republic is for the period 2012-2020 (ICS). The intention of the government is to reach by 2020 among the 20 most competitiveness countries of the world. The strategy assesses the competitiveness of the nine pillars. One of them, "Market Efficiency of goods and services and improving the characteristics of the business." The aim is to improve the business environment, business development and business innovation, intensive use of positional rents. To meet the objectives of the measure are indicated 4.

Action 1: Reducing administrative burdens in connection with the plan to reduce the administrative burden on entrepreneurs and project measurement.

Action 2: The introduction of uniform effective dates of legislation to simplify orientation within the legal framework of business.

Action 3: Extending entrepreneurs in corporate governance.

Action 4: Evaluation of the impact of environmental legislation on the competitiveness of the Czech business environment (EKOAUDIT).

4 Conclusion

The competitiveness of small and medium-sized enterprises is one of the important factor of a well functioning economy. Small and medium businesses could, by its size and its convenient proximity to customers, well respond to changes in demand or changes in development. They could bring an innovation and scientific and technological progress. Therefore, the challenge for any government is to create and maintain a business environment that is friendly to the development of SMEs.

Strengthening the Competitiveness of SMEs in the retail trade could be summarized in a few key points. These include, for example, Consumer empowerment, Improved access to more sustainable and competitive retail services, Fairer and more sustainable trading relationships along the retail supply chain, More innovative solutions, Better working environment.

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