



## Proceedings of XVth International Scientific Conference

### Economic Policy in the European Union Member Countries

Organized by Department of National Economy, Faculty of Economics, VSB – Technical University of Ostrava, in cooperation with Department of Economics and Public Administration, School of Business Administration in Karviná, Silesian University in Opava

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***Dear authors and participants of the conference, dear readers***

we are pleased to present the proceedings of the 15th international scientific conference „Economic Policy in the European Union Member Countries“ held 8th – 10th November 2017 celebrating the 40th anniversary of the Faculty of Economics, VŠB-Technical University of Ostrava. As every year the conference was put on by the Department of National Economy, Faculty of Economics, VŠB-Technical University of Ostrava, in cooperation with the Department of Economics and Public Administration, School of Business Administration in Karviná, Silesian University in Opava.

In the past we have had guests such as prof. Jan Švejnar from Columbia University and CERGE-EI in Prague or prof. Václav Klaus, ex-president of the Czech Republic. Among this year's keynote speakers were prof. John S. Earle from the George Mason University, Schar School of Policy and Government (USA); prof. Roberta Rabellotti from the University of Pavia (Italy); and Filip Pertold, Ph.D. from CERGE-EI, Charles University in Prague. During the conference there were discussions in fields aimed at fiscal and monetary policy, international economics and the labour market. We would like to thank all contributing authors for interesting ideas and discussions during the course of the conference. All contributions at the conference as well as selected papers in these proceedings successfully passed a double-blind referee process. The referees are distinguished scholars from Czech as well as foreign universities.

Many thanks to the organising team for preparing the conference, smooth running of it and for the help in formation of the proceedings.

We believe that the conference forged new opportunities for all participants for further academic research and has contributed to deepening of mutual scientific cooperation. We also believe these proceedings will be beneficial not only to participants of the conference, but for all readers interested in development in the field of economic policy and international economics.

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## AN INFLUENCE OF MARKET INTEREST RATES ON THE HOUSEHOLD SAVING RATE IN THE CZECH REPUBLIC

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### Abstract

The issue of an influence of the interest rate on the basic characteristics of consumption of household saving has been at the forefront of empirical research since the 1970s, yet many aspects of this relationship remain the source of a broad polemic. One of the most questionable is the assumption of a causal relationship of interest rate and a tendency to saving. Above all due to the contradictory impacts of the substitution and income effects, the empirical results so far are ambiguous, not very robust and thus not quite stable. The aim of this work is to test a new method of verifying this relationship by dividing households into income categories according to their position in distribution of disposable income combined with the use of different types of market interest rates doing so on the example of the Czech Republic. As indicated by the initial results achieved through panel regression, this new approach could become a relevant enrichment of the interest rate pass-through analysis in relation to households. Repeatedly obtaining of unambiguous and stable results then may significantly assist the central bank in implementing of monetary policy.

### Keywords

Market interest rates, Saving rate, Interest rate pass-through, Income categories, Panel regression.  
E21, E43, C23.

## 1 Introduction

Household consumption and savings are key indicators of economic activity both from the perspective of individuals, income groups, or at aggregate level. If the satisfaction of needs through consumption, as it is known, is the primary and final purpose of every economic effort, deciding between current consumption and current making of saving is de facto nothing else than a choice between meeting needs now and in the future. There is another one of the basic knowledge applicable above all to the macro level that implies from the mentioned above. A realization of consumption expenditure leads to a higher current production and thus to a support of economic growth in the short term. While deferral of this consumption in the form of saving (and their possible appreciation) enables them to be used more efficiently in the future period and therefore it supports rather longer-term economic growth. And since the analysis of both types of economic growth has always been one of the most important topics of economic research and recommendations in making of economic policies, then the finding of aspects determining the distribution of disposable income into consumption and saving is a matter of no lesser importance.

The interest rate seems to be one of the factors influencing the creation of saving and thus also consumption at the same time. This assumption is, at first glance, quite logical and relatively intuitive. Higher interest rate promising greater appreciation motivates households to create higher saving. Then we should observe the proportional relationship between the interest rate and the propensity to save. Is this simple premise, however, in line with reality? But perhaps we should first ask whether this assumption is fully consistent with the current state of theoretical knowledge. Already the theory of intertemporal substitution in consumption has strictly distinguished between the influence of substitution and income effect. In terms of current consumption, the interest rate actually reflects the opportunity costs. Together with the

growth of potential money appreciation, consumption becomes relatively more expensive, on the contrary, making of saving more advantageous. So when interest rate rises, households are motivated to replace current consumption expenditures with saving. Thus the substitution effect affects the saving rate positively. The income effect, on the other hand, implies that higher interest also means a higher expected income and therefore the higher consumption both in the future and in the current period. The observed impact is therefore negative. In other words, the substitution effect says that a higher interest rate will make saving money more attractive but also less necessary due to the income effect. As you can see, these two effects work against each other and the resulting direction is then controversial and probably depends on many other factors, as confirmed by empirical research so far (see the following chapter).

The aim of this work is to verify the influence of market interest rates on the average propensity to save of Czech households and at the same time to find out whether it predominates the substitution or income effect.

To achieve this goal we use econometric analysis for panel data. However, our analysis will differ significantly in two points from most of the contemporary works with a similar focus. First, we don't take into account a single monetary interest rate, but a variation of market interest rates, as already mentioned in the aim of the thesis. Secondly, we don't examine an impact of the interest rate on one aggregate propensity to save, but on the tendency to save of individual income groups. This approach can open a new way of analyzing of interest rate pass-through in terms of households behavior.

Before moving on to the empirical analysis itself, it is appropriate to become acquainted with the current state of theoretical and empirical research, as described in the second chapter. The data and methods are commented in the third chapter while in chapter four we introduce and discuss the final results of the empirical analysis. In the last chapter we summarize the most important conclusions of the work and suggestions for further research.

## **2 Review of current research**

### **2.1 Theoretical knowledge and assumptions**

It is always useful to keep in mind that household consumption and saving form de facto two sides of the same coin - two sides of the use of the same disposable income. Therefore, the theory of consumer behavior is de facto also a theory of saving. Already Keynes (1936) discussed in detail the influence of the interest rate on consumption and saving characteristics. According to his considerations, interest rate changes (if not too large) are not likely to have a significant effect on the consumption habits of households. He rather draws attention to the relation of interest rates with absolute amount of consumption and saving. Higher interest rate may slightly increase the propensity to save, but through a reduced income, caused by the negative impact of the interest rate on investment which is the source of income, the total amount of saving paradoxically declines after all. This view was logically strongly reflected in Keynesian theory of consumption and saving and in some circles it has prevailed till today.

Modigliani and Brumberg (1954) achieved a great progress in the field of clarifying household consumption behavior with their life-cycle hypothesis. Although their work is primarily a theory of saving rather than consumption itself, they assume a zero interest rate as abstraction in their model, which has contributed just very little to our subject. A completely different role here is given to the theory of permanent income, which with Friedman (1957) came out a few years later. Although his work is very similar to the life-cycle hypothesis, and



modern macroeconomic texts thus logically merge them into one<sup>1</sup>, they differ in one aspect crucial for us after all. Friedman (1957) directly defines the marginal propensity to consume as a function of the real interest rate, but, unfortunately, he does not comment on this relationship in more detail. According to the theory of permanent income the propensity to consume and saving is influenced by expectations rather than by interest rate. In the case of Friedman adaptive, later also rational expectations, as pointed out by Hall (1978)<sup>2</sup>.

As demonstrated later by Hall and Mishkin (1982) and Campbell and Mankiw (1989), when deciding about the amount of consumption and saving, only a part of the population take into account the permanent income, and therefore the functional relationship between the interest rate and the propensity to consume, as assumed by Friedman (1957), would be significantly weakened. Flavin (1985) or also Zeldes (1989) offers one of the most promising explanations for this phenomenon. Both authors consistently point to the fact that not all members of society (especially youth, socially disadvantaged groups, etc.) have a full-fledged approach to financial markets. They can't borrow in order to fully cover the expenses that would correspond to their permanent income. Hence, the interest rate, at which these additional finances might be provided, is not that important for them in their consumer decision-making. These perceptible liquidity constraints, together with a kind of myopia, ie the fact that not everyone is able to think forwards, significantly weaken the position of the LC-PIH concept, and the relationship of interest rate and consumer behavior remains unclear.

Instead, the impact of the interest rate on saving creation should be strengthened if the theory of Carroll (1997) is valid. It assumes that people target the amount of their financial reserves. If this is the case, the interest rate should then be one of the key determinants in deciding on the creation of these saving, where, in addition to the substitution, the income effect would also take on the strength.

## 2.2 Empirical evidence

What do the data show about the influence of the interest rate on the saving rate? Is this relationship really significant? If so, will the substitution effect prevail and together with the growth of interest rate also the propensity to save is to be increased? Or will the negative income effect dominate? A number of research and empirical tests have already been carried out with the motivation to solve these questions, but the answers still remain ambiguous.

According to simple logic, superiority of the substitution effect, which is usually more visible at first glance, could commonly be expected. However, as showed by the recent experience with the global economic crisis, accompanied by a sharp rise in saving rates at falling interest rates, the reality may be also the opposite. This fact is also confirmed by the authors Mody, Ohnsorge and Sandri (2012) in their panel study for advanced economies, who also show that the primary source of the surge in saving trends was the newly generated uncertainty and therefore the precautionary effect already mentioned. It might seem that the interest rate alone is not the primary determinant of a propensity to save or consume. These doubts, however, were disproved by Loayza, Schmidt-Hebbel and Servén (2000) long before

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<sup>1</sup> The approach of LC-PIH (Life-Cycle Permanent Income Hypothesis) has in the course of time become the starting point for both theoretical and empirical research. Although it has no longer as strong status today as in the 1960s and 1970s, it is still a cornerstone of textbooks and a source of controversy and discussion while creating new models.

<sup>2</sup> Since adding the aspect of rational expectations into LC-PIH we can talk about so called RE-PIH (Rational Expectations – Permanent Income Hypothesis) – a consumption concept based on the "random walk" model as defined by Hall (1978) himself.

the crisis. With a wider range of countries and over a much longer period of time, they show that the income effect unequivocally prevails over the substitution one and it is thus a significant source of variability for the observed saving rate.

An evidence of the predominance of the substitution effect (on an international dataset) is provided, for example, by Masson, Bayoumi and Samia (1998). Especially for a sample of advanced economies, they identify the less robust, yet positive, nature of wanted relationship. However, the recent work of Aizenman, Cheung and Ito (2016) best describes the confusion and ambiguity of the empirical results in this area. Although the authors primarily confirm the predominance of a positive effect between the trends in interest rate and propensity to save, they still point out that at very low interest rate levels the effect may also be the opposite. In accordance with the work of Mody, Ohnsorge and Sandri (2012) they draw attention to the link between low interest rates and a precautionary motive in generating financial reserves.

For the sake of completeness, it's essential to notice that there is, of course, also a number of less general research, that is, implemented on data for one economy. However, the results are very similar to those achieved in panel analyzes. While, for example, Boskin (1978) has proved the predominance of the substitution effect for US data, Campbell and Mankiw (1989) later came out with the opposite proof. The negative dependence of propensity to save on the interest rate is evidenced, for example, by the recent work of Nabar (2011) on data from a completely different environment of China.

As we can see, the empirical results so far are very contradictory. Where one research reveals the positive impact of the interest rate on the propensity to save, the study will eventually come with the opposite claim. The particular form of observed dependence is probably not a matter of general validity, but it's very sensitive to the specific characteristics of the given economy, time and, of course, the setting of the model used. The only thing that most studies agree on is that if the influence of the interest rate on the ratio in which the disposable income is distributed between saving and consumption can be proven, then this effect is rather weak, not very robust, and therefore not quite stable.

### **3 Methods and data**

#### **3.1 Data**

The causal relationship of interest rate and propensity to save is tested here on the example of the Czech Republic. The values of market interest rates were taken from the database of Czech National Bank (2017), all other data then from the Czech Statistical Office (2005 - 2016) or the Czech Statistical Office (2016) respectively. In all cases, this is an annual observation between 2004 and 2015, where only market interest rates have been recalculated as the simple average of individual monthly rates.

A key indicator of a proper understanding of household income and consumption expenditure data is their primary breakdown into 10 sub-categories (panels) by deciles ordered ascendingly according to disposable income. The default time series of average consumption and disposable income per capita, expressed nominally<sup>3</sup> in CZK, were then used to calculate the average propensity to save as a simple share of saving on the disposable income (Formula 3). The relative disposable income was then derived based on Formulas 1 and 2.

There are variables directly entering the subsequent regression:

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<sup>3</sup> Although we can generally expect the impact of the interest rate on the real variables, due to the relative nature of  $APS$  and  $Y_{RD}$  indicators, the effect of changes in the price level is to be completely eliminated anyway.

*APS* – Average propensity to save,  
*Y<sub>RD</sub>* – Relative disposable income,  
*inf* – Inflation rate,  
*age* – Average age of the population,  
*ratio* – Ratio of old-age pension to average wage,  
*i*<sub>1</sub> – Nominal<sup>4</sup> interest rate on overnight deposits,  
*i*<sub>2</sub> – Nominal interest rate on deposits redeemable at notice,  
*i*<sub>3</sub> – Nominal interest rate on consumer credit,  
*i*<sub>4</sub> – Nominal interest rate on mortgages,  
*i*<sub>5</sub> – Nominal interest rate on overdraft loans,  
*i*<sub>6</sub> – Nominal interest rate on credit card receivables.

The basic descriptive characteristics of all input variables are summarized in Tab. 1, which serves primarily for orientation and better understanding of the dataset used. But for its elementary essence, it does not need a wider commentary.

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<sup>4</sup> As can be seen, nominal rates are used in all cases, although according to economic logic, primarily the real interest rate should have the influence on the households' budgetary behavior. However, we don't lose any information in this case as the inflation rate is also included as a separate indicator. On the contrary, by the elementary decomposition of real interest rate, we can easily separate the influence of nominal variables and movements in the price level. Households can no doubt identify these separate indicators much better than the resulting real interest rate.

**Tab. 1** Basic descriptive statistics

	Number of observations	Mean	Standard deviation	Minimum	Maximum	Skewness	Kurtosis
<i>APS</i>	120	0.09	0.05	-0.057	0.221	0.093	3.187
<i>Y<sub>RD</sub></i>	120	1.073	0.453	0.474	2.279	1.221	3.93
<i>inf</i>	120	2.175	1.545	0.3	6.3	1.315	4.697
<i>age</i>	120	40.804	0.658	39.772	41.869	0.118	1.793
<i>ratio</i>	120	53.843	0.809	52.709	55.077	-0.0162	1.559
<i>i<sub>1</sub></i>	120	0.576	0.183	0.275	0.857	0.0315	1.598
<i>i<sub>2</sub></i>	120	1.868	0.257	1.407	2.189	-0.744	2.103
<i>i<sub>3</sub></i>	120	13.66	0.786	12.36	14.667	-0.414	1.657
<i>i<sub>4</sub></i>	120	4.219	1.008	2.348	5.709	-0.258	2.093
<i>i<sub>5</sub></i>	120	16.186	1.441	13.689	17.892	-0.411	1.546
<i>i<sub>6</sub></i>	120	21.001	0.845	19.805	23.276	1.392	4.872

Source: own calculations and processing in Stata 15

### 3.2 Methods

To achieve the objective stated above, ie verifying of the influence of the interest rate on the propensity to save, we use primarily econometric analysis. Compared to most studies exploring this topic (see research review), however, our empirical analysis fundamentally differs in two areas.

First, we don't use a single monetary interest rate, but more types of market interest rates together. Why this change? The first reason is the simple premise that when examining the determinants of the household saving rate, it is far more appropriate for its analysis to use the variables with which the households actually come into contact. In other words, if a study finds a significant causal relationship between the monetary-policy interest rate and the propensity to save, it must necessarily be a secondary or mediated relationship. It is not possible for households to be directly affected by the type of interest rate they will never come into contact with. If we want to dive into the very essence of the problem and examine the primary influence of these two variables, it is necessary to use the interest rate at which households can actually borrow or save, that is, market (client) interest rate. The second advantage of this procedure is also the fact that we do not have to rely on a single variable, but we can use a wide range of market rates that themselves can work differently. Both the income and the substitution effect can, of course, prevail both in interest rates on deposits and on loans.

The second major change is that we don't examine the impact of interest rates on a single aggregate saving rate, but on the propensities to save of individual income categories. Unlike studies that do the contrary, we will be able to distinguish the influence of the interest rate on

different types of population, depending on their position within the distribution of disposable income.

In formulating the initial model, we build on the principles of the life-cycle hypothesis (variables *age* and *ratio*), but above all from the postulates first formulated by Duesenberry (1949), particularly from the definition of relative income used by Badura (2016):

$$Y_{RD_{i,t}} = \frac{Y_{D_{i,t}}}{\bar{Y}_{D_t}} \quad (1)$$

where the relative disposable income of the  $i$ -th income category at time  $t$  ( $Y_{RD_{i,t}}$ ) is calculated as the share of the disposable income of the same category  $Y_{D_{i,t}}$  on its all-society average  $\bar{Y}_{D_t}$ . That is formulated as the weighted average of disposable incomes of all categories, particularly by the pattern:

$$\bar{Y}_{D_t} = \frac{\sum_{i=1}^N Y_{D_{i,t}} \cdot w_{i,t}}{\sum_{i=1}^N w_{i,t}} \quad (2)$$

where weights are set as the average numbers of members in a given income category ( $w_{i,t}$ ) and where  $N$  is the number of these categories. The response variable - the average propensity to save was derived according to the fundamental formula:

$$APS_{i,t} = \frac{S_{i,t}}{Y_{D_{i,t}}} \quad (3)$$

where saving of  $i$ -th category  $S_{i,t}$  are divided by its disposable income.

As the structure of the dataset already suggests, we use panel regression to estimate regression equation itself, where individual entities are represented by the income categories of the population. In the case of a simple non-dynamic estimate, it is basically possible to use three types of estimation, but it is clear from the very essence of the matter that we definitely don't need so-called between-effects. That's why two basic methods are taken into account at this point. On the one hand, the random effects model:

$$\begin{aligned} APS_{i,t} = & \alpha + \beta_1 \cdot i_{1,t} + \beta_2 \cdot i_{2,t} + \beta_3 \cdot i_{3,t} + \beta_4 \cdot i_{4,t} + \beta_5 \cdot i_{5,t} + \beta_6 \cdot i_{6,t} \\ & + \beta_7 \cdot Y_{RD_{i,t}} + \beta_8 \cdot inf_t + \beta_9 \cdot age_t + \beta_{10} \cdot ratio_t + u_{i,t} \\ & + \varepsilon_{i,t} \end{aligned} \quad (4)$$

where  $APS_{i,t}$  - the average propensity to save (of  $i$ -th income category at time  $t$ ) is explained by the level constant  $\alpha$  (the same for all categories), market interest rates  $i_{1,t}$  till  $i_{6,t}$  (described in more detail in the section of data) and control variables: relative disposable income  $Y_{RD_{i,t}}$ , inflation rate  $inf_t$ , average age of population  $age_t$  and indicator of  $ratio_t$  representing the ratio of old-age pension to average wage. The random error is then divided into two subcategories, the residues between the categories ( $u_{i,t}$ ) and within a category ( $\varepsilon_{i,t}$ ).

In the case of fixed effects, the equation of the estimated model is basically quite similar:

$$\begin{aligned} APS_{i,t} = & \alpha_i + \beta_1 \cdot i_{1,t} + \beta_2 \cdot i_{2,t} + \beta_3 \cdot i_{3,t} + \beta_4 \cdot i_{4,t} + \beta_5 \cdot i_{5,t} + \beta_6 \cdot i_{6,t} \\ & + \beta_7 \cdot Y_{RD_{i,t}} + \beta_8 \cdot inf_t + \beta_9 \cdot age_t + \beta_{10} \cdot ratio_t + u_{i,t} \end{aligned} \quad (5)$$

with the difference that  $\alpha_i$  is now the level constant for the  $i$ -th income category. It can also be decomposed as  $\alpha_i = \beta_0 + \gamma_i$ , where  $\beta_0$  is the basic level constant for which it applies  $\beta_0 = \alpha_1$ . The variable  $\gamma_i$  is then an added fixed impact of given income category for  $i \in \{2; \dots; I\}$ ,

where  $I$  expresses the number of these categories. Using the fixed effect method, all the heterogeneity between the individual categories is captured in the above-mentioned partial level constants, so we henceforward recognize only one random component  $u_{i,t}$ .

Finally, let's emphasize that both substitution and income effect can prevail in relationship of saving rate and interest rate, as many studies have confirmed - see research review. Therefore neither the positive or negative values of the coefficients  $\beta_1$  to  $\beta_6$  can be explicitly assumed, they may even reach positive or negative values depending on the specific interest rate. Therefore, the signs of wanted coefficients are by no means the premise of this analysis, but its result, which will be discussed in the final chapter.

## 4 Results

First, the stationarity of input time series was tested using 3 tests based on the null hypothesis of the unit root existence: Harris and Tzavalis (1999), Breitung (2000) and Im, Pesaran and Shin (2003). The resulting p-values of the individual tests are summarized in Tab. 2.

**Tab. 2** Stationarity test of input variables

	Harris-Tzavalis	Breitung	Im-Pesaran-Shin
<i>APS</i>	0.0000	0.0005	0.0135
<i>Y<sub>RD</sub></i>	0.0000	0.0087	0.0003
<i>inf</i>	0.0000	0.0000	0.0006
<i>age</i>	0.9993	1.0000	1.0000
<i>ratio</i>	0.0000	0.0000	0.0827
<i>i<sub>1</sub></i>	0.2671	0.0006	0.9408
<i>i<sub>2</sub></i>	0.0944	0.0507	0.4863
<i>i<sub>3</sub></i>	0.0000	0.0733	0.0604
<i>i<sub>4</sub></i>	0.9995	0.9883	1.0000
<i>i<sub>5</sub></i>	0.7825	0.9982	0.5103
<i>i<sub>6</sub></i>	0.0000	0.0000	0.0629

Source: own calculations and processing in Stata 15

It should be noted that the presence of a unit root is a problem especially for long time series, however we consider stationary only those variables for which the zero hypothesis was not significantly confirmed by any of the tests. In this case, our requirements are met by indicators of *APS*, *Y<sub>RD</sub>*, *inf*, *ratio*, *i<sub>3</sub>* and *i<sub>6</sub>*. The other variables were then converted to differences in order to remove the unit root and tested again. P-values of these tests are newly summarized in Tab. 3.

**Tab. 3** Stationarity test of modified variables

	Harris-Tzavalis	Breitung	Im-Pesaran-Shin
<i>age_dif</i>	0.0000	0.0000	0.0275
<i>i_1_dif</i>	0.0000	0.0000	0.0023
<i>i_2_dif</i>	0.9967	0.9859	1.0000
<i>i_4_dif</i>	0.0013	0.0013	0.1335
<i>i_5_dif</i>	0.0000	0.0000	0.0001

Source: own calculations and processing in Stata 15

After converting to differences, our stationarity condition is met by all the modified variables but *i\_2\_dif*, which test results, on the contrary, have significantly deteriorated. Let's note that, when converting to the second difference, this variable finally fulfills the condition of stationarity, but this time at too high cost. It should be borne in mind that with each differentiation we lose *N* observations and due to a smaller number of input time periods, another such loss for the sake of one variable is not acceptable. For this reason, we introduce the default model M1 from which the variable *i\_2* is completely discarded, and the indicators of *age*, *i\_1*, *i\_4*, *i\_5* are replaced by their differences.

Before the regression estimate itself, it's also necessary to verify whether there is a significant multicollinearity among the independent variables of the M1 model. For this purpose, the matrix of Pearson correlation coefficient values is displayed in Tab. 4.

**Tab. 4** Correlation matrix of explanatory variables

	$Y_{RD}$	$inf$	$age\_dif$	$ratio$	$i\_1\_dif$	$i\_3$	$i\_4\_dif$	$i\_5\_dif$	$i\_6$
$Y_{RD}$	1.0000								
$inf$	-0.0033	1.0000							
$age\_dif$	0.0069	-0.3319	1.0000						
$ratio$	0.0083	-0.5953	0.5959	1.0000					
$i\_1\_dif$	-0.0035	0.9165	-0.4030	-0.6371	1.0000				
$i\_3$	0.0064	-0.1264	0.2531	0.4120	-0.1882	1.0000			
$i\_4\_dif$	-0.0069	0.6218	-0.6975	-0.6952	0.5978	-0.3722	1.0000		
$i\_5\_dif$	-0.0022	-0.2233	-0.0429	-0.1221	-0.2377	0.1317	-0.0194	1.0000	
$i\_6$	-0.0007	0.0292	-0.4816	-0.1407	0.1191	0.4228	0.2358	0.5400	1.0000

Source: own calculations and processing in Stata 15

It is worth keeping in mind at this point that there is no natural boundary separating the multi-collinearity from an acceptable correlation rate. However, the value of the correlation coefficient of 0.8 is very often considered to be the limit<sup>5</sup>. This value is exceeded only by the degree of interdependence between the variables of  $inf$  and  $i\_1\_dif$ . Therefore, it is not appropriate to leave both variables in subsequent regressions. And since for the purposes of this study the interest rate is far more essential than the indicator of inflation rate, it is the variable of  $inf$  that is going to be removed from the default model. However, due to the high correlation between both indicators, by this step the information about the inflation rate development will not be completely lost, but it will be (simply said) in almost 92% stored in the development of the  $i\_1\_dif$  variable. By dropping the inflation indicator, a set of control variables should not be significantly affected. However, coefficients of variables (especially those more strongly correlated with  $inf$ ) can be affected by this intervention. For comparing, we introduce model M2 that contain both variables  $inf$  and  $i\_1\_dif$ .

The coefficients of the final estimates and their p-values (in brackets) for both models mentioned are shown in Tab. 5. First, let's note that the presence of autocorrelation<sup>6</sup> was excluded in both models. Heteroskedasticity<sup>7</sup> was found statistically insignificant only for the M2 model, so it was necessary to estimate the robust standard error of the M1 model using White's estimator, which should address the problem adequately. Similarly, only half the

<sup>5</sup> Although this method is rather a rule of thumb than an accurate evaluation of multicollinearity, for smaller sample size like this it can be considered sufficient.

<sup>6</sup> The existence of first-order autocorrelation was tested using the Wooldridge test for panel data. For the M1 model the null hypothesis - the absence of autocorrelation was accepted with a p-value of 0.563, for the M2 then with a p-value of 0.694.

<sup>7</sup> A modified Wald test was used to verify the presence of heteroskedasticity. For the M2 model the null hypothesis - the presence of homoskedasticity was accepted with a p-value of 0.305. For model M1, however, the p-value of 0.075 does not allow for a definite acceptance of the null hypothesis.



success was achieved in the residual normality test<sup>8</sup>, but due to the panel nature of the data, it is not strictly necessary to meet this assumption. Not quite normal distribution of the residual component, however, remains a weaker point of the alternative M2 model, but not essential enough to negate the credibility and explanatory ability of the results obtained.

**Tab. 5** Estimation results for models M1 and M2

	M1 (random)	M1 (fixed)	M2 (random)	M2 (fixed)
$Y_{RD}$	0.079 (0.000)	0.39 (0.065)	0.079 (0.000)	0.392 (0.010)
$inf$	-	-	- 0.012 (0.015)	- 0.012 (0.015)
$age\_dif$	- 0.733 (0.000)	- 0.75 (0.003)	- 0.745 (0.000)	- 0.762 (0.000)
$ratio$	0.032 (0.000)	0.031 (0.001)	0.033 (0.000)	0.032 (0.000)
$i\_1\_dif$	0.057 (0.130)	0.056 (0.152)	0.167 (0.001)	0.166 (0.002)
$i\_3$	0.017 (0.000)	0.017 (0.002)	0.024 (0.000)	0.023 (0.000)
$i\_4\_dif$	- 0.016 (0.032)	- 0.015 (0.062)	- 0.005 (0.545)	- 0.005 (0.564)
$i\_5\_dif$	0.033 (0.000)	0.034 (0.001)	0.038 (0.000)	0.039 (0.000)
$i\_6$	- 0.029 (0.000)	- 0.03 (0.001)	- 0.037 (0.000)	- 0.037 (0.000)
$\alpha$	- 1.204 (0.000)	- 1.475 (0.006)	- 1.17 (0.000)	- 1.443 (0.000)
$R^2$	0.688 (0.000)	0.562 (0.000)	0.703 (0.000)	0.567 (0.000)

Source: own calculations and processing in Stata 15

Both estimated models seamlessly passed through the Hausman test, with the p-values of 0.848 for the model M1 and 0.885 for M2. Thus it is not necessary to further modify regression equations or filter out the heterogeneity between the panels, so the general method of random effects can be used<sup>9</sup>. However, the use of the fixed effects method is not excluded by this, so for comparison Table 5 shows the results for both random and fixed effects method estimates for both default models.

When discussing the results themselves summarized in Tab. 5, let's note at first that all estimated variants of models are significant with a sufficiently high coefficient of determination. All control variables have appeared to be statistically significant in the estimation using random effects. By using fixed effects, their p-values have increased on

<sup>8</sup> Normal residual distribution was verified using a standard Jarque-Bera test based on the null hypothesis about a normality of residual component. With the p-value of the test for M1 at 0.53 we don't reject the required residual normality, whereas the result of the p-value 0.058 for the M2 model definitely can't be considered satisfactory.

<sup>9</sup> Although it is very unlikely that the data wouldn't have a panel effect at all and so it would be possible to use a simple OLS, also this option was properly tested as well. Using the Breusch-Pagan LM test, based on a null hypothesis about zero variance of residuals between entities, with the p-values of 0.000 for both models we obtain a definite answer. The data report a panel effect and the estimation using random effects is the appropriate method.

average, but this is only a logical consequence of Hausman's test results. The coefficient of the main control variable  $Y_{RD}$  is very stable in both estimates using random effects, and in accordance with the Duesenberry's hypothesis it is positive, because with a growing position in the income distribution, a higher propensity to save can be expected. On the other hand, we notice a significant change in the coefficient value compared with the estimate using fixed effects. However, this result is not such a surprise and can be relatively easily explained by the fact that the power of the relative income effect is determined primarily due to the heterogeneity between the income groups, which has been drained away by the fixed effects into the level constant.

A negative sign for the inflation rate indicator in model M2 shows that with the accelerating growth in the price level households save a less in percentage terms, simply because they have less money left for saving at a higher cost. In the same way, the negative coefficient of difference of the average age is also in line with the economic assumptions, as already presumed by the life-cycle theory. However, the positive value of the *ratio* indicator remains a kind of surprise. The ratio of old-age pension to average wage de facto represents the rate of social security for old age (which is one of the main reasons for saving), and with the growth of security provided by the state, we would rather expect a decline in households' saving tendencies. This phenomenon can be probably explained only by the fact that the income effect from the increase of *ratio* indicator unexpectedly prevailed in this case, in other words, the retirement pension recipients have been able to increase the propensity to save more than the wage-earning households have reduced it.

However, the interpretation of coefficients for individual interest rates remains much more important for us. Let's note at first of all that none of the estimates are too dependent on heterogeneity between categories, their signs or magnitudes don't change much by using either random or fixed effects. Exactly according to the assumptions, the elimination of the multicollinearity affects especially variables that were correlated with inflation the most (*i\_1\_dif* and *i\_4\_dif*). It may seem at first that households even react to development in interest rates on overnight deposits (model M2). However, the above mention is only an illusion caused by an error in a matrix of explanatory variables. In fact, interest rates on overnight deposits (as a rule very low) are practically insignificant for household decision making about generation of saving, as showed by model M1. Likewise, under the influence of multicollinearity, the impact of interest rates on mortgages might seem to be entirely insignificant. However, after correction in the model M1, we see that although it is only significant with relatively higher significance levels, it is certainly impossible to ignore this relationship. Perhaps, as expected, the income effect prevailed here, which implies that the higher interest rate does not dissuade Czech households from mortgage loans too much. Higher costs in a form of elevated rates are absorbed into households' budget which is reflected in a lower propensity to save.

Significant and relatively stable coefficients of interest rates from overdraft loans and credit cards have appeared to be slight surprise, since that is not where would seek for the mentioned causality too much. What's more, although, these products are relatively close substitutes for households, according to results their effect on the average propensity to save is exactly the opposite. While the substitution effect dominates for the overdraft loans, the influence of interest rates for credit cards is negative and rather it reflects the classical position of households in the role of the borrower. The substitution effect also prevails in the case of interest rates on consumer credit, which reflects the fact that Czech households respond to higher rates rather with deferred consumption and thus with a lower demand for this banking product rather than with lowering their propensity to save.

## 5 Conclusion

The aim of this work was to verify the causal relationship of market interest rates and the average propensity to save on the example of Czech households. Although the results, achieved using panel regression, might be marked as surprising in some aspects, for 4 out of 5 interest rates that we use, the above-mentioned relationship has been verified. In two cases the substitution effect prevailed, for the other two rates it was income effect the dominant one. It is so obvious that in the environment of the Czech Republic the influence of a single aggregate interest rate would be ambiguous and probably also relatively weak. Therefore it is not possible to a priori assume the negative and positive impact of the interest rate on the propensity to save without knowing a particular type of the interest rate.

Although it is not the primary purpose of this work to make practical recommendations for improving economic life, many of these applications could already be suggested by our results. Market interest rates are not far from interbank rates that are often deliberately influenced by the central bank. If we accept as a fact the existence of this notorious well-known interest rate pass-through, then with the knowledge of the specific characteristics of the transmission mechanism in the Czech Republic that can be provided, for example, by Bruna (2008) or Crespo-Cuaresma, Égert and Reininger (2004), using the monetary policy instruments of CNB we will be able to purposefully influence also particular market interest rates. And if the CNB knows precisely how their actions are going to affect the saving tendencies and therefore the propensity to consume, they will be able to intervene much better and more sensitively in the stabilization of the economic cycle or in long-term support of the growth of saving rate associated with the growth of the potential product.

There was a relatively large innovation compared to studies investigating a similar topic that was the distribution of households into groups according to their position in the distribution of disposable income. This step enabled to include into final analysis also information about heterogeneity, with which different income groups of population respond to changes in interest rates. However, the use of a set of market interest rates instead of one monetary policy rate has finally turned out to be even a greater benefit. Exactly as expected, it has been proven that economic units respond differently to different types of rates. Once a negative relationship can prevail, in case of a different type of rate households can respond positively in their tendencies to save. The above-mentioned is a very likely explanation of the current contradictory results when using a single monetary interest rate, which impact on the saving rate is actually determined by a set of effects from individual client rates. One of the major conclusions that is implied by the results of this study is that, unlike most of the current empirical research, the ambiguous and unstable relationship between monetary policy interest rate and propensity to save at aggregate level is not a surprise and source of confusion but a logical and inevitable consequence of heterogeneity across effects of market interest rates.

Perhaps despite the expectation, the results achieved are relatively robust and the breakdown of households into income categories, which we use, together with the application of market interest rates, which are much closer to the consumer than monetary rates, may be the answer to the controversial results of the current empirical research. This step thus potentially opens up a new way of analyzing the interest pass-through in relation to households. In our case, however, it is only the initial results of this new approach, which at the same time brought a number of uncertainties and quite surprising conclusions. Therefore, it is necessary from now on to test this method using sundry datasets and models so that it could be revealed in time whether this path is a welcome contribution to clarifying the rules driving the distribution of disposable income or only a blind aisle to forever fall into oblivion.

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## THE SITUATION OF INFORMAL CAREGIVERS IN THE CZECH REPUBLIC AND THE LEGISLATIVE CHANGES ASPIRING TO IMPROVE THIS AREA

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### Abstract

This paper is devoted to the topic of informal care in the Czech Republic and its importance at present and in the future in relation to demographic prognoses for oncoming years. The issue of the life situation of people caring for a close person may be identified as a relatively new area of interest for organisers of social services, local governments and the state. The text includes the results of analysis of the situation of informal caregivers in the Czech Republic executed by the Fund for Further Education of the Ministry of Labour and Social Affairs of the Czech Republic (MLSA) dating from 2014 and also comments on the measures accepted by the MLSA, which are intended to resolve the most common difficulties faced by caregivers. In the survey informal caregivers state that the most serious effects are loss of leisure time, mental exhaustion and restrictions to their social life. The majority of caregivers stated that they find it difficult to make ends meet on their monthly income. Only a quarter of caregivers retained their full-time job. Compared to original expectations in many spheres the changes presented and promoted by the MLSA do not support informal care as much as was originally expected. The proposed changes partially counterbalance the disinterest of the state in informal caregivers during previous years, however, the most important issue – a long-term strategy – is nowhere in sight.

### Keywords

nursing, informal care, ageing, social policy  
JEL Classification: J14, K40

## 1 Introduction

The issue of the life situation of people caring for a close person can be identified as a relatively new sphere of interest for organisers of social services, local governments and the state. We can state that informal caregivers have been more or less simply accepted, but not supported, for many years. They were a “Cinderella” from the viewpoint of public policy in the past. It was known that they existed. That they provide significant help to the needy and that their contribution is indisputable. But that is all. The Ministry of Labour and Social Affairs of the Czech Republic admits that the position of informal caregivers can be described in three words: “irreplaceable, but underappreciated”.

The role of family caregivers in the system of long-term care is absolutely fundamental. They provide a significant amount of care for members of their families – most frequently children with disabilities or aged parents. However, the Czech social system is incapable of comprehensibly comprehending this care and expediently supporting caregivers (MLSA, 2015) as yet, and this may be a significant issue in oncoming years. The importance of informal caregivers will continue to grow with regard to the aging population and new social risks faced by today’s society. And this will be linked to the need for their increased support. But do we know what exactly informal caregivers currently need? What support they would like from the state? What they lack, or what they have an excess of? It is only after we answer these questions that we can devote more attention to this issue.

Fortunately, the first steps leading to obtaining these answers have already been taken. The needs and situations of people providing long-term care for a close person became the subject of a survey titled “Support of informal caregivers” realised by the Fund for Further Education, an allowance organisation of the MLSA in 2014. The goal of this survey was to propose systematic support for people providing long-term care to a close person, who is dependent on the assistance of others due to his poor state of health. The project, including mapping of the requirements and situations of caregivers and a description of these requirements and situations by means of a quantitative and qualitative survey. The fund published partial results last year. According to these results further development of informal care in the Czech Republic is prevented by insufficient financial compensation, inadequate information and limited options for combining the role of caregiver with a job. The Department of Labour and Social Affairs subsequently presented options for resolving the situation in response to the established facts. Some of these passed through the legislative process and began to apply, or will begin to apply in the future. However, a number of measures were not approved, or the Ministry has not managed to prepare them and their future depends on the new management of the department, which will result from the parliamentary elections in October. The paper should have the following structure: introduction, literary research, methods and data, results and discussion, conclusion, literature.

## **2 Informal caregivers**

According to COFACE (the Confederation of Family Organisations in the European Union), the concept of informal caregiver has a fairly broad definition, which includes: “all men and women, who are not professional caregivers, but on the basis of their own decision, or because they had no other choice, provide care to a dependent person in their immediate area. They provide this person regular or irregular basic care in various forms. This particularly concerns the following types of care and support: nursing care, help with education and social activities, help during settlement of official matters, coordination care, continuous supervision, psychological support, help with communication and household work,” (COFACE, 2015). This is consequently a specific counterpoint to formal care, which includes services inspected and qualitatively guaranteed by the state or other institutions, which are provided explicitly by trained, qualified and licenced professionals (typically social workers, nurses, etc.).

The network of informal providers of services may consist for example of family (blood relations) and also friends, neighbours, the wider community of a person dependent on the assistance of other people, etc. However, the aforementioned definition is not the only one. We can encounter a number of definitions in various countries and in various contexts, which differ significantly. The Czech Fund for Further Education also struggled with this issue. The Fund was aware that “there is a fundamental difference in whether the person dependent on care requires occasional care (e.g. delivery of shopping, cleaning the household, etc.) or whether this care must be provided throughout the entire day and help is required with basic needs such as dressing, mobility, transport, communication with authorities, giving medication, preparing food, etc.” (Tomášková, 2015) and, for the requirements of the survey, it defined informal care as assistance exceeding usual family reciprocity, which is provided at least 20 hours a week, i.e. in a scope that represents specific personal restrictions for the caregiver, e.g. the option of remaining on the employment market (Tomášková, 2015).

At present caregivers who are immediate family members provide over 80% of overall care in EU countries. Two thirds of these are women of productive age – daughters or daughters-in-law, or partners or wives, aged between 45 – 64 years (Triantafillou et al., 2010). A typical

caregiver is a woman of over 50 years of age, who cares for her parents or the parents of her partner. Most of these women (89%) are younger than 65 years, are married (71%) and employed (49%).

Informal caregivers are most frequently recruited from the immediate family and from the extended blood relations of the recipient of the care. This is because care is based on a moral obligation and responsibility arising from family relations, not based on usual reciprocity in this case (Allan, 1991). As a result of insufficient support from the state we can say that family care remains primarily care based on love (Jeřábek, 2009). This is a reflection of the predominant familial value orientation of the Czech population, which continues to prevail at present and which expresses the desire that if the need for long-term care arises, it should be provided by the immediate family, to a greater degree than in Western countries (Barvíková, 2013). In the broader context this can be called one of the last surviving elements of what is a gradually disappearing natural (primary) solidarity in the Czech Republic.

### **3 Solidarity as a key principle**

Solidarity is a manifestation and expression of human mutuality. We can understand it as the relinquishment of claims to the benefit of others. It can also be defined as collective protection against risks, motivated by interest in oneself. It is impossible to effectively protect oneself against social risks through individual insurance. According to Krebse et al. (2015), solidarity represents an irrefutable mental attribute of social policy, which is comprehended not only as mutual understanding and assistance in modern times, but also as mutual responsibility. It can be considered a significant driving force of not only the material, but also the moral and spiritual evolution of humanity and a condition of progress. According to Kolibová (2011) it is the alpha and omega of execution of social policy.

Expansion of the goals of solidarity was accompanied by changes to its forms. The original forms were based on a common membership in family, neighbourhood, religious, guild, professional etc. groups. This practically concerned the first forms of insurance against life risks. In the event that one member of a group suffered existential difficulties, the groups functioned as self-regulating systems that maintained their balance by mobilisation of their own resources. These groups considered these measures a key condition for survival (Castel, 1995).

Keller (2005) identifies this solidarity as primary solidarity. According to him, secondary solidarity became more important from the 19<sup>th</sup> century, when an artificially established solidarity originated, which acquired an increasingly systematic form. This culminated in the form of a social state, where secondary solidarity weakened the primary form. While primary solidarity can be perceived as the solidarity of individuals, societies and associations and is currently based more on a philanthropic foundation, secondary solidarity is chiefly realised on the level of redistribution measures and in the form of the state's transfer policy. But this creates potential risks. There is more and more strong pressure from subjects on the state to subsidise groups of the population, which are not considered defenceless and weak. Redistribution of public funds is therefore at risk from non-transparent flows to the benefit of lobby groups, who only act for their own benefit and solidarity is simply an excuse to justify these flows.

Kolibová (2011) classifies solidarity into natural (roughly corresponding to the aforementioned primary solidarity) and unnatural, which is represented by all artificial political intervention carried out with the goal of manipulating and acquiring political support in elections in exchange for implementing non-system benefits and activities.

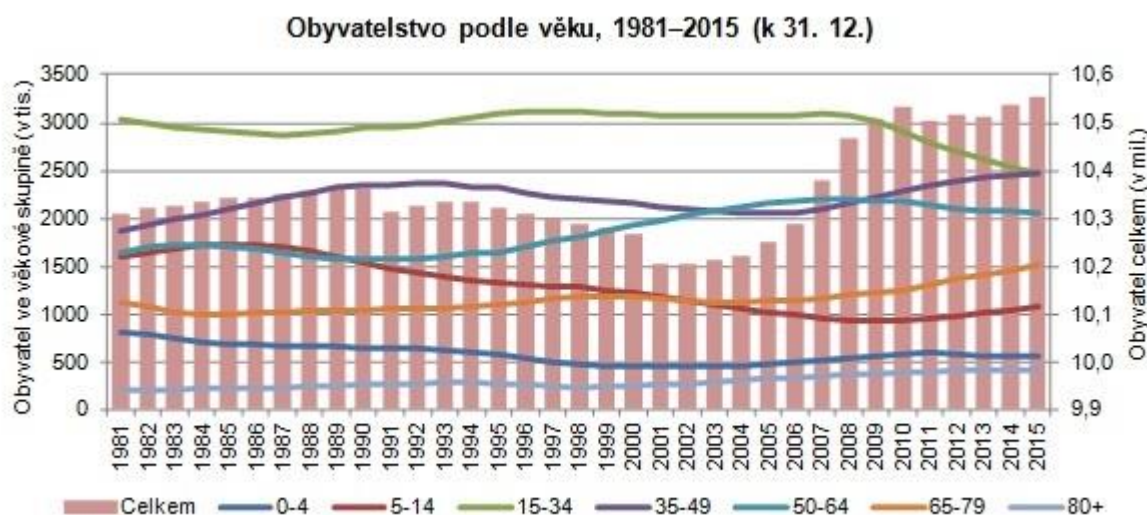


Natural solidarity is generally welcome and appreciated. People surrender their profits to the benefit of someone else. In this aspect it is not important whether the motive is blood ties or that it is simply expected by people around the caregiver. It is not only the actual act of mercy that is of importance. The consequence, when a weaker individual is helped to fulfil his basic needs, is also very important. In ideal cases the giver also receives satisfaction, in the form of fulfilment of higher requirements (whether in the form of self-satisfaction as a result of acknowledgement by other people, or a good feeling from carrying out a good deed).

#### 4 The aging Czech society

Fertility and birth-rate is falling very rapidly and significantly in the Czech Republic, as in a number of other economically advanced countries. Even though other factors also contribute to the trend of an aging population, the low birth-rate is the most fundamental reason according to a number of authors. According to Rabušic, whether the population is young or aging depends mainly on how many children women have. If they have more children, then the population is young, because the base of the tree of life is broad in such cases and is shaped overall like a pyramid. On the contrary, if women have fewer children, the population begins to age, because the base of the tree of life is narrow and the ratio of the young population to the older population is reduced (Rabušic, 1995).

The number of people over sixty years of age continues to grow in the Czech Republic, and the ratio between economically active people and pensioners is growing narrower. The population of the Czech Republic grew in 2015, similarly to 2014. However, the source of this increase in 2015 was explicitly the positive balance of foreign movement (16.0 thousand). The natural number of inhabitants fell – the number of deceased people was 0.4 thousand more than the number of live born children. The population of the Czech Republic increased by a total of 15.6 thousand in 2015, a total of 67.1 thousand since 2011, when the number of inhabitants was initially established on the basis of to the results of a census in 2011.



**Pic. 1** Population by age, 1981 - 2015 (Source: Czech Statistical Office, 2017)

According to the Czech Statistical Office there were a total of 10,553.8 thousand people living in the Czech Republic at the end of 2015. However, it is most important that although the Czech Republic acquires inhabitants mainly from foreign migration (with people aged

between 20 and 34 years of age predominating), the highest increase in the number of inhabitants in recent years is concentrated in the age group of over 65 years. In 2015 the number of seniors in this age group rose by 52.0 thousand to the final number of 1.93 million. The number of children aged 15 years and under also increased, by 22.7 thousand to 1.62 million. The group of children aged between 5 and 9 years changed most significantly (an increase by 17.1 thousand). On the contrary, the number of inhabitants aged between 15 and 64 years fell during the course of 2015 by 59.1 thousand, to a number just below 7.0 million. Less numerous years of birth are now entering productive age, people who were born at the turn of the 20<sup>th</sup> and 21<sup>st</sup> century, and the numerous years of birth, born at the end of the first half of the 20<sup>th</sup> century, have now moved into the age group of 65 years and over (Czech Statistical Office, 2017). This trend clearly indicates the key role that informal caregivers will play in the future.

We must be aware that the income of old-age-pensioners falls to 40 per cent of their existing income when they retire (down to just 20 per cent for high-earning individuals). Those who have relied on a pension from the regularly financed state pension system are now at risk of poverty and will continue to be in the future, because demographic development indicates that there will be 1.5 economically active people per one pensioner (at a pensionable age of 64 years). If the pension system insurance levy is currently 28 per cent of the gross salary, we can assume in such cases that the average pension in 20 to 30 years will be max. 25 to 30 per cent of the average salary in the economy (Barák, Rotschedl, 2015). This will result in the need for even more informal care. Seniors with such low incomes will not be capable of utilising social care and the above-standards of commercial types and will be dependent on assistance from the state in the basic scope. It will be up to their families to face the issue. If the goal will be to that the senior is cared for, if possible in a home environment and by close relatives, informal care seems a good solution. However, we can also encounter the issue described by sociologists as the “sandwich generation” more and more often. The middle generation is required to not only take care of their children, but simultaneously care for their own parents. All while being fully employed with their own job.

Informal care concerns various groups of recipients of care and various types of handicap or long-term illness. But it is the aging population due to which more and more attention is being given to informal care provided by close people. The aging population is linked to an increasingly wider gap between the number of people who need the assistance of others and the number of caregivers who are capable of assuring this assistance and the services they provide. The term in relation to this is the so-called “care gap” and some authors identify this issue as a new risk to the European social policy (Jakobs, 2003). The strategy and trend in the European social policy is to enable care provided by close people to be a dignified alternative to employment, not simply an additional duty. However, as indicated by the survey by the Fund for Further Education under the MLSA, this is certainly not so in the Czech Republic today.

## **5 The needs of informal caregivers**

The Fund for Further Education mapped the needs and situation of informal caregivers in autumn 2014, when an extensive questionnaire survey of caregivers was realised by the Stem/Mark Company. 858 people participated in the survey. A total of 10 focus groups of both caregivers and experts were also held at the same time. The survey had interesting results, however I will only discuss some of these.

The goal of this survey did not primarily focus on long-term care of people dependent on care at home (even though this was part of the survey) However, we can give some key data, which emphasises the fundamental role of home care in the Czech environment. Recipients of formal

long-term care in OECD countries represent 2.3% of the population on average. Recipients of long-term care in the Czech Republic are approximately 2.8% of the total population (recipients of long-term care in a home environment make up 2.4% and recipients of long-term institutional care 0.4% of the total population. Approximately 70% of recipients are provided with long-term care in their home environment. This percentage ranges from 55% in Belgium to over 80% in the Czech Republic.

The target group of this research was so-called informal caregivers, who are defined for the purpose of this survey as people who continuously, regularly care for another person in a home environment in the long-term, selflessly and without payment. The criterion of long-term care was not required. The intention was to address the widest possible group of informal caregivers. Only informal caregivers who met the following criteria were included in the survey:

- age 15 years and over;
- care is provided for over 3 months;
- this concerns the main caregiver or one of the main caregivers, e.g. in the event that there are multiple caregivers, the caregiver devoting the most time to care of the dependent person ;
- the care provided represents a significant restriction on the employment market or a significant restriction in the process of education,
- care is provided in at least the following scope: the caregiver must carry out at least 3 care activities from the following list in the scope of at least 20 hours a week.

The survey was designed as a face-to-face questionnaire survey and the FFE collaborated with the survey realiser (STEM/MARK) on the final form. A pilot survey took place on 1% of the respondents from the expected sample of 800 respondents, before the full survey was launched. The final form of the questionnaire was executed on the basis of this pilot survey. The average questioning time was actually 35 minutes. (Šimoník, 2015).

During the questionnaire survey 39% of caregivers informed that they consider their financial situation to be considerably worse as a result of providing care. A total of 79% of caregivers stated that they find it difficult to make ends meet on their monthly income. Commencing provision of care frequently has a negative impact on the economic activities of caregivers. The questionnaire survey indicated that of the people who were employed full-time before providing care, only 28% of these managed to retain their job full-time and more than a quarter (27%) of respondents who originally worked full-time became full-time caregivers. A job does not just fulfil an economic function for the respondents. They frequently mentioned its relaxing aspects, its social importance and the fact that work helps increase their self-confidence and feeling of recognition, and provides satisfaction (Tomášková, 2015).

The most fundamental results of the FFE survey can be considered the following findings:

- The most significant effect was loss of leisure time, mental exhaustion and restriction of social life.
- The majority of caregivers stated that they find it difficult to make ends meet on their monthly income.
- Only a quarter of caregivers retained their job full-time.

- The amount allocated within the terms of individual levels of contributions towards care are inadequately low, only a very small part of the care can be covered from these contributions.
- There is a complete lack of independent and complex support strategy, which would reflect the situation in the field of informal care in all its aspects.

## **6 Changes and new measures promoted by the MLSA**

The findings of the Fund for Further Education were also analysed by the Ministry of Labour and Social Affairs of the Czech Republic. This also established a Specialist Committee for Family Policy, the conclusions of which are to be one of the pillars of the proposed legislative changes. The unsatisfactory situation of informal caregivers was also defined as a point for discussion

The first planned measure by the Ministry was time off for care or so-called caregiver leave lasting three to six months. The “institute of time off for care will be analogical to maternal leave or the institute of caring for a family member. The goal is to provide informal caregivers with the option of providing care without fearing loss of their job,” the Minister of Labour and Social Affairs Michaela Marsková stated (Barák, 2015).

Another measure was the right to claim financial assistance in the value of 60 per cent of the daily assessment base, which relatives and people who pay sickness insurance would be entitled to. This measure was actually approved, but in a different form. For instance the suggestions of the Minister of Finance of the Czech Republic affected the form of the law, which can be considered very pragmatic, but which do not take the actual complicated situation of informal caregivers into consideration. For that matter the MF of the Czech Republic doubted their role. “Ill people belong primarily under the care of a health-care facility, not under the care of relatives. If this concerns a permanent condition and the affected person requires long-term social care, it is more suitable to significantly accelerate decisions concerning contributions towards care and effectively utilise social services,” the Ministry of Finance stated in its suggestion proceeding.

According to the proposal, time off for providing care will be conditional to the employer’s consent. However, employers will only be able to refuse to provide time off for care for serious operating reasons. Time off for care will last for up to 90 days according to the proposal and family members will be able to take turns providing care. The spouse or registered partner of the person being cared for, direct relatives, siblings, partners living in a joint household with the person being cared for and other relatives, for example mother-in-law, farther-in-law, daughter-in-law, son-in-law, niece, nephew, aunt, uncle or their spouses, registered partners or partners, will be able to provide care. People with sickness insurance will be able to take time off for care of a person who has spent at least a week in hospital. The proposal will come into effect from the middle of next year (2018).

People will receive care benefits in the form of 60 per cent of their income base, from the sickness insurance. According to calculations by the MLSA, time off for care will impact the government budget by approximately 1.84 billion Crowns a year. It is estimated that the public health insurance system would lose another 242 million Crowns a year. On the contrary, according to the justification report, public budgets would save approximately 900 million Crowns on financing stays in the wards of care service facilities (Czech Press Office, 2017).

The last pledge for the time being is an increase in contributions for care, i.e. the most important source of financing social services (Jeřábková, 2013). This contribution has not been increased since 2007. The department prepared two versions of the amendment on social

services. In the first proposal the contribution towards care should have increased by ten per cent from June 2017. The second proposal assumed an increase from July 2016 by five per cent and by another five per cent from January 2017 (Barák, 2015). However, the proposal was amended following discussion, mainly in order to economise. The definitive version accepted by the government assumes an increase in the contribution towards care sum only at level IV. dependence (complete dependence) from 13,200 Crowns to 19,200 Crowns. However, a specific bonus was supplementation of the legislation which will now enable faster settlement of an application for a contribution. The government resolution acknowledges that this is “an effort to support provision of care by informal caregivers, particularly by close persons, in a home environment.” “The amendment will help the most needy, people who are completely dependent on the help of others. Thanks to the increase in this contribution, these people will be able to remain cared for in their home environment,” the Minister of Labour and Social Affairs Michaela Marksová stated in her press report (Average Earnings Information System, 2017). The act should come into force on 1 January 2018.

The approved increase in contribution to care amounts will increase the total annual mandatory expenses for benefits. Some of the expended funds will be returned to the social services system by means of payments by clients of registered providers of social services provided in field or out-patient form. An increase in expenditure from the government budget is expected in relation to the increase in the contribution to care amount of the group of people defined at dependence level IV., which will affect approx. 25 thousand people according to the estimate of the MLSA. The qualified estimate of the increase in expenditure from the government budget is CZK 1.8 billion. The equalisation of terms for payment of the benefit will have some positive effect on the public budget. However, this should be inconsiderable because it can affect a maximum of five hundred recipients of the contribution towards care. The MLSA believes that the increase in the contribution will support operation of social services in the Czech Republic. However, the question is whether the increase in funds will actually provide support for the field of informal care, and whether this increase will actually be utilised by the end client to the benefit of the offered social services, or whether this will simply be more income for the client. This can only be evaluated after research following a specific period.

## **7 Conclusion**

In recent years efforts have been made in the field of social and health care of a long-term nature, in order to transfer care of dependent people to their home environment. These people very frequently desire that people close to them provide them with care, which corresponds to the familial value orientation of the Czech population. However, informal caregivers in this country are underappreciated, their situation has not been discussed for a number of years. And it is therefore unsurprising (as indicated by the extensive survey by the Fund for Further Education) that caregivers suffer from a number of difficulties, which could be easily resolved by acceptance of social policy measures by the state.

The fact that the current management of the Ministry of Labour and Social Affairs of the Czech Republic has finally started to take steps in the matter of informal caregivers, which could lead to improvement of their situation, must be appreciated. However, these steps are individual rather than systematic. The increase in the contribution towards care may slightly improve the economic situation of dependent persons, but there is no direct equivalent towards caregivers in this case. The approved time-off for care lasting for up to three months, which caregivers seem to be interested in according to current signals, seems more promising in this

aspect. However, we must add that, compared to original expectations, the final act is different and fails to support informal care to the degree originally expected in many aspects. The planned three months of time off were reduced to two, and the condition of the employer's consent is very problematic from the viewpoint of interested parties. However, we will only be able to analyse the specific impact of the act after it has been valid and effective for a sufficiently long period.

The proposed changes partially eliminate the impact of the state's disinterest in informal caregivers during previous years, but the most important solutions are nowhere in site. There is unfortunately still a lack of an independent and complex strategy for support, which would reflect the situation in the field of informal care in all its aspects.

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## **SPENDING ON PUBLIC PENSIONS IN THE CONTEXT OF POLITICAL SYSTEM: EVIDENCE FROM ITALIAN FIRST REPUBLIC**

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### **Abstract**

Spending on public pensions is influenced by many factors such as arrangement of pension system, demography or political business cycle. There are also constitutional rules that play a role. Electoral system, as one of them, can influence government economic policy through its impact on party system and type of government. The aim of this paper is to evaluate, on example of the Italian First Republic (1948-1994), the hypothesis that proportional electoral systems, fragmented party systems and common coalition governments result in large-scale public pension systems. All these theoretical prerequisites of large-scale pension system were found in the Italian First Republic. Moreover, nearly for a half century, all Italian governments were led by the Christian Democracy. No real alternation of governments resulted in institutionalized clientelism. This negative phenomenon was probably one of the main reasons of extensive Italian public pension system which was the most generous in the developed world. We use comparative method, historical method and correlation analysis to evaluate the impact of constitutional rules on the public pension system on the example of Italy. Cross-country comparison of selected European countries is based on OECD data.

### **Keywords**

Political system, electoral system, coalition government, public pension spending, government expenditure

### **JEL Classification**

D72, H53, H55

## **1 Introduction**

The reform of pension system is current issue in many countries of the European Union. The need to reform unsustainable PAYGO pension systems is caused by many determinants. Perhaps the key factor is the ageing of the European population. There are also other incentives for pension reforms as, for instance, fiscal consolidation. Public expenditure on the pension system is influenced by the governmental economic policy. However, changes in pension system usually lead to changes in political preferences of voters. For this reason, there is a threat that government will have no interest to reform pension system. Another dangerous and more common situation is when the government increases public pension spending to win in the elections. In view of this implication, many papers and literature deal with the issue of the political business cycle. However, this paper is based on the ideas of constitutional economy. Electoral system, as one of the constitutional rules, can influence government economic policy through its impact on party system and type of government. Specifically, proportional representation (PR) and majority electoral system have different impacts on party fragmentation and type of government (coalition/single-member party government). This paper deals with the consequences of these institutional causalities for government expenditure on public pension system. This topic is described for example by Persson and Tabellini (2003, 2004, 2006), Persson, Roland and Tabellini (2003) or by Milesi-Ferretti, Perotti and Rostagno (2002).



This paper is focused on the political system of the Italian First Republic (1948-1994). This political system was characterized by an almost pure proportional electoral system which resulted in highly fragmented party system and common coalition governments.

The aim of this article is to evaluate, on example of the Italian First republic, the hypothesis that proportional electoral systems, fragmented party systems and common coalition governments result in large-scale public pension systems. Firstly, we will make the cross-country comparison and correlation analysis of public pension expenditure and share of elderly population in Italy and in selected European OECD member countries in the period 1988-1994. The countries will be chosen on the basis of criterion of similar fundamental political institutions (electoral system to lower house and a type of democracy). This is very important for comparability. To reveal the links between political system and public pension spending and to show anomalies of political system of the Italian First Republic we will focus also on the details of each country (governments and its duration, coalitions and number of parties in parliament). Connections between the political system of the Italian First Republic and public pension spending are examined by the empirical history.

The remain of this paper is structured as follows. Main empirical studies are presented in Section 2. Section 3 deals with methods and data used in this paper. Section 4 presents results and discussion. Finally, Section 5 contains concluding remarks.

## 2 Literature review

Important empirical publications concerning field of constitutional economics are compiled in this section. Selected publications are focused on electoral rules, party systems and type of government. According to the literature review below, these political institutions can influence outcomes of government economic policy as for example size and composition of public expenditure.

Persson and Tabellini (2003, 2004, 2006) describe, that electoral rules systematically influence economic policy. Diverse economic outcomes could be affected by different setting of each electoral system. Electoral formula, which serves for translation of votes into seats, is the fundamental feature of electoral system. There are two main types of this formula – *proportional representation (PR)* and *majoritarian system*<sup>10</sup>. District magnitude is another important element of electoral systems. While multi-member districts are typical for PR, the single-member districts are associated with the majoritarian system. In this paper, we do not consider other details of electoral rules as mathematic formulas or ballot structures due to simplification. Persson and Tabellini (2003, 2006) postulate that the arrangement of electoral system influences structure of government expenditure. Specifically, single-member districts and majoritarian systems cause that politicians tend to support narrowly focused programs in favour of voters from small single-member constituencies. Change of voter political preferences in majoritarian system could cause significant change in composition of parliamentary majority. This is the motivation for elected politicians (political parties) to be responsible and more sensitive to desires of key voter groups in their own constituencies. On the contrary, PR and larger multi-member constituencies diffuse electoral competition. This induces politicians (political parties) to benefit broader groups of voters than under majoritarian system (e. g. through universalistic redistributive programs as public pensions or other welfare benefits). Thus, it is predicted that PR systems lead to higher public spending on welfare and social

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<sup>10</sup> There is also distinction between plurality rule and majority rule, but the most of papers deals with the majority rule. Persson and Tabellini (2003) postulates that their paper can also be considered as comparison of strictly majoritarian and strictly proportional elections in a simple framework.

security programs compared to majority rule. This is confirmed in Persson and Tabellini (2003, 2004, 2006) who tested the differences in public spending on social security and welfare programs on a sample of 72 democracies in the 1990s. “*Confining attention to parliamentary democracies, and without controlling for other determinants of welfare spending, legislatures elected under proportional electoral systems spend more in social security and welfare by as much as 8 percent of GDP, compared to legislatures elected under majoritarian elections.*” (Persson and Tabellini, 2004, p. 86). If they included other determinants as demography, per capita income, the age or quality of democracy, then this difference drops to 2-3 % of GDP and remains statistically significant.

Another investigation of the effects of electoral institutions on the size and composition of public expenditure was presented by Milesi-Ferretti, Perotti and Rostagno (2002). The research sample consisted of twenty OECD member countries and twenty countries in Latin America. According to the authors, elected politicians have to face a fundamental trade-off – *allegiance to a social constituency vs. allegiance to a geographic constituency*. Based on this trade-off, we can define two types of government expenditure: *transfers* (e.g. spending on social protection or subsidies to companies) and *purchase of goods and services* (sum of government consumption and capital spending; e.g. hiring civil servants or investment to infrastructure). While purchases of goods and services are easier to concentrate geographically (constituency), transfers are easy to target across broad social groups and across constituencies. PR and multi-member districts lead to a more social groups represented in a parliament. Politicians, who represent diverse social groups, support various types of transfers. The result is the high spending on transfers. On the contrary, under majoritarian system it is possible that all elected politicians belong to the same social group (similar distribution of different social groups across districts is the prerequisite). Then, elected politicians derive voters from the same type of transfers but each of them derives different voters from public goods. So, these politicians rather prefer spending on public goods pointing to their districts than on transfers. The result is the high spending on public goods. „*The model then predicts that spending on transfers is higher in proportional systems, and spending on public goods is higher in majoritarian systems.*” (Milesi-Ferretti, Perotti and Rostagno, 2002, p. 610). Authors state that empirical investigation strongly supports this theoretical model, especially in OECD countries.

Remarkable findings about electoral systems, party structures, government coalitions and fiscal policy are presented by Persson, Roland and Tabellini (2003). They researched impacts of electoral systems on parliamentary democracies within a theoretical model based on two ideas. *Firstly*, under majoritarian system, it is profitable for politicians (with similar ideology) to be grouped in a larger political party due to an increased chance of reaching the majority in each constituency. Under PR politicians are not forced to be grouped in a larger political party therefore PR produces a fragmentation of party system. It usually results in more common single-party majority governments under majoritarian systems and very usual coalition governments under PR. *Secondly*, coalition governments differ from single-party majority governments. In the case of a single-party majority government, voters cannot easily distinguish between different politicians in this government. It means that the main electoral conflict happens between the government and the opposition. So, we could expect that single-party government will make responsible economic policy. On the other hand, in case of coalition government, voters can distinguish between the coalition parties. Therefore, electoral conflicts run within the governing coalition. Intra-government conflicts and conflicts of the interest in coalition government cause higher public spending. Coalition governments lead to a higher public spending under PR but also under majoritarian system (when electoral districts are heterogeneous, then party system is fragmented under majoritarian system as well). Persson,

Roland and Tabellini (2003) verified their simplified theoretical model on the sample of about 50 parliamentary democracies (1990–1998) and on the sample of about 40 parliamentary democracies (1960–1998). Empirical evidence strongly supports the predictions of theoretical model. „*Proportional rule is indeed associated with more fragmented party structures, which in turn lead to more frequent coalition governments, which spend more than single-party majority governments.*“ (Persson, Roland and Tabellini, 2003, p. 45).

Similarly, Bawn and Rosenbluth (2003) according to data from the 1970's-90's in 17 European countries verified prediction about higher government expenditure in broad coalition governments and fragmented party systems. Moreover, Bawn and Rosenbluth (2003) state the same hypothesis as Persson, Roland and Tabellini (2003) that behaviour of a single-party government differs from a coalition government. It is caused by an electoral accountability. Single-party government is accountable for all its political decisions and has to defend its reputation. On the other hand, political parties in coalition government are only partially responsible for decisions of a whole government.

Explanation of the higher public spending in coalition governments describes Gregor (2005). Highly fragmented party systems and coalition governments, as possible consequences of PR electoral systems, lead to a less efficient handling of public finance – so called *problem of common-pool*. Each political party in coalition government seeks to obtain benefits from common budget because increased consumption is paid by other shareholders. Thus, negative externality (tax externality) is imposed to all shareholders. The higher the number of shareholders the greater and less efficient the budget is. The great ideological range of preferred policies across political parties and slowdown of economic reforms are other problems caused by fragmented party system (Gregor, 2005). Alesina and Perotti (1994) emphasizes that inefficient and lengthy negotiation in a coalition government blocks decision making process about budget. Moreover, PR electoral systems are accompanied by budgetary institutions which do not support fiscal discipline such as weak position of prime minister of coalition government or unlimited number of amendments within coalition. Roubini and Sachs (1989) states that broad coalitions with short average duration tend to make bigger budget deficits. Another problem is that all political parties in coalition have veto power over changes in the status quo.

Summarizing, we see that arrangement of electoral system (especially PR/majoritarian system) influences fragmentation of party system, which influences a type of government. Type of government (coalition/single-party government) has a direct impact on economic policy. For example, PR system usually leads to a highly fragmented party system and subsequently to a coalition government. Politicians elected under PR are induced to benefit broader groups of voters (e.g. through universalistic redistributive programs such as social transfers) because of diffused electoral competition across larger multi-member districts and because of more social groups represented in the parliament. Under the majoritarian system, politicians tend to support narrowly focused programs in favour of voters from small single-member districts. Thus, we should predict that PR systems lead to a more generous public spending on welfare and social security programs such as pension spending. Moreover, coalition governments (especially with many political parties) usually lead to a less efficient negotiation within coalition, problems of common-pool, lower political responsibility or intra-government conflicts of interests. Thus, we can expect higher public spending in coalitions. It is possible that public pension spending can be amplified through this channel.

### 3 Methods and data

First, we develop the cross-country comparison of the public expenditure on pension system and of the share of elderly population to find out the basic differences between countries. Then, the empirical-historical method is used to identify the connections between the political system and the public pension spending in the Italian First Republic.

Data related to the public expenditure on pensions is taken from OECD database – *Pension spending*. According to the OECD, “*Pension spending is defined as all cash expenditures (including lump-sum payments) on old-age and survivors pensions. Old-age cash benefits provide an income for persons retired from the labour market or guarantee incomes when a person has reached a 'standard' pensionable age or fulfilled the necessary contributory requirements.*” This indicator includes also early retirement pensions with exception of early retirement for labour market reasons, supplements for dependants paid to old-age pensioners with dependants under old-age cash benefits, social expenditure on services for the elderly people, services such as day care and rehabilitation services, home-help services or expenditure on the provision of residential care in an institution. This indicator is measured in percentage of GDP (OECD, 2017a).

There are many aspects, which influence public pension spending but probably the most important determinant is demography. Current demographic trends such as population ageing is a challenge for many governments because of rising public expenditure on pension systems. Due to this fact, we use indicator of *Elderly population* from the OECD database for the purpose of our analysis. The elderly population is defined as people aged 65 and over and this indicator is measured as a percentage of population (OECD, 2017b).

The cross-country comparison of public pension spending includes Italy and other selected European OECD member countries in the observed period 1988-1994. This period was chosen because of escalating political crisis in Italy at the turn of the 80's and 90's. Political system of the Italian First Republic finally came to end in 1994. For our comparison, we bore in mind also some political prerequisites – parliamentary democracy (not presidential or semi-presidential) and PR or majoritarian electoral system to lower house of parliament. We do not include presidential and semi-presidential democracies because of different implications on economic policy of presidentialism and parliamentarism (e. g. Persson and Tabellini, 2003). Each electoral system is unique because of many details such as mathematic formulas, ballot structures, etc., thus we consider only distinction between PR and majoritarian electoral system. Additional and illustrative indicator is a form of government – republic or constitutional monarchy. Table 1 contains all selected characteristics of political systems in the European OECD countries in the period of 1988-1994. The initial sample of countries included 17 countries.

**Tab. 1** Characteristics of political systems in the European OECD member countries (1988-1994)

Country	Electoral system to lower house	Type of democracy	Form of government
Austria	PR	parliamentary	republic
Belgium	PR	parliamentary	constitutional monarchy
Denmark	PR	parliamentary	constitutional monarchy
Finland	PR	semi-presidential	republic
France	MAJ	semi-presidential	republic
Germany	PR	parliamentary	republic
Greece	PR	parliamentary	republic
Ireland	PR (STV)*	parliamentary	republic

Italy	PR	parliamentary	republic
Luxembourg	PR	parliamentary	constitutional monarchy
Netherlands	PR	parliamentary	constitutional monarchy
Norway	PR	parliamentary	constitutional monarchy
Portugal	PR	semi-presidential	republic
Spain	PR	parliamentary	constitutional monarchy
Sweden	PR	parliamentary	constitutional monarchy
Switzerland	PR	sui generis (mixed)	republic
United Kingdom	MAJ	parliamentary	constitutional monarchy

PR: proportional representation, multi-member districts

MAJ: majoritarian system, single-member districts

\*(STV) – Single transferable vote

Source: Colomer, 2004; Stepan and Skach, 1993; Hloušek, Kopeček and Šedo, 2011; Chytilek et al., 2009; own modification.

Considering selected characteristics of political system, we had to exclude the following countries from our sample – Finland, France, Ireland, Portugal and Switzerland (highlighted in table 1). Finland, France and Portugal were considered semi-presidential democracies in the observed period (Stepan and Skach, 1993; Hloušek, Kopeček and Šedo, 2011). Ireland was excluded because of a specific type of electoral system – single transferable vote (STV) (Chytilek et al., 2009). Switzerland was excluded due to political system, which is very difficult to classify – political system of *sui generis* – especially because of many elements of direct democracy (Hloušek, Kopeček and Šedo, 2011). Final sample includes 12 European OECD member countries in the period of 1988-1994.

#### 4 Results and discussion

In this section, we present data about governments, coalitions, cabinet duration, number of parties in a parliament, the public pension spending and the share of elderly population in the selected OECD countries to briefly compare Italian experience with other European countries. Firstly, we discuss data and correlation analysis and then we describe the case of the Italian First Republic. We try to reveal the links between public pension spending and political system of the First Republic.

##### Public pension spending in selected European OECD member countries

According to the comparison of the European OECD member countries with similar political characteristics in the period of 1988-1994, there are significant differences among countries included in the Table 2. Italy had the highest public pension spending in the observed sample of countries (the highest numbers in the table are highlighted). But if we included all the OECD countries independent of political system and geographical location, then Italian public pension spending was the highest in the developed world (total pension spending of all OECD countries was 6,56 % of their GDP on average in the observed period of 1988-1994). Italian public pension spending was about 11,9 % of GDP on average in that period and was constantly rising. If we focus on the distinction between PR and majoritarian electoral system, then we have to note that the United Kingdom was the only one country with the majoritarian electoral system included in our sample. Even though the British public pension spending was the lowest in the observed sample – lower than pension spending in any country with PR electoral system – we cannot make any conclusion about verification of empirical literature. Data from Austria is very interesting as well but some years are missing in the dataset.

**Tab. 2** Public pension spending, % of GDP, 1988-1994

Country	1988	1989	1990	1991	1992	1993	1994
Austria	-	-	11,30	11,39	11,46	11,97	12,22
Belgium	9,28	9,00	8,95	9,26	9,37	9,59	9,44
Denmark	5,81	6,09	6,11	6,25	6,25	6,38	7,35
Germany	10,21	9,92	9,47	9,14	9,50	9,80	10,01
Greece	8,49	8,83	9,48	8,92	8,88	9,16	9,07
Italy	10,99	11,17	11,32	11,63	12,40	12,80	13,01
Luxembourg	7,68	7,51	7,73	8,15	8,19	8,14	8,14
Netherlands	5,74	5,64	6,31	6,20	6,15	6,06	5,56
Norway	5,41	5,46	5,54	5,55	5,61	5,58	5,55
Spain	7,11	7,20	7,71	7,88	8,21	8,62	8,65
Sweden	7,31	7,33	7,29	7,62	8,20	8,41	8,22
United Kingdom	4,54	4,31	4,47	4,85	5,12	5,19	5,06
OECD – Total*	6,24	6,20	6,38	6,57	6,75	6,90	6,90

\*The total includes all OECD member countries (not only European) in that period

Source: OECD, 2017a.

As mentioned above, one of the key factors of public pension spending is demography. Table 3 contains shares of elderly population (age of 65 years and more) in the observed countries.

**Tab. 3** Elderly population, % of total population, 1988-1994

Country	1988	1989	1990	1991	1992	1993	1994
Austria	14,74	14,87	14,93	14,94	14,91	14,93	15,01
Belgium	14,49	14,72	14,92	15,13	15,31	15,48	15,66
Denmark	15,47	15,55	15,59	15,58	15,54	15,46	15,36
Germany	15,40	15,38	15,31	14,60	15,27	15,66	15,83
Greece	13,42	13,58	13,74	13,97	14,27	14,56	14,84
Italy	14,12	14,49	14,89	15,27	15,63	16,10	16,38
Luxembourg	13,37	13,40	13,42	13,49	13,59	13,70	13,85
Netherlands	12,59	12,74	12,84	12,92	12,99	13,06	13,14
Norway	16,20	16,28	16,32	16,28	16,24	16,14	16,03
Spain	12,89	13,23	13,58	13,91	14,20	14,49	14,81
Sweden	17,77	17,79	17,78	17,74	17,69	17,61	17,52
United Kingdom	15,62	15,71	15,73	15,77	15,81	15,83	15,82

Source: OECD, 2017b.

According to the data, we can remark that the highest share of elderly population between 1988-1994 was in Sweden, about 17,7 % on average (highlighted in the table). Italian elderly population was the second largest from the sample of countries in 1994, but it was nearly similar to those in Belgium, Norway or in the United Kingdom. Moreover, Italy was not an exception in the developed Europe between 1988-1992. The share of elderly population was more balanced across the selected countries than the indicator of public pension spending.

Obviously, only one indicator (the share of elderly population) cannot explain the differences between pension spending in the observed countries due to many significant distinctions in arrangement and details of each pension system such as official retirement age, minimum contribution period, etc. The goal of this sub-section was to compare public pension spending in the European OECD member countries with similar political characteristics. Italian

pension system was the most generous in the observed sample of countries and in the whole developed world in the period of 1988-1994. However, the share of elderly population apparently could not be the most important determinant of the Italian large-scale public pension system.

There are two following questions. Why was the Italian pension system the most generous in the developed world and why was the political system of Italy exceptional relative to other observed countries with the similar political characteristics? To find the answers, in the following sub-sections we will focus on the governments and its durations, coalitions or number of parties in parliament; then we will present correlation analysis; and finally we will focus on the political system of the First Republic and on the details of the Italian public pension system.

### Governments in selected European OECD member countries

We showed fundamental characteristics of political system in selected OECD member countries – electoral system to lower house, type of democracy and form of government in Table 1 in the section *Methods and data*. Then we compared public pension spending and the share of elderly population in selected countries with similar fundamental political characteristics. However, type of electoral formula, type of democracy and form of government served for the primary classification of selected countries. Now we will focus on the details of each political system of the observed countries.

**Tab. 4** Cabinets, coalitions, cabinet duration and number of parties in parliament in selected European OECD member countries (1945-1999)

Country	Number of party-based cabinets	Number of coalition governments	Cabinet duration			Number of parties in parliament	
			Mean duration of cabinet	Minimum duration	Maximum duration	Range	Mean
Austria	21	17	854,3	160	1431	3-5	3,5
Belgium	33	28	520,2	7	1502	4-14	8,5
Denmark	31	17	626,4	40	1337	5-11	7,7
Germany*	26	22	699,5	14	1452	3-9	4
Italy	48	34	355,1	11	1628	8-16	10,5
Luxembourg	16	16	1170,5	153	1936	4-7	4,8
Netherlands	22	22	808,1	80	1638	7-14	9,9
Norway	26	8	755,3	24	1435	5-8	6,4
Sweden	26	7	771	167	1468	5-7	5,3
United Kingdom**	19	0	994,2	50	1847	-	-

\* 1949-1999

\*\* 1946-1997, cabinet duration is based on own calculations, number of parties in parliament is not included because of many independent individuals elected

Source: Müller and Strøm, 2003; UK PI, 2017\*\*; Butler and Butler, 2011\*\*; own calculations\*\*

We chose some indicators included in Table 4 which illustrate the differences among selected countries. Among them the number of party-based cabinets; number of coalition governments; mean, minimum and maximum duration of cabinet; range of political parties in parliament and mean number of parties in parliament are the most important. The empirical information covers entire post-1945 period – from the first post-war cabinet until 1 January 1999. However, there are some exceptions. Data from Germany covers the life of the Federal republic from 1949. Data from the United Kingdom include period of 1946-1997 and the number of parties in parliament in the UK is not included because of many independent

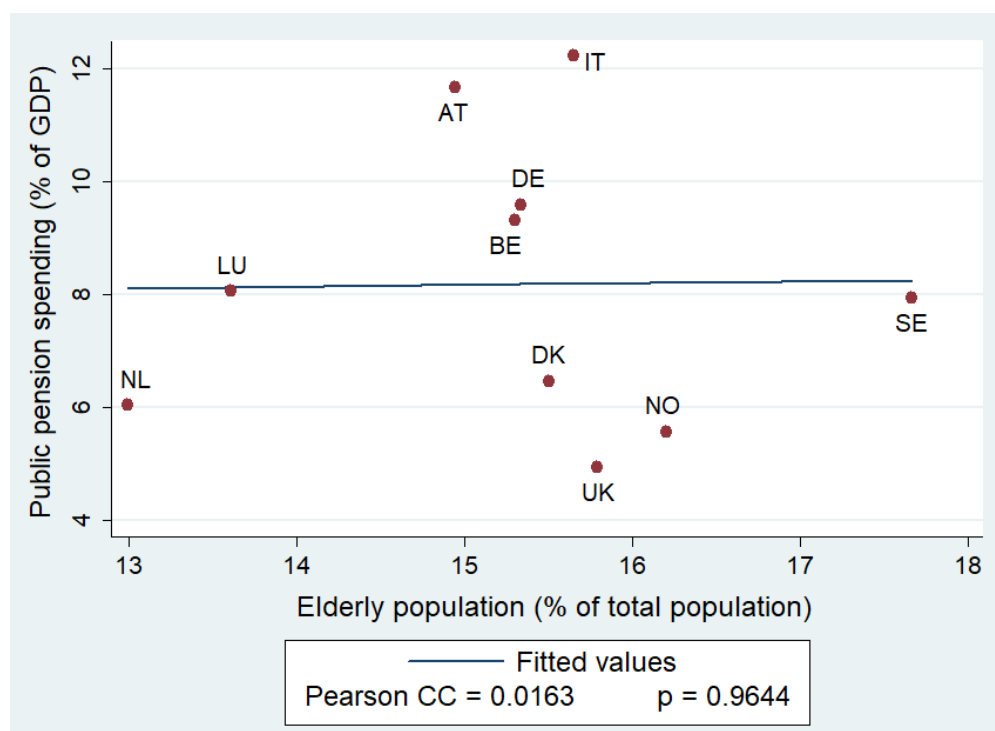


individuals elected. In addition, we had to exclude Spain and Greece because of discontinuity of democracy – both countries were under dictatorship (Spain until 1975 and Greece in the period of 1967-1974).

The extremes in the Table 4 are highlighted. According to the data, there were 48 Italian party-based cabinets in the observed period and it was the highest number among selected countries. Frequent alternation of Italian cabinets had some negative effects as for example short duration of governments and political instability. Mean duration of Italian cabinets was no more than a year (only 355,1 days) in the period of 1945-1999. Coalitions were common – 34 cabinets of 48 were coalition governments. Range of political parties in the Italian parliament varied from 8 to 16 and the mean of political parties represented in parliament reached 10,5 in the period of 1945-1999 (Müller and Strøm, 2003). We can see, that Italy was a genuine exception in the European political landscape. To sum up, the Italian excels among the observed European OECD member countries in the period of 1945-1999 – the highest number of governments/coalition governments, the shortest duration of cabinets and the highest mean of political parties in the parliament.

### Correlation analysis

As mentioned above, the key factor of public pension spending should be demography. We focus on the share of elderly population (age of 65 years and more). There should be a positive dependence between public pension spending and the share of elderly population. To test this dependence, we use simple correlation analysis of two variables – 5-year average (1990-1994) of public pension spending (% of GDP) and 5-year average (1990-1994) of elderly population (% of total population) in our sample of the European OECD member countries. Surprisingly, Pearson correlation coefficient is very low (0,0163). It implies that there is nearly no linear correlation between these two variables.

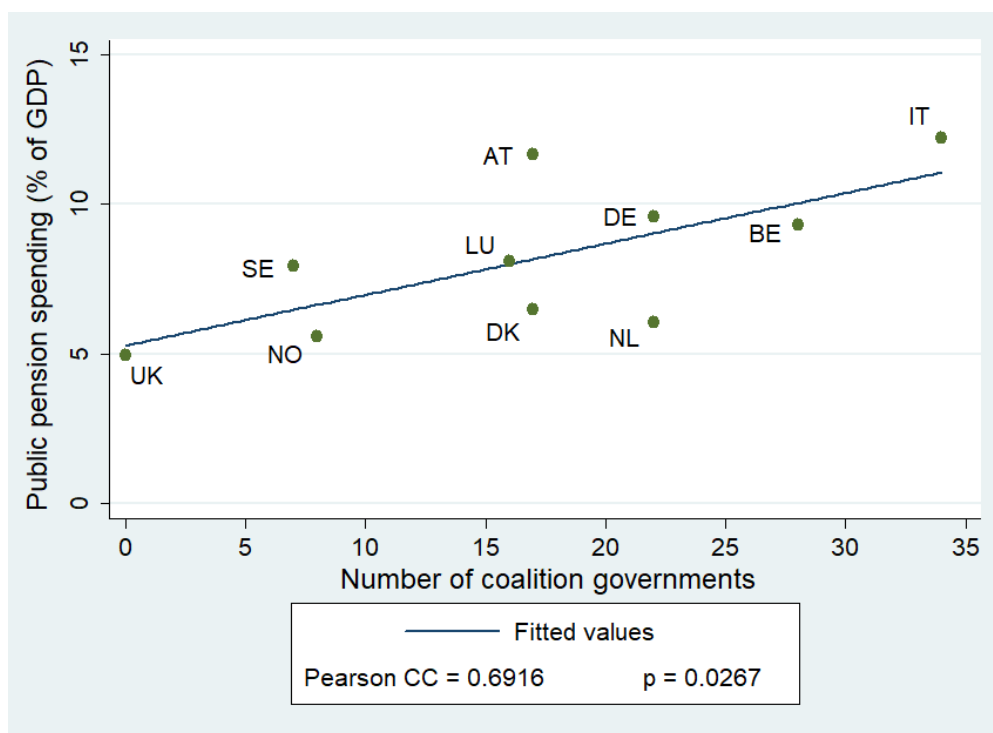


**Fig. 2** Elderly population (% of total population; 5-year average 1990-1994) and Public pension spending (% of GDP; 5-year average 1990-1994) (Source: own calculations)



According to the literature review, we predicted that PR systems lead to a more generous public spending on social security programs. Moreover, coalition governments (especially with many political parties) usually lead to a less efficient negotiation within coalition, problems of common-pool, lower political responsibility or intra-government conflicts of interests. Thus, we can expect higher public spending in coalitions and social security programs can be amplified through this channel.

So, we expect statistical dependence between public pension spending and the number of coalition governments. We test this prediction by correlation analysis. Two variables are included – 5-year average (1990-1994) of public pension spending (% of GDP) and the number of coalition governments in the post-war era (1945-1999) in our sample of the European OECD member countries. Linear dependence between these two variables is presented in the following figure. Pearson correlation coefficient is 0.6916. According to Evans (1996), values in the interval of 0,60-0,79 indicate strong correlation. This positive dependence is statistically significant at the  $\alpha$ -level of 0,05 ( $p$ -value (0,0267)  $< \alpha$  (0,05)).



**Fig. 2** Number of coalition governments (1945-1999) and Public pension spending (% of GDP; 5-year average 1990-1994) (Source: own calculations and processing in Stata 13)

Italy is situated in the right upper corner of correlation graph due to the highest public pension spending and the highest number of coalition governments during the period 1945-1999 in the observed sample of countries. Two questions arise from these results – why was Italy such exceptional among other European democratic countries with similar political characteristics such as PR electoral system and what caused the political instability. In the next sub-section, we will focus on the political system of the Italian First republic, which covered almost entire post-war period until the 1990s.

### Political system of the First Republic

The political system of the First Republic (1948-1994) was formed after World War II. This system had several specific features and anomalies partly established in the Italian Constitution from 1948 and partly caused by other social, historical and political factors. Equality of both chambers of the Italian Parliament (perfect bicameralism) and almost pure proportional electoral system (PR) to Chamber of Deputies and *de facto* also to Senate<sup>11</sup>, were examples of the specific elements. This arrangement of electoral system without electoral threshold led to high number of political parties in the Italian Parliament and coalition governments became a rule (Bull, 2015; Dvořáková and Kunc, 2009; Klokočka, 1991; Senato della Repubblica, 2017). In legislative elections 1948-1992, about 11 to 12 political subjects on average obtained at least one mandate in Chamber of Deputies and 12 parties on average in Senate. After the elections in 1992, there were even 16 political parties in Chamber of Deputies (Ministero dell'Interno, 2017). Another specific feature was the extraordinary influence of parliamentary committees, which had the power to approve so-called little laws (*leggine*) by a special legislative process without plenary debate. These little laws mainly served for particularistic interests (Dvořáková and Kunc, 2009).

Blocked Italian democracy can be considered as an abnormality, too. Cabinets had always been led by the strongest political party of the First Republic – Christian Democracy (*Democrazia Cristiana*, DC), while the second strongest political party – Italian Communist Party (*Partito Comunista Italiano*, PCI) – had been in the opposition. This anomalous arrangement of political powers, which was caused by the ongoing Cold War and the bipolar division of the world, persisted for more than 40 years. PCI was legitimately perceived as a threat to Italian democracy. DC as a hegemon on political landscape was forced to govern in collaboration with some smaller political parties (Socialists, Republicans, Liberals etc.) to defend Italian democracy. At the turn of 80s and the 90s, there were usually four or five political parties in the coalition governments. This set-up of the Italian party system led to no real alternation of governments, but to the reorganization of major ministries between governing parties. This situation created several negative phenomena. The spread of political corruption and clientelism through the entire Italian political system was the main accompanying phenomenon. Another phenomenon was the reinforcement of the role of the political parties (so called *partitocracy*) and the weakening of governments. Ministers were primarily responsible to own political party, not to the Prime Minister. Moreover, it was complicated by the existence of many fractions within the political parties that competed against each other. This is reflected in more than forty cabinets during the period of 1948-1994, with the average length of less than a year (Bull, 2015; Governo Italiano, 2017; Klokočka, 1991; Kunc, 2000; Bělohradský, 1999).

The political system of the First Republic came to end in 1994. It was preceded by several events, such as collapse of the Eastern Bloc, end of the Cold War or the dissolution of the Italian Communist Party (PCI) in 1990. In 1992, the *Tangentopoli* corruption scandal broke out and the movement *mani pulite* (clean hands) revealed the extensive corruption networks across governing class. Reform of the electoral system in 1993 was another event in the culminating institutional crisis. In 1994, the dominant political party that had governed for nearly half a century – Christian Democracy (DC) collapsed. It was the beginning of the so-called Italian Second Republic, dominated by the politician, media tycoon and billionaire Silvio Berlusconi with his political party Forza Italia. This new political party founded by Berlusconi

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<sup>11</sup> If a candidate to the Senate obtained in elections more than 65 % of the votes in own district, then he was elected. It happened very rarely.

at the beginning of 1994 filled an empty space on the right side of the Italian political spectrum (Procacci, 2010; Kunc, 2000).

As mentioned, clientelism was one of the negative phenomenon of the First Republic and became an indispensable feature of Italian political life. Italians' electoral behaviour was based on the trade exchange that provided personal or group benefits for political (electoral) support. Respectively, the vote in the election became a kind of goods. Democratic consensus no longer emerged as a choice of political opinion, but as a political trade (*scambio politico*) on the political market. The backbone of the clientelism system consisted of the fractions within Christian Democracy (DC), which were divided both regionally and sectorally (trade unions, peasant unions, state apparatus, etc.). Clientelism and other typical feature of Italian politics – traditionalism – contributed to the stability of positions in the instability of the coalition governments. Clientelistic voting is characterized by the fact that the voter prefers a certain social and existential certainty, the possibility of ascension, and other advantages that will ensure his vote. DC was the most favourable partner to the voters in this way (Klokočka, 1991). Guzzini (1995) describes the problem of clientelism in Italy as a financing of social consensus through public resources. Briquet (2015) states that the most members of governing DC had benefited from these clientelistic relations. DC had successfully penetrated state institutions at all levels, hence it was easier to divide public funds among own voters (social or interest groups, etc.) through its officials and government agencies. Thanks to this system, DC created a political hegemony.

As predicted in the previous literature, almost pure PR electoral system in Italy led to a highly fragmented party system and broad coalition governments became rule due to the presence of many political parties in the Italian parliament. Another prediction was that broad coalition governments usually lead to a less efficient negotiation between its members and to intra-government conflicts. Italian coalition governments were unstable and average duration was less than a year. Surprisingly, there were no real alternations of the Italian governments because government crises were caused by competing fractions within the governing political parties. This no alternation of governments gave rise to institutionalised corruption and clientelism. In the following sub-section, the Italian public pension system, as an evidence of Italian political clientelism, is described.

### **Italian pension system**

*„By the end of the 1980s, Italy had perhaps the most generous pension system in the developed world. It was also widely recognised as unsustainable over the long term: the effective retirement age was falling, even as life expectancy rose, and the population as a whole was ageing fast.“* (Tompson and Price, 2009, p. 106). At the turn of the 80s and the 90s, the Italian public pension system was a pay-as-you-go (PAYGO) system financed by employers' and workers' contributions. The Italian pension system was highly fragmented – 17 schemes for salaried workers, 3 for the self-employed and 11 for the professions. There were much more schemes than in any other continental welfare regime, for instance, the Netherlands had unified pension system. The complexity of the system, which allowed very pluralist treatment, was the result of clientelistic legislation in favour of particularistic interests. This so called “pensions labyrinth” was largely the product of lobbying. There was an inclination to establish an independent scheme for any occupational category. The little laws (*legghine*) served for these particularistic purposes (Guzzini, 1995; Franco, 2002; Tompson and Price, 2009).

Costs and benefits of the Italian public pension system were extremely unequally distributed across generations and occupational categories. Civil servants, railway workers or

members of armed forces, for instance, were treated very generously. The most remarkable element of the Italian pension system was *pensione di anzianità* (seniority pension). This type of pension allowed early retirement before the official retirement age for workers who had contributed for a certain number of years. For women with children employed in the public sector, this minimum contribution period was less than 15 years. For men in the public sector it was about 20 years and for industrial workers about 35 years. Thus, nearly 85 % of the civil servants retired before the official retirement age. Especially due to this reason, the retirement age in Italy in 1992 was only 58 years (Tompson and Price, 2009). Bělohradský (1999) states that the benefits granted to the public employees were absurd and immoral and led to the paradoxes, when the 35-year-old women with children were pensioners, so-called *babypensioneri*. According to the OECD Economic Survey from Italy (OECD, 2007), the labour participation rates for the 55-64 age group was around 32.5% in the period of 1985-1995 (OECD average was 49,3 % and EU15 average was 40,4 %). The difference of participation rates (55-64 age) between Italian men and women was remarkable: 51,6 % of men remained in the labour force, but only 15.1 % of women did so. For instance, the difference of an OECD average was only 2,7 percentage points.

The Italian public pension system was unfair and financially unsustainable due to rapidly ageing society and the ever-increasing ratio of the elderly to the working-age population. The need of pension system reform had been recognised in the 1970s. In the 1980s, many reform commissions were convened, pension reform proposals were presented by various governments and awareness of the need of pension reform in Italy was made. However, there were only increases in contributions instead of reform. Moreover, from the mid-1980s to the mid-1990s, public opinion about the Italian welfare state had changed. According to the surveys, an increasing share of Italians considered taxes as too high, and the support for benefits declined. In the 1990s, the main macroeconomic goal of Italian governments was consolidation of public finances. It was top priority because of 1992 financial crisis and because of the oncoming Economic and Monetary Union (EMU) which was included in Maastricht Treaty. The situation radically changed in 1992 when some major laws were adopted (Amato reform). The most important and more complex reform was adopted in 1995 (Dini reform). These reforms were indispensable. In the absence of reforms, the expected ratio of public pension spending to GDP was about 23 % by 2035 (Tompson and Price, 2009; Hamann, 1997; Franco, 2002; OECD, 2007).

“By 1994, however, the gap between pension outlays and contributions projected for the following year was 84 trillion lire or about 5% of GDP, equivalent to somewhat over half the total projected general government deficit.” (Tompson and Price, 2009, p. 107). Thus, high public expenditures on an extensive welfare state and other inefficient public expenditures led to deepening of public budget deficits. The general government budget deficit averaged around 7.6 % of GDP per year in the 1970s, rising to an average of around 10.7 % of GDP per year in the 1980s. The expansion of public spending was boosted by rising interest payments. Italian governments did not take a chance of economic growth in the second half of the 1980s to stabilize public debt (Toniolo, 2013). On the contrary, public debt relative to GDP unprecedentedly increased. Whereas in 1980 the Italian public debt amounted to about 56 % of GDP, then ten years later, in 1990, this ratio was already around 94.65 % of GDP. Four years later in 1994, public debt achieved 121.84 % of the Italian GDP (Mauro, Romeu, Binder and Zaman, 2013). Toniolo (2013) states that no other developed country after World War II had seen such a rapid increase in public debt in such a short period.

If we take into consideration the Italian experience and predictions of empirical literature, it is possible to see some significant connections. It was predicted, that politicians elected under PR are induced to benefit broader groups of voters through universalistic redistributive programs (e. g. pension system). According to the data, the Italian public pension system was the most generous in the developed world. This extensive clientelistic system provided immoral benefits to selected groups of voters such as public employees. Another prediction was that coalition governments face the problem of common-pool, less efficient decision-making process, lower political responsibility or to intra-government conflicts of interests. All these problems usually lead to the higher public spending. Italian budget deficits in the 1980s were double-digit and public debt rapidly increased. It is possible that these typical problems of coalitions spilled over to the large-scale pension system.

## 5 Conclusion

The aim of this paper was to evaluate, on example of the Italian First Republic, the hypothesis that proportional electoral systems, fragmented party systems and common coalition governments result in large-scale public pension systems. Comparative method, historical method and correlation analysis were used to prove the hypothesis on the sample of European OECD member countries.

According to the cross-country comparison of the public pension spending, at the turn of 1980s and 1990s, the Italian public pension system was the most generous in the developed world. Costs and benefits of this pension system were extremely unequally distributed across generations and occupational categories. Public employee, for instance, were treated very generously. One of key determinants of pension spending is demography, thus one of indicators of demographic development – share of elderly population – was observed as well. According to the correlation analysis, this factor does not belong among the most important causes of the Italian large-scale public pension system. Then we focused on political system, especially on electoral system and its impacts on party system, type of government and on politicians' incentives.

Based on conclusions of the empirical literature, it was predicted that proportional electoral systems lead to a higher public spending on universalistic redistributive programs such as social transfers. Moreover, proportional electoral system usually leads to a fragmented party system and common coalition government. Broad coalition governments usually lead to a less efficient decision-making process, intra-government conflicts of interests, problem of common-pool and to lower political responsibility. We can then expect higher public spending in coalitions and this spending can be amplified through this channel.

There are some evident similarities between predictions of literature and the political system of the Italian First Republic (1948-1994). Almost pure proportional representation (PR) electoral system without electoral threshold to the Italian parliament resulted in the highly fragmented party system and the coalition governments became a rule. Thus, all theoretical prerequisites of large-scale public pension system were found in the Italian First Republic. Moreover, no real alternation of governments for nearly half a century led to an extensive political clientelism. According to the presented data, Italy had the highest number of cabinets during the entire post-war period until 1 January 1999 in the observed sample of the European OECD member countries. There were nearly fifty party-based cabinets and its mean duration was extremely short – not more than a year. This instability of cabinets was caused by the increasing role of the political parties (*partitocracy*) and the decreasing position of governments. Ministers were primarily responsible to own political party, not to the Prime

Minister. Existence of many fractions within the political parties, which competed against each other, was another complication. However, all the cabinets of the First Republic (1948-1994) had been led by Christian Democracy (DC), while the second strongest party – Italian Communist Party, had been in the opposition. It was caused by the ongoing Cold War and by the communist threat to the Italian democracy. The need of preventing the Communists from coming to the government had required broad provision of benefits for all the Italians. It had led to the expansion of the clientelism. Italian governmental clientelism financed the social consensus through the public expenditure. Apparently, it resulted in the most generous public pension system in the developed world.

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## LABOUR COSTS IN THE EUROPEAN UNION

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### Abstract

Humanity has reached a stage of development in which human labour is rapidly being replaced by machines. Nevertheless, the need remains for human labour with respect both to the manufacture of goods and the provision of services. Labour costs continue to determine what will be produced and where. Such costs influence the competitiveness of products, services and even individual states with concern to international trade. Machines will, undoubtedly, eventually replace human labour; however, until that happens it will be necessary to closely monitor labour costs. This paper presents the results of the competitiveness of the labour production factor in EU countries for the period 2010 to 2015. The results were compiled according to Research Institute for Labour and Social Affairs methodology as approved by the Ministry of Labour and Social Affairs of the Czech Republic; thus, particular emphasis will be accorded to the position of the Czech Republic. Although the European Union is a partnership of individual states, at the same time these countries continue to be economic rivals, i.e. competitors.

### Keywords

competitiveness, labour costs, productivity, unit labour costs

### JEL classification:

E2, J3

## 1 Introduction

The European Union is one of the world's three largest economic players (the United States, the European Union, China) in terms of the strength of the economy measured by means of gross domestic product and the volume of foreign trade (export and import). It unites 28 countries including some of the richest and most developed states in the world. The key precondition for maintaining this position in the world ranking lies in sustaining competitiveness at the level of the factors of production. The European Union enjoys one of the leading positions in terms of the capital factor and, on average, the original fifteen member states outperform those members who joined the EU after 2004 in this respect; there are, however, a number of exceptions.

Only a small number of countries, including several European Union member states, are preparing for the next industrial revolution via the so-called Industry 4.0 initiative. The availability of the capital required to implement the Industry 4.0 strategy depends on a combination of a sufficient level of funding, a qualified workforce and the appropriate scientific and technical resources. The strategy being implemented in the Czech Republic is also known as Industry 4.0 (in Czech: Průmysl 4.0) (Mařík, 2015).

Despite the rapid rate of scientific and technological progress, labour costs continue to make up the determining factor in terms of the price of production. A particularly apt example of the significance of labour costs is provided by the production transfer of several multinational corporations to the Asian textile and footwear markets. It is, therefore, necessary to determine both the potential of each individual EU member state, and which countries represent real competition. Attention in this respect will be devoted particularly to the notional position of the Czech Republic.

Thus, the aim of the article is to compile a chart which ranks the level of competitiveness within the European Union on the basis of labour costs, the share of labour costs of total costs and unit labour costs.

Labour costs strongly influence other economic indicators: (un)employment, inflation, gross domestic product, foreign direct investment, the standard of living of the population etc. and they do not always represent a direct transference channel; in certain situations, labour costs act as operational or mediating criteria. It is necessary to be aware precisely what position labour costs occupy in relation to other economic indicators and what they directly or indirectly influence. This knowledge has practical implications and is especially suited to predicting a range of economic and non-economic developments, based on which it can be estimated, for example, where investors will move in the future, population relocation, locations of likely pollution increases etc.

Two extremes can be identified with respect to how individual countries remain competitive via the labour production factor. The first option consists of the use of cheap labour, while the second is based on a highly-skilled workforce (human capital) that is difficult to compete against. The concept of the competitiveness of individual economies was conceived in its more modern form by Beneš (2006) based on the concept formulated by Porter (1998).

Both options are open to all economies, and a choice must be made as to which direction the economy will take. Some European Union countries compete by means of a relatively cheap labour force, whereas others compete via their skilled workforces; in this respect, there is a general assumption that those countries that acceded to the EU after 2004 compete to a greater extent by means of a cheap labour force; conversely, it is generally acknowledged that the original (pre-2004) EU states compete via skilled labour forces (Beran, 2014).

Economists specialising in the topic of labour costs claim that, over the long term, it is untenable for expanding economies to base their competitiveness on having a cheap labour force since, from a certain point, it presents an economic barrier to further growth. Therefore, eventually, there comes a time at which it is necessary to move to a higher level of economic growth (Fassmann, 1997).

Hence, countries which compete based on cheap labour should consider switching to a different model, since cheap labour represents an obstacle to the process of replacing labour with capital. This process is referred to as the phenomenon of technical and technological “lagging behind” which, over the long term, leads to a reduction in a country’s level of competitiveness. A cycle is thus created that, paradoxically, fiscal policy is unable to interrupt by means of lowering labour costs. Economically poorer countries simply become even poorer.

At the same time, it is necessary to consider developing nations whose labour costs are many times lower than in the EU. Of the large economies, China and India spring to mind as having successfully employed this strategy over the last few decades, and many examples can be provided among developing countries of the use of cheap labour in industries ranging from textiles to electronics. No EU member country is able to compete with such cheap labour forces. In terms of the Czech Republic therefore, real competition is presented principally by fellow EU member states (Kadeřábková, 2003) for whom different conditions prevail with concern to labour as a factor of production to those in developing countries.

An evaluation of labour costs provides an opportunity to determine the state generally of competitiveness in terms of the price of labour within the European Union and, specifically the position of the Czech Republic, i.e. where the Czech Republic stands in this “economic battlefield” (Baštýř et al., 2004).

The data required for the calculation of labour costs was obtained from Eurostat, the Organisation for Economic Cooperation and Development (OECD) and the U.S. Department of Commerce Bureau of Economic Analysis.

## **2 Labour costs**

It is interesting to consider how the importance of labour costs was viewed in the Czech Republic and the European Union in the 1990s. While Eurostat already employed a basic methodology with concern to labour costs, they have introduced significant changes since that time. With concern to the recent history of the Czech Republic, the Czech Statistical Office began to monitor labour costs only in 1994 and no deeper analysis of this topic was subsequently conducted. A more detailed historical overview can, however, be found in a previous article written by the author (Beran, 2014).

It is important to note that at different times labour costs were calculated using a range of varying methodologies. This was due principally to differences in terms of the relevant statistics and the fact that, for many years, no statistics were available in this area. At the International Labour Office in Geneva, Van Ark and Monnikhof (2000) compiled a study in which labour costs were calculated according to industry (based on estimates) and Holý (2002) compiled a similar study with respect to conditions in the Czech Republic. Further, Andersen (2003) produced a study on labour costs for the European Commission, and labour costs in connection with economic growth are discussed in Hájek and Mihuka (2009).

## **3 Methods and data**

The methodology employed in this study was created by the Research Institute for Labour and Social Affairs and includes the monitoring of labour costs and labour as a factor of production (the share of labour of total costs and unit labour costs) in the form of an international comparison using both national price levels and parity purchasing power.

The data available from Eurostat, the OECD and the U.S. Department of Commerce Bureau of Economic Analysis currently does not allow the monitoring of labour costs at the individual sector level. Rankings based on official data result from aggregated data for the national economies of individual countries; moreover, the input variable time delay of two years, due in part to the two-stage data collection process, represents a serious shortcoming. Data is collected and checked in each country by local statistical offices according to established uniform methodology. The data is then sent to Eurostat (and distributed to other institutions) where it is reviewed once more, sometimes with further consultation with local statistical offices. While this process serves to eliminate errors, it requires a considerable amount of time to complete. Therefore, any data that is available for the current year is, at best, only a rough estimate and the reporting value of such data is, in most cases, zero.

### **3.1 Labour costs**

From the macro-economic point of view, labour costs represent the sum of the costs associated with the functioning of the labour production factor and the reproduction of economic and social relations (Kozelský and Vlach, 2011).

### **3.2 Share of labour costs of total costs**

The share of labour costs of total costs indicator is particularly important with respect to those economies that traditionally have low labour costs. This indicator is not monitored by any international institutions.

The calculation is as follows:

$$SLCTC = \frac{\frac{NEC}{emp}}{\frac{C}{emm}} \times 100 = \frac{\frac{NEC}{emp}}{\frac{IC}{emm} + \frac{NEC}{emp} + \frac{D}{emm}} \times 100 = \frac{\frac{NEC}{emp}}{\frac{MS}{emm} + \frac{NEC}{emp} + \frac{GOS - NOS}{emm}} \times 100 \quad (1)$$

where *SLCTC* is the share of labour costs of total costs, *NEC* is nominal employee compensation, *emp* is the number of employees, *C* is costs at current prices, *IC* is intermediate consumption at current prices, *emm* is total employment (workers), *D* is depreciation at current prices, *GOS* is the gross operating surplus at current prices and *NOS* is the net operating surplus.

### 3.3 Unit labour costs

The unit labour costs indicator is a composite expression of cost pressures in a given economy exerted by the labour force (Jílek and Vojta, 2001). Central banks monitor this indicator for the prediction of both the inflation rate (inflation cost factor) and the effective exchange rate. It is also used as an indicator of the competitiveness of the economy and one of the factors employed in deciding upon foreign direct investment.

The concept of unit labour costs varies in terms of the purpose and requirements of individual institutions. One of the leading methodologies in this respect was developed by The Vienna Institute for International Economic Studies (Havlik, 2005). The various inconsistencies concerning both calculation methods and interpretation, also prevalent in the Czech Republic, led the Research Institute for Labour and Social Affairs to develop its own methodology which is based on the share of the average cost of labour expressed in terms of employee compensation per employee and gross domestic product per employee at current prices. The calculation is in the form of a percentage calculated from both national price levels and purchasing power parity (PPP) values.

The calculation is as follows:

$$UNC = \frac{\frac{NEC}{emp}}{\frac{GDP}{emm}} \times 100 \quad (2)$$

where *UNC* is unit labour costs, *NEC* is nominal employee compensation, *emp* is the number of employees, *GDP* is gross domestic product and *emm* is total employment (workers).

## 4 Results and discussion

The following text presents the results of the analysis of the three monitored indicators (accompanied by a commentary on each): labour costs, share of labour costs of total costs and unit labour costs.

#### 4.1 Labour costs

Labour costs include wages and salaries (including wages in kind included in earnings), wage compensation for non-worked hours, social benefits, social costs and expenses (statutory and voluntary) and the various personnel costs, taxes and subsidies related to employment. As far as this article is concerned, labour costs are expressed in Euro per month worked per employee, see Tab. 1.

**Tab. 1** Labour costs in Euro in the period 2010 to 2015

	Years					
	2010	2011	2012	2013	2014	2015
Belgium	4548	4719	4940	5038	5057	5054
Bulgaria	x	x	x	x	x	x
Czech Republic	1470	1580	1480	1425	1392	1434
Denmark	4349	4467	4672	4741	4784	4848
Germany	3336	3436	3495	3507	3580	3671
Estonia	1188	1263	1352	1431	1518	1590
Ireland	4337	4307	4485	4507	4522	4550
Greece	2862	2751	2689	2488	2443	2389
Spain	2950	3032	2991	2993	2984	3005
France	4059	4189	4259	4225	4259	4335
Croatia	x	x	x	x	x	x
Italy	3969	4019	4003	4028	4049	4035
Cyprus	x	x	x	x	x	x
Latvia	887	927	951	996	1066	1129
Lithuania	848	852	913	951	993	1054
Luxembourg	4159	4280	4260	4390	4549	4583
Hungary	1037	1077	1079	1120	1124	1149
Malta	x	x	x	x	x	x
Netherlands	3683	3745	3827	3923	4013	4029
Austria	3894	4050	4091	4177	4260	4342

Poland	1164	1179	1270	1295	1330	1407
Portugal	1985	1960	2049	2060	2054	2087
Romania	x	x	x	x	x	x
Slovenia	2044	2065	2137	2119	2187	2223
Slovakia	1158	1195	1327	1359	1423	1462
Finland	4003	4086	4304	4373	4431	4513
Sweden	4578	4950	5029	5122	5001	5021
United Kingdom	2750	2737	3446	3346	3606	4143

Source: Eurostat, 2017, OECD, 2016, own elaboration.

In the following commentary, countries are classified from the highest to the lowest values based on 2015.

During the reference period, the following EU member countries had the highest labour costs: Belgium, Sweden, Denmark, Luxembourg, Ireland, Finland, Austria, France, the United Kingdom, Italy and the Netherlands. The cost per employee in Euro per one month in this cost interval amounted to between Euro 5054 and Euro 4000. All these countries belong to the original 15 countries of the European Union (EU-15).

The second cost interval, with values of between Euro 4000 and Euro 3000, consisted solely of Germany and Spain. Interestingly, Germany, which is considered to be the powerhouse of the EU economy, has low labour costs compared to the other original member states. Clearly, this represents a huge competitive advantage, which may well be one of the main reasons for the success of the German economy. The disadvantage of aggregated input data consists of the fact that it does not allow for the identification of those industries which generate the competitive advantage in the economies of the member states. The determination of the sector that creates the greatest competitive advantage in the German economy, for example, would answer many questions concerning German economic success.

The penultimate cost interval is represented by those countries whose labour costs range from Euro 2389 to Euro 1054, i.e. Greece, Slovenia, Portugal, Estonia, Slovakia, the Czech Republic, Poland, Hungary, Latvia and Lithuania. Only two countries from the EU-15 can be found in this interval; all the other countries acceded to the EU after 2004. The figures clearly highlight the considerable difference in terms of labour costs between recent accession countries and the majority of the EU-15 members. While these results are generated by means of aggregated data for each country's economy as a whole, this does not reduce their overall significance. Those countries that joined the EU post 2004 simply do not compare with the original member countries (with the exception of Greece and Portugal) in terms of labour costs, i.e. the composition of these two groups of economies is totally different. In other words, in terms of the size of the country, population, capital provision and economic focus etc., these two blocs are not competitors. Over the years, the convergence of the two groups has been minimal. However, had these countries been required to compete with each other, labour costs would, undoubtedly, have developed quite differently.

The Czech Republic ranks fifth in its group in terms of labour cost indicators; only Lithuania, Latvia, Hungary and Poland had lower values.

While member states undoubtedly benefit from the common market in goods and services, it is not possible to state that they all benefit to the same extent and, most importantly, in same time interval.

The last group of countries consists of those for whom no data is available by which to calculate this indicator, i.e. they are not members of the Organisation for Economic Cooperation and Development. The group is made up of Bulgaria, Croatia, Cyprus, Malta and Romania. In addition, Croatia has not been a member of the European Union for the whole of the monitored time interval.

#### 4.2 Share of labour costs of total costs

The commentary on Table 2 again ranks states from the highest to the lowest values, based on 2015 values.

**Tab. 2** Share of labour costs of total costs in the period 2010 to 2015 in percent

	Years					
	2010	2011	2012	2013	2014	2015
Belgium	30.58	29.54	29.94	30.60	30.79	30.77
Bulgaria	27.00	25.88	26.41	28.56	28.03	28.57
Czech Republic	22.53	21.95	22.47	22.39	22.08	22.25
Denmark	35.24	34.26	33.68	34.18	34.40	34.83
Germany	33.07	32.23	33.03	33.53	33.79	34.39
Estonia	28.70	26.87	26.90	26.69	27.05	28.91
Ireland	27.06	28.84	27.74	27.47	26.55	18.79
Greece	38.88	38.14	36.35	34.99	34.98	35.35
Spain	33.64	33.11	32.55	32.55	32.19	31.96
France	35.34	34.90	35.04	35.45	35.68	35.80
Croatia	38.26	37.37	36.63	36.42	35.89	35.78
Italy	30.82	30.25	30.51	30.80	30.75	31.09
Cyprus	34.76	35.44	35.47	34.48	33.37	33.37
Latvia	25.07	23.69	23.70	24.73	26.40	27.70
Lithuania	31.17	29.88	30.23	30.70	31.80	34.33

Luxembourg	20.55	20.13	19.64	18.74	17.09	15.81
Hungary	25.43	24.77	25.16	25.07	25.13	25.06
Malta	20.35	20.00	19.87	20.22	20.48	20.51
Netherlands	33.97	33.13	33.15	33.50	33.68	33.73
Austria	32.67	31.96	32.05	32.20	32.65	33.12
Poland	28.42	27.38	27.64	27.71	28.10	28.07
Portugal	33.55	32.40	32.04	32.71	32.49	32.56
Romania	30.38	26.92	26.09	25.91	26.50	x
Slovenia	33.50	32.96	33.09	33.16	33.02	33.15
Slovakia	22.43	21.37	21.23	21.49	21.82	21.90
Finland	31.59	30.86	31.16	31.48	31.59	32.28
Sweden	31.93	31.89	32.66	33.60	33.69	x
United Kingdom	38.31	37.76	37.76	37.45	37.62	x

Source: Eurostat, 2017, own elaboration.

With respect to the United Kingdom, Sweden and Romania, 2014 values were considered in the comparison since these countries regularly submit input variable values at later dates than other member countries. Thus, the information is available with more than the afore-mentioned standard two-year delay.

Unfortunately, this indicator is also unable to distinguish according to economic sector. If it were, it would be possible to determine which industries are highly labour-intensive and which are already automated for individual member states.

Non-productive and especially personally-provided services will always entail a high proportion of labour costs. Such services are provided on a person-to-person basis and should not be, indeed no-one would want them to be replaced by machines. The high added value in this case consists of the human contact factor, and such services might be termed above-standard or luxurious.

In terms of this indicator, member countries can be divided into two groups, i.e. those with values above 30% and those below. Countries with a value above 30% consist predominantly of those original member countries that have already switched to service-based economies and which have a higher share of labour costs of total costs calculated on an aggregate basis. That said, four post-2004 accession countries also feature in this group: Croatia, Lithuania, Cyprus and Slovenia. With the exception of Lithuania, all these countries have large tourist industry sectors. Conversely two EU-15 countries have values significantly below 30%, i.e. Ireland and Luxembourg. The Irish economy was transformed in the 1980s and 1990s due to a combination of support in the form of inward US investment and subsidies from the European Union. Luxembourg, on the other hand, is characterised by its status as a tax haven and, moreover, the



majority of its consumption is produced in other countries. The Czech Republic is in fifth position from the bottom of the table.

The share of labour costs of total costs indicator again clearly shows a differentiation of EU member states, i.e. between the EU-15 states and the post-2004 accession countries - two separate groups of countries that compete with each other only within their respective groups. It is unrealistic, therefore, to expect strong competition across the whole of the European Union going forward.

### **4.3 Unit labour costs**

The following commentary on Tables 3 and 4 again ranks EU member states from highest to lowest levels. The interpretation of the results of the table based on national price levels (Table 3) will be followed by that on the results of the table based on PPP (Table 4). With respect to the United Kingdom, the 2014 value was considered in the comparison since the UK regularly submits input variable values at later dates than other member countries. Thus, the information is available with more than the afore-mentioned standard two-year delay. Unfortunately, this indicator is also unable to distinguish according to economic sector.

**Tab. 3** Unit labour costs as a percentage based on national price levels in the period 2010 to 2015

	Years					
	2010	2011	2012	2013	2014	2015
EU (28)	56.91	56.42	56.72	56.56	56.25	55.77
EU (15)	56.64	56.29	56.69	56.60	56.30	55.93
Belgium	59.92	60.32	61.15	61.78	61.26	60.43
Bulgaria	49.88	48.23	49.87	53.94	56.17	56.23
Czech Republic	47.77	48.07	48.80	48.38	47.40	46.47
Denmark	56.38	56.03	55.22	55.06	55.10	55.22
Germany	55.79	55.57	56.47	56.46	56.55	56.35
Estonia	51.73	49.05	49.36	49.65	49.86	52.90
Ireland	49.59	48.25	47.35	47.92	46.00	36.00
Greece	54.28	53.11	52.24	49.82	49.53	48.95
Spain	57.71	57.12	55.62	55.10	55.06	54.91
France	57.37	57.39	58.06	58.33	58.53	57.92
Croatia	62.40	61.78	60.05	58.24	56.82	56.14
Italy	54.05	53.64	53.67	53.42	52.93	52.91
Cyprus	54.57	54.50	54.29	51.91	50.60	50.50
Latvia	48.61	44.64	45.25	46.89	48.44	50.87
Lithuania	45.92	43.98	43.75	44.51	45.48	47.56
Luxembourg	52.72	51.48	52.53	52.04	50.78	50.60
Hungary	47.84	47.46	47.67	46.59	46.02	45.54
Malta	49.25	50.57	51.24	50.85	49.10	47.95
Netherlands	58.35	58.84	59.76	59.60	59.57	58.44
Austria	54.83	54.25	54.79	55.20	55.39	55.20
Poland	49.04	47.91	47.77	47.73	47.80	46.90

Portugal	56.49	55.53	53.98	53.72	52.65	51.35
Romania	54.01	48.56	47.99	46.12	47.32	44.48
Slovenia	64.00	62.78	63.11	62.86	61.52	61.08
Slovakia	44.34	44.03	43.90	43.80	44.17	44.83
Finland	56.05	55.88	57.08	56.44	56.12	55.74
Sweden	48.19	48.88	50.35	50.66	50.28	49.73
United Kingdom	60.59	59.46	59.45	59.14	58.19	x

Source: Eurostat, 2017, own elaboration.

Based on national price levels, Slovenia was found to have the highest unit labour costs followed by EU-15 countries with the exception of Bulgaria (in seventh position) and Croatia (in eighth position). The other post-2004 countries all had lower values. Ireland, however, once more proved an exception with the lowest unit labour costs of any EU member state. The Czech Republic again occupied the fifth lowest position in the table.

**Tab. 4** Unit labour costs as a percentage based on purchasing power parity in the period 2010 to 2015

	Years					
	2010	2011	2012	2013	2014	2015
EU (28)	56.91	56.42	56.72	56.56	56.25	55.77
EU (15)	60.05	59.77	60.37	60.26	60.05	59.74
Belgium	65.52	66.53	66.54	67.82	66.60	64.58
Bulgaria	22.57	22.92	23.38	25.54	26.04	26.06
Czech Republic	33.76	34.59	34.15	32.42	29.70	29.21
Denmark	75.12	74.44	74.26	73.94	73.77	72.22
Germany	58.71	58.11	58.85	59.56	59.09	58.38
Estonia	34.63	33.27	34.04	35.32	35.76	37.69
Ireland	55.06	53.19	51.58	52.94	51.12	38.80
Greece	51.22	50.21	47.34	42.82	41.69	40.39
Spain	54.83	54.08	51.16	50.62	49.70	49.09
France	64.08	64.02	64.88	64.46	64.16	62.05

Croatia	43.34	41.32	38.72	37.41	35.73	34.91
Italy	54.62	53.96	53.11	53.63	52.99	51.54
Cyprus	49.94	50.48	50.79	48.58	46.63	44.66
Latvia	30.69	29.36	30.55	31.94	32.73	33.72
Lithuania	27.03	26.35	26.21	26.87	27.45	28.31
Luxembourg	63.79	61.78	63.04	63.44	61.01	59.76
Hungary	28.69	27.99	27.40	26.70	26.15	25.71
Malta	36.85	38.49	39.32	39.99	39.01	38.48
Netherlands	65.14	65.22	65.20	64.78	65.08	63.10
Austria	60.36	59.80	59.00	59.91	60.03	58.91
Poland	28.96	27.77	27.14	27.28	27.38	26.48
Portugal	46.01	45.87	43.25	42.69	41.43	40.15
Romania	25.77	23.54	22.27	22.82	23.43	21.81
Slovenia	53.36	51.94	50.69	50.53	48.94	47.84
Slovakia	29.10	29.56	29.32	29.29	29.06	29.12
Finland	65.97	66.54	68.64	69.58	69.27	67.53
Sweden	59.61	63.47	66.27	68.55	65.85	63.54
United Kingdom	64.83	64.14	68.08	65.92	68.12	x

Source: Eurostat, 2017, own elaboration.

In the case of the expression of unit labour costs based on PPP values, Denmark (72.22%) was in first position followed by the United Kingdom (68.12%) and Finland (67.53%). Slovenia (47.84%) moved into thirteenth position compared with first position (61.08%) based on national price levels.

The PPP indicator clearly divides European Union member states into two groups, i.e. those with values above and below 50%. The above 50% group consists solely of EU-15 countries, while the below 50% group is made up of post-2004 accession countries and three EU-15 states, i.e. Spain (49.09%), Greece (40.39%) and Ireland (38.80%). A total of eleven post-2004 countries (thirteen in total) were positioned below the lowest ranking EU-15 country (Ireland). Romania had the lowest value at 21.81%. The Czech Republic occupied the seventh lowest position.

It is also interesting to compare differences in unit labour costs between those calculated based on national price level and those on purchasing power parity values (Table 5).

**Tab. 5** Differences in unit labour costs between national price level and purchasing power parity values in 2015

Country	Difference	Country	Difference
Denmark	-16.99	Italy	1.37
Sweden	-13.81	Spain	5.82
Finland	-11.79	Cyprus	5.84
United Kingdom	-9.93	Greece	8.56
Luxembourg	-9.16	Malta	9.47
Netherlands	-4.65	Portugal	11.20
Belgium	-4.15	Slovenia	13.24
France	-4.13	Estonia	15.22
EU (15)	-3.81	Slovakia	15.70
Austria	-3.70	Latvia	17.15
Ireland	-2.80	Czech Republic	17.27
Germany	-2.03	Lithuania	19.24
EU (28)	0.00	Hungary	19.83
		Poland	20.42
		Croatia	21.24
		Romania	22.67
		Bulgaria	30.17

Source: Eurostat, 2017, own elaboration.

It is clear from the results that the negative difference values are exhibited primarily by the most economically developed countries of the European Union (the original member states of the west and north). Conversely, the post-2004 accession countries display positive values as do four EU-15 countries in the south of the European Union (Portugal, Greece, Spain and Italy). The significant mismatch between the national price level and purchasing power parity values in the more recent accession countries (average 17.5 percentage points) highlights the detachment from the more developed EU economies. This reinforces the observation made earlier in the study, i.e. that the EU consists of two disparate groups with similarly structured economies that do not compete with each other, rather they compete within their respective groups.

The difference with respect to the Czech Republic was 17.27 percentage points, i.e. very close to the average for the post-2004 accession countries.

## 5 Conclusion

The European Union is not a homogeneous grouping of countries from the point of view of the labour market. The levels of individual member states in this respect are very different in terms of worker qualifications, remuneration for work performed, the use of the capital with which the labour production factor is required to work, etc. As with the criticism by economists of optimal currency areas such as the Eurozone, they might also similarly criticise the labour market. While the ability to travel freely between member states provides a unique advantage for the EU, the extent of that advantage varies considerably from one member state to another. The European Union is a partnership of countries and, at the same time, these countries are economic competitors, in the context of which labour costs continue to be a factor which separates successful and unsuccessful countries.

Three indicators were presented in the study: labour costs, share of labour costs of total costs and unit labour costs, the methodology of which was created by the Research Institute for Labour and Social Affairs. The data on the input variables was obtained from Eurostat and the Organisation for Economic Cooperation and Development. Through the use of these economic indicators, notional competitive rankings were determined in terms of the labour production factor. All three indicators produced very similar results. The European Union in its present form is divided into two groups: the original European Union (15 countries) and those countries which acceded post 2004 (13 countries), with the occasional exception of a small number of countries (mostly in the south of the EU). The structures of the economies of the original EU-15 are very similar, including in terms of labour costs, just as there is a clear resemblance between more recent accession states. Naturally, within each group certain countries are more similar than others, e.g. geographical neighbours or economies with very similar structures. The fact remains, however, that there is a notionally profound difference between these two large groups (the original EU-15 countries and the post-2004 accession states).

Globalisation has opened up new opportunities in the labour market. Investors who require a very cheap workforce invest their capital in China; however, in most cases it is sufficient to go no further than the eastern countries of the European Union. Conversely, investors who are interested in capital-intensive production or a highly-specialised workforce (human capital) continue to base themselves in the original 15 countries of the European Union since only here can they secure the financial and workforce conditions they require. Consequently, these countries understandably benefit from the higher added value of goods produced and services provided.

The likelihood that the situation will change in the near future is low. Moreover, the Industry 4.0 initiative is poised to exert a major impact on the labour production competition factor. Currently, the benefits of the common market for goods and services are shared by all member states, albeit at different times and varying levels; however, it is more than likely that digitalisation and automation will have negative impacts for some member countries going forward.

The Czech Republic has one of the lowest labour cost levels in the European Union, ranking in fifth position in terms of the first three indicators outlined in this study. While, on the one hand, this is good news in the short term, it is bound to present the country with significant problems in the future. The country does not specialise in the production of high added value goods, nor does it benefit from adding value to goods produced elsewhere. While the Czech Republic has been described as being merely a “workshop” economy, it is perhaps more apt to describe the country as a “support” economy for neighbouring Germany; unfortunately, however, not on an equal level. Thus, perhaps even the term “support” is inaccurate since it

fails to reflect the fact that Germany would continue perfectly well without the Czech Republic, but that the economy of the Czech Republic would have severe problems without Germany.

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## **THE FOREIGN TRADE OF V4 COUNTRIES DURING THE ECONOMIC CRISIS: PERIOD 2007-2016**

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### **Abstract**

The aim of the paper is to monitor, evaluate and compare the development of the foreign trade of Visegrad Group countries during the period of crisis (2007-2016) and to answer the key question of the paper whether it is better to have a national or a common currency in the time of economic crisis. On the one hand, these economies have a lot in common, on the other hand, there is a significant difference in the form of the national or common currency. The development of foreign trade is monitored via the analysis of the selected variables, of which data have form of a time series. The empirical results do not exactly prove whether it is more beneficial to have the national or common currency, but on the other hand they rebut numerous assumptions about the disadvantage of the common currency for foreign trade support purposes in the time of the economic crisis.

### **Keywords**

Foreign trade, Visegrad Group, Economic crisis, Currency, Exchange rate volatility  
JEL Classification: F14, F40, F63

## **1 Introduction**

Nowadays, the foreign trade is a significant and an inherent part of the economic growth of countries all over the world. Due to the globalization and the growing specialization of countries, the share of foreign trade on the gross domestic product of the countries is increasing. However, current globalization in the shape of the high economic dependence of the countries also entails the risk of transferring of a negative economic shock of the one country to the other countries. We were witnesses of this negative effect in 2008 (respectively 2009) when the crisis which epicentre was in the United States, hit the entire world including Visegrad Group countries.

The Visegrad Group (V4) is formed by four Central European countries: the Czech Republic, Slovakia, Hungary and Poland. These countries have been cooperating for over two decades on common political, social and economic goals. Their economies all went through the similar development of transformation process from transit to market economies. They are also similar to each other from the point of view of a territorial and commodity structure of foreign trade. And still there is a difference which has a significant impact on the foreign trade – it's a currency. In 2009, Slovakia exchanged its own national currency for common currency – euro. By this integration step, Slovakia gave up some part of its sovereignty and powerful economic instrument at the very moment, when the economic crisis hit V4 countries. The remaining three countries have their national currencies up to now.

Currency plays a significant role in connection with the foreign trade. On the one hand export can be supported through currency depreciation, on the other hand export can be also supported through increased currency credibility. Main objective of the paper is to monitor, evaluate and compare the foreign trade of V4 countries during the crisis (period 2007-2016) and answer the question whether it is better to have a national or a common currency in the time of economic crisis (considering the case of V4 countries).

## 2 Literature review

### 2.1 The impact of the currency on the foreign trade in the time of economic crisis

The issue of a currency in the context of the foreign trade raises questions to a number of economists - is it better to have a national or a common currency in the time of crisis? Is it more beneficial for foreign trade support purposes to have its own monetary policy and with this associated possibility to devalue the currency or is it more beneficial to have the more credible currency of which advantage relates to lower exchange rate volatility?

From the theory of foreign exchange rates is clear that in the time of economic crisis the advantage should be the ability to devalue the currency. However, Lacina and Toman (2009) draw attention to the risks of currency devaluation associated with asymmetric information, the rise of inflation and the lack of motivation to implement important measures due to the expectation of further depreciation. The question also remains the fulfilment of the Marshall-Lerner condition in the situation of a global recession, where even currency depreciation may not lead to a significant increase in exports due to declining consumption in the countries of the main trading partners. Dědek (2014) warns against competitive devaluations, which do not bring any competitive advantage to anyone in the end, and at the same time they just distort foreign trade. Slovakia, which is in a different position as a member of the euro area, cannot gain a competitive advantage in the form of a currency devaluation, but can draw of its credibility and avoid the negative impact of the high exchange rate volatility. According to Sobiják (2013), the other advantage of Slovakia connected with credibility of the euro consisted in a prevention of excessive capital outflow during the crisis.

Lacina and Toman (2009) consider the fundamental problem of the Czech economy at the beginning of the crisis especially too rapid appreciation of the Czech crown against the euro and subsequent depreciation in the last third of 2008. Hungarian forint and Polish zloty went through the same development of appreciation and subsequent depreciation as Czech crown in the same year. Due to the depreciation of these currencies against the euro, export prices have become more competitive. Frolík (2009) in the case of the Czech Republic points out, that the weaker crown would significantly help the exporters with one to two years delay. Exporters usually hedge up to 75% of the expected revenue for the first year, and 40% of the revenue for the second year. These hedged exchange rates thus had a negative impact on exporters, because despite the weaker crown the exporters could not make their prices more competitive. A similar negative impact of the hedged exchange rates has also been demonstrated for Polish exporters. Mitrega-Niestroj (2011) notes, that if the Polish zloty was not depreciated, the volume of Polish export would be 2.5 percentage points lower in the 2009 and import would be 2.5 percentage points higher in the same year.

According to Čársky et al. (2012), countries with a floating exchange rate recorded a more moderate fall in export. Compared to the three euro area countries (Austria, Slovakia and Slovenia), the export recovery in the countries with a free-float exchange rate was in principle faster, as those countries at the end of the 2<sup>nd</sup> quarter of 2011 reached 108-110% of the pre-crisis level of export from the 2<sup>nd</sup> quarter of 2008. However, he also argues that Slovakia from the monitored euro area countries reached the export pre-crisis level fastest, reaching 105% of the pre-crisis level in the 2<sup>nd</sup> quarter of 2011<sup>12</sup>. Jevčák (2011) argues that the adoption of the euro was a good step for Slovakia and had a positive impact on foreign trade. Sobiják (2013) sees in the common currency a great advantage in terms of monetary stability only in a longer period. The sharp decline in Slovak exports he attributes to the impossibility of devaluating the

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<sup>12</sup> at the same time Austria reached 96%, Slovenia 94%

currency. According to Taušer and Čajka (2014) the sharp decline in foreign trade of Slovakia was also caused by introducing euro.

## 2.2 The exchange rate volatility

The substantial disadvantage of the national currency in relation to foreign trade may be increased exchange rate volatility, which causes its diminished credibility. Partially, against the negative effects of exchange rate volatility can be used the hedging, although paradoxically it is not always beneficial as it was briefly described in the previous section. The relationship between exchange rate volatility and foreign trade in Central and Eastern European countries is investigated by Cociu (2007), who used the regression of the panel data and applied it on aggregate data from the period 1995-2006. Using a real exchange rate, he identified the negative impact of exchange rate volatility on foreign trade. Šimáková (2016), Rajan (2004) and Rose (2000) came also to the conclusion about the negative impact of exchange rate volatility on foreign trade. Hudson and Straathof (2010) are slightly different in the results. Using the gravitational model, they concluded that exchange rate volatility had a negative effect on foreign trade only until 1985, and since then it has begun to lose its importance. Nicita (2013) in his study does not identify any impact of the exchange rate volatility on foreign trade.<sup>13</sup>

Some of studies are more specifically focused on V4 countries. For example, the study made by Cociu (2007) empirically proves, that negative impact of exchange rate volatility is higher in countries with a higher degree of openness like the Czech Republic, Slovakia or Hungary. For the case of Poland was demonstrated a lower negative impact. Šimáková (2016) focused on the impact of exchange rate volatility on different traded product classes determined by SITC classification. For this purpose, panel regression applied to the gravity model of foreign trade was used. Results of her study can be seen in Tab. 1.

**Tab. 1** Impact of exchange rate volatility on different traded product groups by SITC

COUNTRY	NEGATIVE EFFECT OF EXCHANGE RATE VOLATILITY WAS REFLECTED IN...
<b>CZECH REPUBLIC</b>	FOREIGN TRADE WITH FOOD AND LIVE ANIMALS, ANIMAL AND VEGETABLE FATS, MACHINERY, TRANSPORT EQUIPMENT AND MISCELLANEOUS MANUFACTURED ARTICLES (SITC 0, 5, 7 AND 8)
<b>SLOVAKIA</b>	FOREIGN TRADE WITH ALL PRODUCT CATEGORIES EXCEPT RAW MATERIALS AND CHEMICALS (ALL SITC EXCEPT SITC 2, 5 AND 9)
<b>HUNGARY</b>	FOREIGN TRADE WITH ALL PRODUCT CATEGORIES (SITC 0-9)
<b>POLAND</b>	FOREIGN TRADE WITH ALL PRODUCTS CATEGORIES EXCEPT MINERAL FUELS, LUBRICANTS, ANIMAL FATS, OILS AND WAXES (ALL SITC EXCEPT SITC 3 AND 4)

Source: Šimáková (2016)

Another study focused on V4 countries made by Égert and Morales-Zumaquero (2008) shows, that the negative effect of exchange rate volatility manifests the most on the trade with chemicals (SITC 5) and different types of manufacturing (SITC 6-8). These sectors together account for 80% of total exports. Tomanová (2013), who focused on trade of V4 countries with euro area countries, says the impact of exchange rate volatility is ambiguous given that many factors affecting foreign trade depend on non-domestic factors and development of euro area.

<sup>13</sup> Many studies focusing on impact of exchange rate volatility on the foreign trade summarized Ozturk (2006) in his work

As an advantage of euro adoption she considers reduction of uncertainty about exchange rates development in foreign trade.

The literary research presents, that both the national currency and the common currency have their undeniable advantages. Whether and how had these advantages impact on the development of foreign trade of V4 countries during the crisis years 2007-2016, is presented in the following section of the paper

### **3 Methodology and data**

From the methodological point of view, for this paper is used analysis of the selected variables, where the selected variables include import and export, their commodity and territorial structure, trade balance of goods and nominal exchange rate. Due to the high positive correlation between import and export developments and GDP development, real GDP development is also monitored. The development of import and export is monitored through a base index and the rate of annual growth (or decrease). The commodity structure is monitored through the Standard International Trade Classification (SITC<sup>14</sup>), Rev. 4. The paper monitors only trade with goods, so all mentioned variables will not include statistics of trade with services.

Data for the empirical part of the paper are in the form of time series and are drawn from the databases of international institutions. These are the databases of Eurostat, World Bank, European Central Bank and UN Comtrade.

### **4 Results and discussion**

The paper continues with its own empirical research aimed at monitoring, comparing and evaluating the development of time series of selected foreign trade indicators of individual countries in the context of other V4 countries. Monitored are the indicators of import, export, balance of trade, territorial and commodity structure, real GDP and nominal exchange rate developments. The empirical part should to provide the basis for the answer, whether it is better to have the national or the common currency in a time of economic crisis (considering the case of V4 countries).

#### **4.1 Development of export**

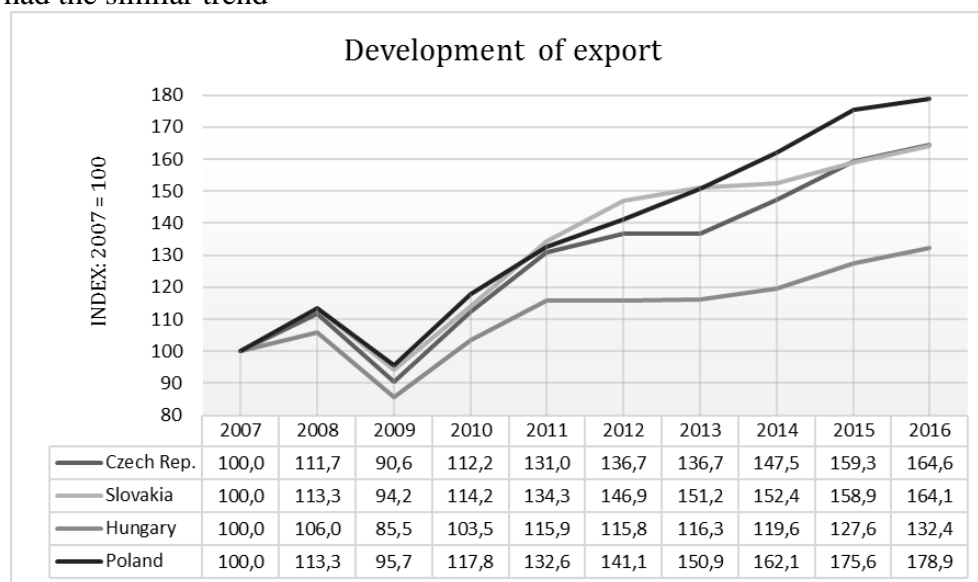
The crisis has visibly affected export of all countries the most in 2009. During this year, the lowest export value based on a base index was recorded in Hungary when its value was 85.5% of the value of the pre-crisis year 2007. Decline of exports in Hungary was highest among V4 countries also in year-on-year terms, when exports dropped by 19.3% compared to 2008. Because of slow further growth of Hungary's export, the fact remains, that export value of 132.4% in 2016 compared to 2007 is considerably the lowest one compared to exports of other V4 countries.

In 2016, exports of the Czech Republic and Slovakia reached almost identical values compared to 2007 (Czech Republic 164.6%, Slovakia 164.1%). The export trends of these two economies were different mainly between 2012 and 2014. In 2012, the export growth of the

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<sup>14</sup> SITC 0 – food and live animals; SITC 1 – beverages and tobacco; SITC 2 – crude materials, inedible, except fuels; SITC 3 – mineral fuels, lubricants and related materials; SITC 4 – animal and vegetable oils, fats and waxes; SITC 5 – chemicals and related products; SITC 6 – manufactured goods classified chiefly by material; SITC 7 – machinery and transport equipment; SITC 8 – miscellaneous manufactured articles; SITC 9 – commodities and transactions not classified elsewhere in the SITC

Czech Republic decelerated and the export in 2013 was practically unchanged compared to the previous year. Export stopped in 2012 at 136.7% compared to pre-crisis 2007. In the case of Slovakia, the export growth slowed down especially in 2013 and 2014, a one-year delay compared to the Czech Republic. Despite the different currencies, the export of these two countries had the similar trend



**Fig. 1** Development of export (Source: Eurostat, 2017a)

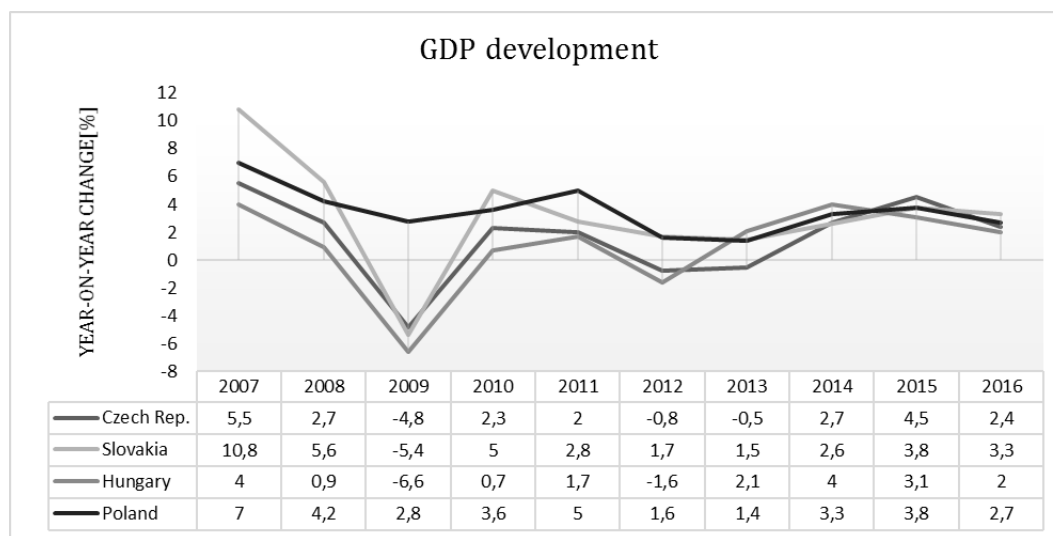
Among the V4 countries, Poland reached the fastest export growth. In 2009, it was Poland whose export declined the least (decrease by 15.6 %). Its export increased steadily between the years 2011-2015, when the growth rate didn't go below its lower limit of 6.4%. The fact remains that Polish export had increased the most of all V4 countries, when in 2016 its value was at 178.9% compared to 2007. The reason for such a development is likely the very nature of the Polish economy, which is not so dependent on foreign trade, what was an undeniable advantage at the time of the crisis.

In summary, it can be stated that the export of Poland increased the most and the export of Hungary the least. The exports of Slovakia and the Czech Republic, despite the difference in their currencies, increased almost identically. Looking at export development it is not possible to determine whether it is better to have a national or a common currency. However, it is necessary to remark that currency is not the only important factor in the development of foreign trade, the important role in the development of export plays for example openness of the economy, when Polish economy is less open than the economies of other three countries.

## 4.2 Development of GDP

Kubna et al. (2011) and Gajdušková and Krčál (2011) identified a positive correlation between GDP development and the development of foreign trade (i.e. import and export). The economies experienced a decline in exports not only in the critic year 2009, but also in 2012 and 2013 (in the case of Slovakia in 2013 and 2014). During these years, real GDP growth decelerated, and consequently in relation to already mentioned strong positive correlation export performance has been also reduced. Export growth was low in these years, in the case of the Czech Republic and Hungary its growth reached negative numbers. The exception is Poland, whose export growth was still high despite the decline of GDP. It is worth mentioning the also fact that Poland (as the only country of the EU) achieved a positive GDP growth of 2.8% in 2009 even despite

the decline in export and import. The explanation may be lower dependence of Poland on foreign trade and the greater importance of its domestic market.



**Fig. 2** Development of GDP (Source: Eurostat, 2017b)

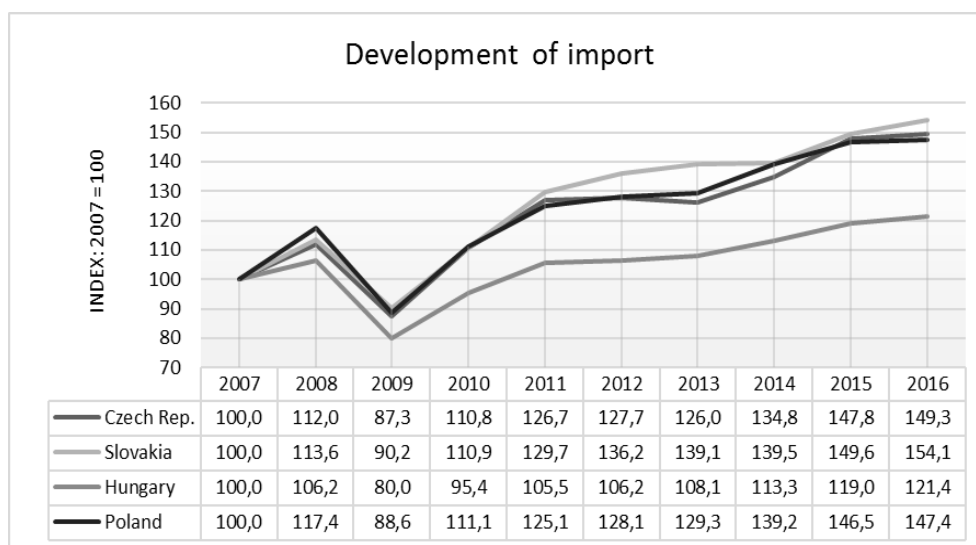
Most of the economies of the European Union suffered a "W" crisis, which symbolises a double bottom when the economy is experiencing an economic recovery, but again there is a decline in economic activity (Dědek, 2014; Roubini and Mihm, 2011). Such development has taken place to a greater or lesser extent also in the case of V4 economies. For small open economies, the situation of economies abroad and especially in Germany as their main trade partner is very important.

The year-on-year GDP growth of Germany in 2012 and 2013 was only 0.5%. This undoubtedly had an impact on Germany's reduced demand for imports and by this affected by the reduced export of V4 countries.

### 4.3 Development of import

The largest decline of import was recorded in the case of Hungary, when its import value in the 2009 was only 80% of the value from 2007. In 2009, Hungary's import dropped year-on-year by 24.7%. While the other V4 countries overcame the pre-crisis value of import already in 2010 by more than 10%, Hungary exceeded that value only in 2011, when its import was higher by 5.5%. Growth of import was not significant, the rate of annual growth in the period 2012-2016 did not exceed the upper limit of 5.0%. The growth of the import of Hungary was the lowest from all countries - in 2016, its import value was 121.4% compared to the pre-crisis year 2007.

The Czech and Slovak import trends developed in a similar way to their exports. Compared to 2008, the Czech Republic recorded a sharper decline in import (22.0%) than Slovakia (20.6%), on the other hand a year later import of Czech Republic increased more (by 26.9%) than of Slovakia (by 22.9%). The economic slow-down in 2012-2013 (for Slovakia 2013-2014) had a negative impact also on the import. Based on the base index, in 2016 the highest value of imports from the V4 countries reached Slovakia of 154.1% compared to 2007. In the same year, the Czech Republic reached import value of 149.3% of the pre-crisis 2007, what represents the second highest value among the V4 countries.



**Fig. 3** Development of import (Source: Eurostat, 2017a)

Despite the smaller openness of Poland, the crisis hit its import significantly when its year-on-year decline was 24.5% in 2009. Next year, thanks to the year-on-year increase of 25.3% reached Poland's import the value of 111.1% of the pre-crisis 2007, what was the highest value among V4. Growth of import was particularly low in 2012, 2013 and 2016. In 2016, the import value reached 147.4% compared to 2007.

According to the results, import increased in largest extent in Slovakia, which is followed by Czech Republic, Poland and Hungary. It is possible that in case of import also the currency played a role – when national currencies depreciated (what occurred in all three countries), the competitiveness of the prices of the importers decreased, what could lead to an increase of the consumption of domestic production and thus to reduction of demand for foreign goods.

#### 4.4 Commodity structure

The commodity structure of the trade is monitored at four-year intervals – i. e. for the years 2007, 2011 and 2015. The figures for all years are in the Appendix (Tables A to H). The purpose of this subchapter is to determine the export and import specialization of the countries according to the SITC classification and the impact of the crisis on the development of the shares of the individual classes on total exports and imports.

**Tab. 2** Commodity structure of the Czech Republic by SITC – shares on export and import

	EXPORT SHARE			IMPORT SHARE		
	2007	2011	2015	2007	2011	2015
SITC 0+1	3.5	3.8	4.5	5.0	5.2	5.7
SITC 2+4	2.7	3.0	2.5	2.6	3.3	2.5
SITC 3	2.6	3.8	3.0	7.9	10.1	6.6
SITC 5	5.7	6.2	6.0	10.3	10.9	11.3
SITC 6	20.3	17.7	15.9	20.8	18.3	17.3
SITC 7	54.6	54.7	55.7	43.4	42.2	45.4
SITC 8	10.5	10.7	12.1	10.0	9.7	11.0
SITC 9	0.1	0.2	0.3	0.1	0.3	0.2

Source: UN Comtrade (2016)

The commodity structure of the Czech export did not change significantly during the monitored period. The biggest change was in the class SITC 6 - the share of this class in total exports in 2015 was by 4.4 percentage points lower than in 2007. However, it is unlikely, that this was caused by the crisis, as this downward trend was established before the crisis.

The commodity structure of the Czech Republic's import fluctuates mainly in the classes SITC 3 and SITC 7. Like in the case of export, also the share of the class SITC 6 on total imports has been declining over the years (not because of the crisis).

**Tab. 3** Commodity structure of Slovakia by SITC – shares on export and import

	EXPORT SHARE			IMPORT SHARE		
	2007	2011	2015	2007	2011	2015
SITC 0+1	3.5	4.0	3.4	5.1	5.8	5.3
SITC 2+4	2.2	2.9	2.0	3.0	4.0	2.5
SITC 3	4.6	6.4	3.7	11.0	14.7	8.1
SITC 5	4.7	4.9	0.6	8.7	8.8	8.8
SITC 6	21.0	18.6	16.7	17.4	15.5	15.0
SITC 7	53.8	53.2	59.6	43.8	39.9	47.3
SITC 8	9.0	9.8	9.6	10.4	11.0	12.6
SITC 9	1.2	0.2	0.30	0.4	0.3	0.4

Source: UN Comtrade (2016)

The commodity structure of export of Slovakia has - as in the case of the Czech Republic – a declining trend for the class SITC 6, when the share of this class on total exports dropped by 4.3 pp by 2015 compared to 2007. A significant increase (by 6.4 pp) in 2015 compared to 2011 was recorded in the case of the class SITC 7, what speaks of a high specialization in the automotive and engineering industries.

As in the case of the Czech Republic, also in the commodity structure of Slovakia's import, significant changes occurred especially the classes SITC 3 and SITC 7 - but these changes caused by the crisis were more severe

**Tab. 4** Commodity structure of Hungary by SITC – shares on export and import

	EXPORT SHARE			IMPORT SHARE		
	2007	2011	2015	2007	2011	2015
SITC 0+1	5.9	6.8	7.0	3.9	4.5	4.8
SITC 2+4	1.8	2.8	2.2	1.4	2.3	2.0
SITC 3	2.8	3.5	2.3	9.4	12.2	8.2
SITC 5	7.2	9.2	10.8	8.6	10.6	11.9
SITC 6	9.2	9.8	10.3	14.0	12.9	13.6
SITC 7	58.2	54.4	56.3	48.8	42.3	47.1
SITC 8	7.7	8.2	8.8	6.6	5.9	7.6
SITC 9	7.3	5.4	2.4	7.2	9.4	4.7

Source: UN Comtrade (2016)

In the case of Hungary had the class SITC 6 an increasing tendency. The fluctuations were recorded in SITC 7 - the share on total exports in this class first decreased by 3.8 pp by 2011 compared to 2007, but in the next four years it recorded an increase of 1.9 pp. A significant



increasing trend is in the class SITC 5 (chemicals), which represents the third most significant share on total exports.

The commodity structure of Hungary's import is very similar to that of Slovakia, especially in the development of SITC 3 and SITC 7 classes. Unlike Slovakia, where the share of SITC 5 on total imports is almost unchanged, Hungary recorded a gradual increase in import share of this commodity. It may be caused by increasing of needed inputs for producing export (given the high export performance in connection with the chemicals).

**Tab.5** Commodity structure of Poland by SITC – shares on export and import

	EXPORT SHARE			IMPORT SHARE		
	2007	2011	2015	2007	2011	2015
SITC 0+1	9.1	10.4	12.4	5.8	7.1	8.0
SITC 2+4	2.4	2.5	2.4	3.3	3.9	3.5
SITC 3	3.8	5.0	3.3	9.9	13.1	7.5
SITC 5	7.2	9.0	8.8	12.8	14.1	13.9
SITC 6	22.8	21.3	18.8	20.8	18.0	17.2
SITC 7	40.8	39.3	39.1	35.3	31.6	36.6
SITC 8	12.6	12.4	15.0	8.4	9.6	11.8
SITC 9	1.2	0.2	0.2	3.8	2.5	1.5

Source: UN Comtrade (2016)

Among all V4 countries, Poland is the most agricultural-oriented country. In 2007, the classes SITC 0+1 (including beverages and tobacco) accounted a 9.1% share of exports, in 2015 it was already 12.4%. As in the cases of the Czech Republic and Slovakia, the share of the class SITC 6 has a declining character also in Poland. The share of class SITC 7 is not as high as in other countries - in 2015, it represented a share of 39.1% on total exports.

The development of the commodity structure of Poland's import is similar to that of the previous countries mainly in the development of SITC 3, SITC 6 and SITC 7 classes. Significant decrease occurred the share of class SITC 3 on total imports, when between 2011 and 2015 decreased by 5.2 percentage points. The share of SITC 7 on imports grew by 5.0 pp between 2011 and 2015.

The crisis had no significant impact on the countries' commodity structure (except for short-term fluctuations). After all, for a larger change of the commodity structure they are required extensive reforms whose effects do not show immediately but in a long period - the monitored period of this paper is too short for identifying changes caused by reforms or other radical government measures.

The commodity structure points out the countries' specialisation mainly in manufacturing. The share of class SITC 7 on total exports (and imports) of the Czech Republic, Slovakia and Hungary demonstrates the importance of the automotive and engineering industries. In the time of crisis, there is a decreasing demand for luxury and durable goods, what for example the cars are. Poland has a bigger competitive advantage in the agricultural sector, reflecting the relatively high share of food and live animals (SITC 0) on total Poland's export. The view on the commodity structure is also important in view of the negative impact of exchange rate volatility on selected classes according to the SITC. As it was mentioned in literary research, Égert and Morales-Zumaquero (2008) write about negative impact of exchange rate volatility mainly on the chemicals and the manufacturing industry (SITC 5-8), what make up more than

80% of the exports. Šimáková (2016) focused on each SITC class separately. For example, in the case of Hungary, exchange rate volatility negatively affects all SITC classes, which could also have an impact on the fact that its export increased the least. In the case of other countries, not all SITC classes were negatively affected by exchange rate volatility.

#### 4.5 Territorial structure

The territorial structure of the trade is also monitored at four-year intervals – for the years 2007, 2011 and 2015. The figures for all years are in the Appendix (Tables I to P).

**Tab. 6** Territorial structure of the Czech Republic by countries – shares on export and import

EXPORT SHARE				IMPORT SHARE			
	2007	2011	2015		2007	2011	2015
GERMANY	30.8	32.2	32.2	GERMANY	28.1	25.8	26.0
SLOVAKIA	8.7	9.0	9.0	CHINA	7.9	12.5	13.5
POLAND	5.9	6.3	5.9	POLAND	5.7	6.6	7.9
FRANCE	5.4	5.5	5.1	SLOVAKIA	5.3	5.7	5.1
UK	5.0	4.5	5.3	RUSSIA	4.8	5.4	3.0
ITALY	4.9	4.1	3.7	ITALY	4.7	3.9	4.1
AUSTRIA	4.6	4.6	4.1	FRANCE	4.6	3.3	3.1
OTHERS	34.7	33.8	34.7	OTHERS	38.9	36.8	37.3

Source: World Bank (2017)

Almost a third of the export (32.2% in 2015) is exported from the Czech Republic to Germany. The crisis did not have a negative impact on the share of export to Germany, on the contrary – the share increased even further (by 1.4 pp until 2011 compared to 2007). The other most important partners are the two countries of V4 - Slovakia and Poland. Exports to Italy, France and Austria are declining.

In the case of import, there is a significant increase of the share on import from China - between 2007 and 2011 its share increased by 4.6 pp (in relative terms by 58,2%). This increasing trend of import from China has been established already before the crisis, but it can be assumed that thanks to the crisis the share on import from China has soared so steeply. The shares on the imports of Slovakia, Italy, France and Russia have slowly decreased.

**Tab.7** Territorial structure of Slovakia by countries – shares on export and import

EXPORT SHARE				IMPORT SHARE			
	2007	2011	2015		2007	2011	2015
GERMANY	21.1	20.4	22.4	GERMANY	18.7	16.7	15.9
CZECH REP.	13.0	14.2	12.4	CZECH REP.	10.9	10.3	11.3
FRANCE	6.5	6.4	5.6	RUSSIA	9.2	9.6	5.3
ITALY	6.3	5.0	4.5	CHINA	5.1	6.2	8.8
HUNGARY	6.3	7.1	5.6	HUNGARY	5.1	.3	5.0
POLAND	6.2	7.3	8.3	REP. OF KOREA	5.1	8.0	6.6
AUSTRIA	5.8	7.0	6.0	POLAND	4.0	4.1	5.1
OTHERS	34.8	32.6	35.2	OTHERS	41.9	41.4	42.0

Source: World Bank (2017)

The share of Slovakia's export to Germany is not such high as in the case of the Czech Republic. Probably due to the crisis has increased the share of export to the Czech Republic, Hungary and Austria, which are all neighbouring countries of Slovakia. However, the increase was short-term, these shares on export declined by 2015. The shares on exports to France and Italy are declining.

Germany is a major importer also for Slovakia, but not as dominant as in the case of the Czech Republic. Because of economic sanctions, the share on import from Russia decreased also in the case of Slovakia - between 2011 and 2015 decreased by 4.3 pp. In 2011, Russia was the second largest importer for Slovakia. The share on import from Asia - mainly from China and the Republic of Korea - has increased.

**Tab. 8** Territorial structure of Hungary by countries – shares on export and import

EXPORT SHARE				IMPORT SHARE			
	2007	2011	2015		2007	2011	2015
GERMANY	28.4	24.8	27.3	GERMANY	26.8	23.9	26.2
ITALY	5.6	5.0	4.7	RUSSIA	6.7	8.8	4.0
FRANCE	4.7	4.7	4.6	AUSTRIA	6.1	6.6	6.6
AUSTRIA	4.5	5.7	4.8	CHINA	5.4	6.0	5.3
UK	4.5	4.6	3.9	ITALY	4.5	4.5	4.6
ROMANIA	4.5	6.1	5.3	POLAND	4.0	4.6	5.5
SLOVAKIA	4.2	5.9	5.0	SLOVAKIA	3.1	5.4	5.3
OTHERS	43.6	43.2	44.4	OTHERS	43.4	40.2	42.5

Source: World Bank (2017)

The impact of the crisis on trade with Germany reflected most in the case of Hungary's export, when in 2011 its share on exports to Germany was lower by 3.6 pp in comparison with 2007. Compared to the two previous countries is Hungary's export more territorial diversified, what indicates a higher share of other countries on exports of Hungary – 44.4% in 2015.

Because of the crisis, there was a short-term decline of the share of import from Germany, which by 2015 despite the increase still did not exceed the value of share from 2007. Russia's share on import was lower by 4.8 pp in 2015 compared to 2011. The shares of Poland and Slovakia on imports between 2007 and 2015 increased by 1.5 and 2.2 pp. Shares of other countries on imports remained almost unchanged over the monitored years.

**Tab. 9** Territorial structure of Poland by countries – shares on export and import

EXPORT SHARE				IMPORT SHARE			
	2007	2011	2015		2007	2011	2015
GERMANY	25.9	26.0	26.9	GERMANY	24.0	22.2	22.6
ITALY	6.6	5.4	4.8	RUSSIA	8.7	12.2	7.6
FRANCE	6.1	6.1	5.6	CHINA	7.2	8.7	11.8
UK	5.9	6.5	6.8	ITALY	6.8	5.3	5.2
CZECH REP.	5.5	6.2	6.5	FRANCE	5.1	4.2	3.7
RUSSIA	4.6	4.5	2.9	CZECH REP.	3.5	3.7	3.4
NETHERLANDS	3.8	4.4	4.4	NETHERLANDS	3.4	3.7	3.8
OTHERS	41.6	40.9	42.1	OTHERS	41.3	40.0	41.9

Source: World Bank (2017)

The share on export of Poland to Germany was not negatively affected by the crisis - it has increased steadily. As in the other V4 countries, the share on export to Italy has declined also for the case of Poland. On the contrary, the shares on exports to the United Kingdom (UK) and Czech Republic have increased.

Neither Poland is not an exception among V4 countries and has the same main importer (Germany) and a similar development in form of increasing shares on import From Russia and China. The shares of Italy and France on import declined, the shares of Czech Republic and Netherlands on import almost did not change.

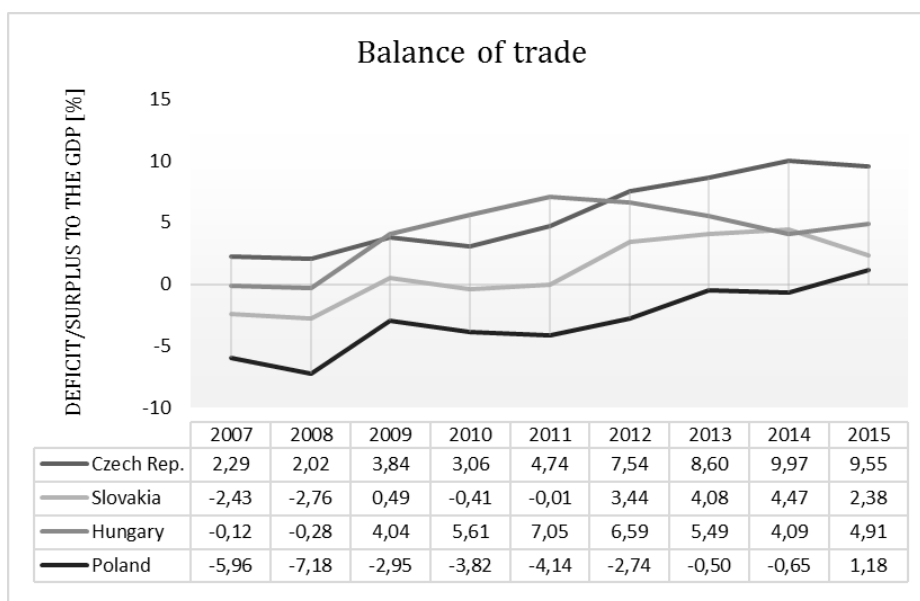
Territorial structure has not significantly changed except the short-term fluctuations. In all countries, we can see a decreasing share on import from Russia and a growing share of imports from Asian countries (mainly from China and the Republic of Korea). The weakening of trade relations with Russia is not caused by crisis but a political measures and economic sanctions (for more see the Council of the EU, 2017). Significant increase of imports from China and Republic of Korea is caused by the formation of new business relationships as well as the economic boom of their economies.

The main trading partner for all countries is Germany. Countries in large volumes trade with their neighbouring countries and other EU countries. Among the seven largest trading partners of Slovakia are four countries using the common currency euro. The remaining three trading partners are the V4 countries. From the point of view of elimination of negative impact of exchange rate volatility on foreign trade, Slovakia has an advantage when trades with euro zone countries. Among other things, there are studies (Baldwin, 2006; Rose and Stanley, 2005; de Nardis and Vicarello, 2003; Rose, 2000) confirming the increased trade between countries with the common currency. However, the overwhelming majority of trade relations arose before Slovakia's entry into the euro area, so it is difficult to quantify how the common currency was an advantage in the formation of new relations. The disadvantage of the national currency is already mentioned the higher exchange rate volatility – but the hedging is commonly used against it, by which the risk of financial losses from unpredictable fluctuations of the exchange rate is eliminated.

#### **4.6 Development of balance of trade**

Balance of trade provides the basic information about the quality of the country's involvement in external economic relations (Gajdušková and Krčál, 2011) and says more about the competitiveness of the country (Lazarevič, 2016).

A significant improvement of the balance of trade came in 2009, when the effects of the crisis showed the most. The reason for the such a rapid improvement of the balance in 2009 was a sharper decline in import compared to the export. Countries like Slovakia, Hungary and Poland had a trade deficit in the pre-crisis years 2007 and 2008. Although Hungary had already oscillated before the crisis around the value of zero, it managed to overcome this limit only in 2009 (thanks to an increase of 4.31 percentage points compared to 2008). In 2009 reached trade surplus also Slovakia (thanks to increase of 3.25 pp compared to 2008). Although the balance of trade of Poland was significantly improved (by 4.24 pp compared to 2008), it didn't reach a trade surplus due to high negative trade deficit in the pre-crisis period (in 2008 it was 7.18%). The Czech Republic has recorded a trade surplus since 2005.



**Fig. 3** Development of balance of trade (Source: World Bank, 2016)

The last year of the monitored nine-year time series is 2015. This year ended all countries with trade surplus, its values in proportion to the GDP were in the case of the Czech Republic 9.5%, Slovakia 2.38%, Hungary 4.91%, and Poland 1.18%. For the determination of the improving or worsening of balance of trade during crisis serves a comparison between the first and the last year of monitored time series. In this nine-year period, the Czech Republic's balance of trade improved by 7.26 percentage points, followed by balance of trade of Poland with the improvement of 7.14 pp, Hungary's improvement of 5.03 pp and Slovakia's improvement of 4.81 pp. It can be stated that the Czech Republic had the best results of development of balance of trade, both in terms of the total value of trade surplus in 2015 and in terms of the most significant improvement of the balance of trade during the monitored period.

The exchange rate has a significant effect on the balance of trade. Depreciation of the currency makes the prices of exporters more competitive and on the contrary, the prices of the importers are less competitive. In other words, export increases and import decreases. On the other hand, neither more competitive prices do not have to guarantee an increased financial volume of trade, especially in time of crisis, when there is a general decline of demand for goods. But, according to Mitrega-Niestroj (2011), the depreciation of the Poland's currency contributed to improving its trade balance. And perhaps hanks to the depreciation of the national currencies, all countries' balance of trade had improved more than a trade balance of the country with a common currency, which recorded the slightest improvement of the trade balance over the monitored period.

#### **4.7 Development of exchange rate**

The significance of the currency and its impact on foreign trade is mentioned in the literary research. As it was mentioned further, Lacina and Toman (2009) consider the fundamental problem of the Czech economy at the beginning of the crisis especially too rapid appreciation of the Czech crown against the euro and subsequent depreciation in the last third of 2008. Hungarian forint and Polish zloty went through the same development of appreciation and subsequent depreciation. Likewise, Dědek (2014) consider as a main problem of Slovakia the

“hyperactivity” of its exchange rate strengthening. But the Slovak crown, unlike other currencies, did not go through the subsequent depreciation phase. The relative changes as well as dates and values of the highest and lowest values of the nominal exchange rates against euro are shown in Tab. 10.

**Tab. 10** The biggest changes of nominal exchange rates of V4 countries

COUNTRY	DATE	EXCHANGE RATE	CHANGE
<b>CZECH REPUBLIC</b>	21 <sup>ST</sup> JULY 2008	22.968 CZK/EUR	28.4%
	17 <sup>TH</sup> FEBRUARY 2009	29.49 CZK/EUR	
<b>HUNGARY</b>	18 <sup>TH</sup> JULY 2008	228.16 HUF/EUR	38.72%
	6 <sup>TH</sup> MARCH 2009	316.5 HUF/EUR	
<b>POLAND</b>	28 <sup>TH</sup> JULY 2008	3.0253 PLN/EUR	61.3%
	17 <sup>TH</sup> FEBRUARY 2009	4.8795 PLN/EUR	
<b>SLOVAKIA*</b>	30 <sup>TH</sup> JANUARY 2007	35.278 SKK/EUR	14.61%
	31 <sup>ST</sup> DECEMBER 2008	30.126 SKK/EUR	

Source: European Central Bank (2017)

\*note: in the case of Slovakia, it is the appreciation of its nominal exchange rate

Among the currencies of the Czech Republic, Hungary and Poland, the biggest relative change of the nominal exchange rate was recorded in the case of Polish zloty, which underwent a 61.3% depreciation against the value of nominal exchange rate from 28<sup>th</sup> July 2008. The Hungarian forint and the Czech crown were weakened by 38.72, respectively 28.4%. The sharp depreciation of Polish zloty is explained by Mitrega-Niestroj (2011) also as a result of a speculative attack on the Polish currency. However, for the most part, the currencies were weakened due to their diminished credibility, panic in the financial market, and consequently high foreign capital outflow, which triggered an increased supply of national currencies on the foreign exchange markets, which resulted in the depreciation of these national currencies.

The nominal value of the Slovak crown against the euro in the pre-crisis period strengthened considerably, when in less than 2 years it appreciated by 14.61%. Prior to joining the euro zone, also the central parity of the Slovak crown in ERM II<sup>15</sup> appreciated, when it was revaluated twice. The first revaluation of 8.5% took place in March 2007 (from 38.46 to 35.44 SKK/EUR). At the end of May 2008 took place the second revaluation about 17.6% (from 35.44 to SKK 30.126/EUR). On the 8<sup>th</sup> July 2008, the exchange rate of 30.126 SKK/EUR has been irrevocable fixed and Slovakia thus joined the European Economic and Monetary Union in 2009. The date of the definitive fixation of the Slovak crown against the euro occurred approximately 2-3 weeks before the Czech crown, Hungarian forint and Polish zloty reached the lowest values of nominal exchange rates against the euro, after which these currencies depreciated significantly. The Slovak crown could not afford a significant depreciation. At the time of Slovak currency fixation, it was not considered that the effects of the crisis could have such a profound incidence – for many, the choice of a strong exchange rate of the Slovak crown against the euro that could not be taken back could seem like a not too happy decision (Dědek, 2014; NBS, 2008).

After a sharp depreciation, the Czech crown's exchange rate appreciated again, between 2011 and 2013 (until November) its nominal exchange rate against the euro ranged from 24,018 to 26,121 CZK/EUR. In November 2013, the Czech National Bank launched foreign exchange interventions by which devaluated the Czech crown to a value not exceeding the lower limit of

<sup>15</sup> Exchange Rate Mechanism

27 CZK/EUR. The main purpose of interventions was not to make prices more competitive and thus to support exports, but to damp disinflationary trends and keep the inflation rate at around 2%. The increased competitiveness of domestic exporters' prices was only a side effect of foreign exchange interventions (CNB, 2017). The exchange rate of the Czech crown oscillated around 27.5 CZK/EUR by mid-2015, except for a short-term depreciation of 28,405 CZK/EUR, which came in January 2015 (the exact date is 13<sup>th</sup> January 2015). Starting in the middle of 2015 and then throughout the year 2016, the nominal exchange rate was close to 27 CZK / EUR. In 2016, the crown's exchange rate was 6.92% weaker compared with the average value<sup>16</sup> for 2010.

After 2009, the Hungarian forint exchange rate did not show any significant appreciation like that one before the crisis. Over time, the exchange rate has been depreciated to a greater or lesser extent, its weakest nominal value of 322.78 HUF/EUR comes at 15<sup>th</sup> January 2015. In 2016, its nominal value ranged from 303.86 to 318,35 HUF/EUR. When comparing the average values<sup>17</sup> of exchange rate for 2010 and 2016, the Hungarian forint depreciated by 13.05%.

Like in the case of forint, nor the Polish zloty's exchange rate did not change significantly after 2009 – the only significant drop in the value of exchange rate was in the last quarter of 2011, when the weakest exchange rate of 4,5607 PLN/EUR was measured at 14<sup>th</sup> December 2011. Exchange rate oscillated around 4.2 PLN/EUR between 2012 and 2015, slightly weakening in the last monitored year 2016. Compared to the average values<sup>18</sup> of the exchange rate in 2010 and 2016, the Polish forint was weaker by 9.22% in 2016 compared to 2010. The graphical developments of nominal exchange rates of individual currencies are shown in the Appendix (Figures C, D, E and F).

## 5 Conclusion

Foreign trade is an important part of the economic growth mainly of small open economies. The crisis which hit the world also caused the fall of the foreign trade of the Visegrad Group countries three of these countries still have their national currency, just Slovakia has exchanged its national currency for the euro at the beginning of 2009. The currency is the one of the most important factors influencing the development of foreign trade. There was the question whether it is more beneficial to have national or common currency during the crisis. The V4 countries have common economic features and thus they provided a good basis for answering that question.

Via the analysis of selected variables, it was monitored, evaluated and monitored the development of foreign trade through these selected variables. From an export perspective, it cannot be determined whether it is better to have the common or the national currency. The development of export of Slovakia was almost identical development like the Czech Republic's export, whose currency has been twice significantly depreciated. The other two countries with their national currency, Poland and Hungary, recorded better and worse results than Slovakia, what only confirms the ambiguity of advantage of the common or national currency. Import increased the fastest in case of Slovakia, what was also reflected in the fact that during the monitored period balance of trade of Slovakia recorded the lowest improvement. The currency undoubtedly played a significant role in this thing. It can be stated that from the point of view of the balance of trade, the countries with their national currency performed better than

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<sup>16</sup> The average value of exchange rate in 2010 was 25.284 CZK/EUR, in 2016 27.034 CZK/EUR

<sup>17</sup> The average value of exchange rate in 2010 was 275.45 HUF/EUR, in 2016 311.44 HUF/EUR

<sup>18</sup> The average value of exchange rate in 2010 was 3.9947 PLN/EUR, in 2016 4.3632 PLN/EUR

Slovakia. Looking at the commodity and territorial structure, we can see the similarities of the V4 countries. From the point of view of the territorial structure, the main trading partners of the V4 countries are mainly European countries, of which many are also members of the euro area. In this case, Slovakia had the advantage, both in the form of a reduction of the risk of loss due to exchange rate volatility, as well as in increased volume of foreign trade between countries with the same currency, what was confirmed by many studies.

Based on the empirical results, it is not possible - since in the development of foreign trade was not identified a strong predominance of benefits on the side of the national or the common currency – provide a clear conclusion, whether it is better to have the national or the common currency during the economic crisis. In any case, according to the empirical results it is possible to rebut the numerous claims that the common currency is a disadvantage for foreign trade support purposes during the economic crisis.

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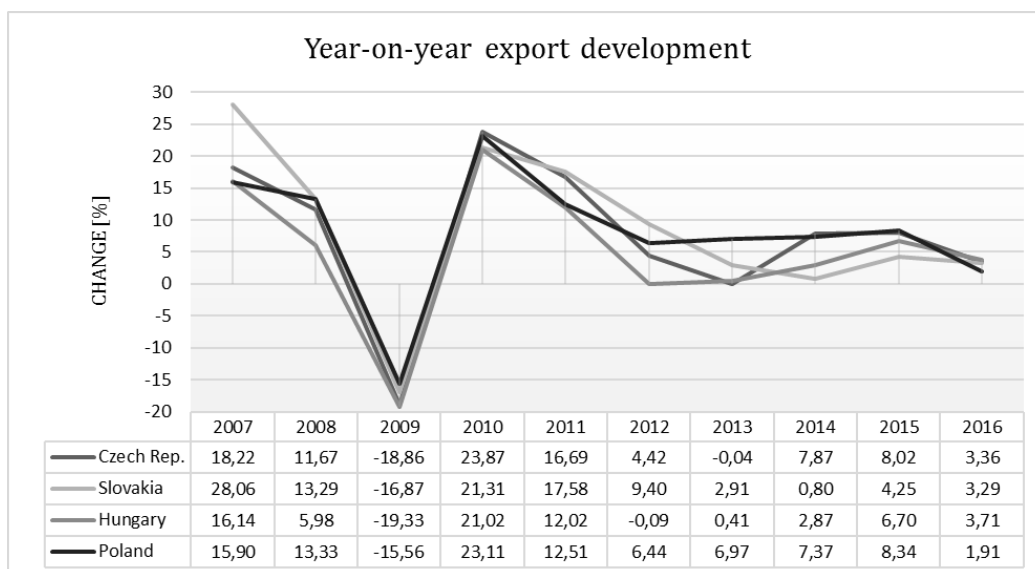
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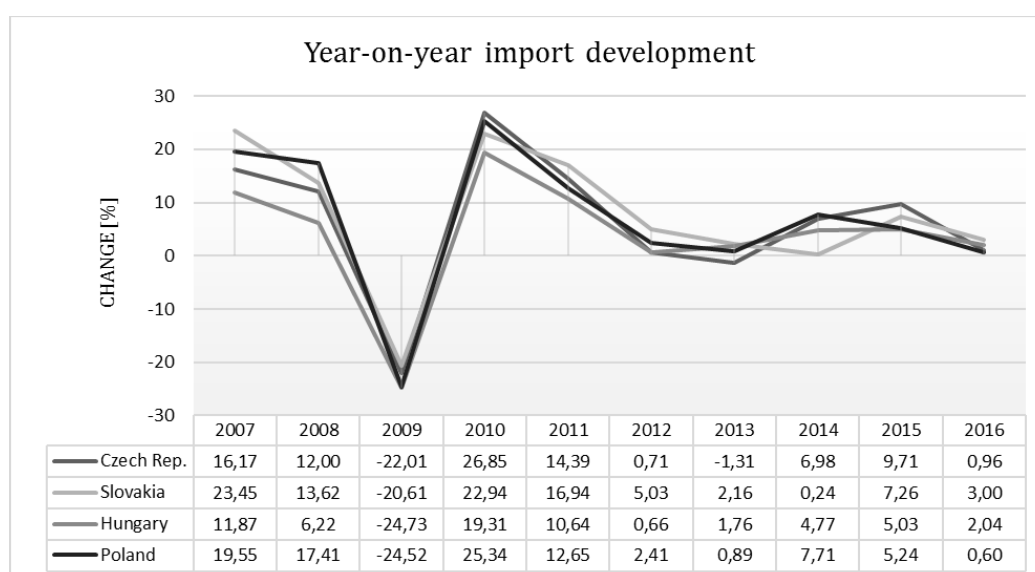
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## Appendix



**Fig. A** Year-on-year export development (Source: Eurostat, 2017a)



**Fig. B** Year-on-year export development (Source: Eurostat, 2017a)

**Tab. A** Commodity structure of export of the Czech Republic by SITC – shares on export

	CZECH REPUBLIC									
	2007	2008	2009	2010	2011	2012	2013	2014	2015	
SITC 0+1	3,5	3,7	4,2	3,6	3,8	4,2	4,4	4,4	4,5	
SITC 2+4	2,7	2,7	2,7	3,1	3,0	3,1	3,0	2,8	2,5	
SITC 3	2,6	3,0	3,6	3,7	3,8	3,8	3,1	2,7	3,0	
SITC 5	5,7	5,7	6,1	6,2	6,2	6,0	6,2	6,4	6,0	
SITC 6	20,3	19,2	17,3	16,8	17,7	17,3	17,4	16,6	15,9	
SITC 7	54,6	52,9	53,0	53,4	54,7	54,5	54,1	55,2	55,7	
SITC 8	10,5	10,4	11,4	10,7	10,7	11,0	11,6	11,7	12,1	

SITC 9      0,1      2,5      2,1      2,5      0,2      0,2      0,3      0,2      0,3

Source: UN Comtrade (2016)

**Tab. B** Commodity structure of export of Slovakia by SITC – shares on export

	SLOVAKIA								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
SITC 0+1	3,5	3,3	4,1	3,8	4,0	4,5	3,9	3,6	3,4
SITC 2+4	2,2	2,4	2,6	3,0	2,9	3,4	2,8	2,2	2,0
SITC 3	4,6	5,0	4,6	4,9	6,4	5,9	5,7	4,7	3,7
SITC 5	4,7	4,4	4,5	4,7	4,9	4,3	4,5	4,8	0,6
SITC 6	21,0	19,7	18,7	19,0	18,6	18,0	17,1	16,9	16,7
SITC 7	53,8	54,0	55,0	54,6	53,2	54,8	57,2	57,9	59,6
SITC 8	9,0	8,9	10,4	9,8	9,8	9,0	8,6	9,7	9,6
SITC 9	1,2	2,2	0,3	0,3	0,2	0,2	0,2	0,2	0,3

Source: UN Comtrade (2016)

**Tab. C** Commodity structure of export of Hungary by SITC – shares on export

	HUNGARY								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
SITC 0+1	5,9	6,3	6,8	6,6	6,8	7,5	7,5	7,2	7,0
SITC 2+4	1,8	2,1	2,0	2,3	2,8	3,1	2,9	2,5	2,2
SITC 3	2,8	3,1	2,5	2,8	3,5	3,9	3,6	3,4	2,3
SITC 5	7,2	7,6	8,4	8,8	9,2	9,9	10,5	10,4	10,8
SITC 6	9,2	9,4	9,0	9,1	9,8	10,4	10,6	10,5	10,3
SITC 7	58,2	56,9	57,5	57,0	54,4	51,6	52,0	54,1	56,3
SITC 8	7,7	7,3	8,0	7,7	8,2	8,7	9,1	9,6	8,8
SITC 9	7,3	7,3	5,8	5,7	5,4	4,8	3,8	2,3	2,4

Source: UN Comtrade (2016)

**Tab. D** Commodity structure of export of Poland by SITC – shares on export

	POLAND								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
SITC 0+1	9,1	9,2	10,7	10,5	10,4	11,7	12,1	12,3	12,4
SITC 2+4	2,4	2,4	2,0	2,5	2,5	2,5	2,7	2,7	2,4
SITC 3	3,8	4,2	3,1	4,2	5,0	5,0	4,8	4,1	3,3
SITC 5	7,2	7,7	7,7	8,6	9,0	9,1	9,3	9,1	8,8
SITC 6	22,8	21,4	19,1	20,0	21,3	21,0	20,2	19,8	18,8
SITC 7	40,8	41,2	43,0	41,6	39,3	37,8	37,9	38,3	39,1
SITC 8	12,6	12,2	12,7	12,6	12,4	12,4	12,8	13,6	15,0
SITC 9	1,2	1,7	1,7	0,0	0,2	0,5	0,3	0,1	0,2

Source: UN Comtrade (2016)

**Tab. E** Commodity structure of import of the Czech Republic by SITC – shares on import

	CZECH REPUBLIC								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
SITC 0+1	5,0	4,8	6,0	5,1	5,2	5,7	5,9	5,6	5,7
SITC 2+4	2,6	2,8	2,5	2,7	3,3	3,1	3,0	2,7	2,5
SITC 3	7,9	10,4	9,1	9,5	10,1	10,2	9,8	8,1	6,6
SITC 5	10,3	10,1	10,9	10,1	10,9	11,1	11,4	11,6	11,3
SITC 6	20,8	19,5	17,2	17,1	18,3	18,0	18,1	17,7	17,3
SITC 7	43,4	41,0	40,8	42,4	42,2	42,0	41,3	43,6	45,4
SITC 8	10,0	10,2	11,6	9,8	9,8	9,7	10,1	10,4	11,0
SITC 9	0,1	1,2	2,0	3,3	0,2	0,3	0,3	0,3	0,2

Source: UN Comtrade (2016)

**Tab. F** Commodity structure of import of Slovakia by SITC – shares on import

	SLOVAKIA								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
SITC 0+1	5,1	5,2	6,5	5,9	5,8	5,9	5,6	5,8	5,3
SITC 2+4	3,0	3,1	2,9	4,1	4,0	4,2	3,6	3,2	2,5
SITC 3	11,0	12,8	11,7	12,5	14,7	13,1	13,1	6,1	8,1
SITC 5	8,7	8,7	9,5	8,4	8,8	8,4	8,4	9,3	8,8
SITC 6	17,4	17,0	15,1	15,6	15,5	15,1	15,1	16,2	15,0
SITC 7	43,8	43,0	42,6	42,7	39,9	41,1	42,4	46,3	47,3
SITC 8	10,4	9,8	11,4	10,4	11,0	11,9	11,6	12,8	12,6
SITC 9	0,4	0,4	0,4	0,4	0,3	0,3	0,2	0,4	0,4

Source: UN Comtrade (2016)

**Tab. G** Commodity structure of import of Hungary by SITC – shares on import

	HUNGARY								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
SITC 0+1	3,9	4,1	5,0	4,4	4,5	4,6	4,5	4,7	4,8
SITC 2+4	1,4	1,5	1,5	2,0	2,3	2,2	2,2	2,1	2,0
SITC 3	9,4	8,5	7,5	10,6	12,2	12,7	12,6	12,1	8,2
SITC 5	8,6	9,2	10,0	9,9	10,6	10,9	11,0	11,3	11,9
SITC 6	14,0	13,2	12,1	12,2	12,9	12,8	13,5	13,6	13,6
SITC 7	48,8	45,7	44,9	45,9	42,3	41,6	42,9	44,5	47,1
SITC 8	6,6	6,3	6,7	5,9	5,9	5,9	6,4	7,1	7,6
SITC 9	7,2	11,4	12,3	9,1	9,4	9,5	6,9	4,6	4,7

Source: UN Comtrade (2016)

**Tab. H** Commodity structure of import of Poland by SITC – shares on import

	POLAND								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
SITC 0+1	5,8	6,1	7,4	7,1	7,1	7,6	8,0	7,8	8,0
SITC 2+4	3,3	3,4	3,0	3,4	3,9	3,9	3,8	3,6	3,5
SITC 3	9,9	11,3	9,4	10,9	13,1	13,7	11,8	10,8	7,5
SITC 5	12,8	12,8	13,7	14,2	14,1	13,8	14,3	14,4	13,9
SITC 6	20,8	18,3	17,0	17,6	18,0	17,2	17,2	17,4	17,2
SITC 7	35,3	34,9	35,1	34,5	31,6	32,0	33,5	33,8	36,6
SITC 8	8,4	8,8	10,4	10,0	9,6	8,9	8,9	10,3	11,8
SITC 9	3,8	4,3	4,0	2,2	2,5	3,0	2,5	1,9	1,5

Source: UN Comtrade (2016)

**Tab. I** Territorial structure of export of the Czech Republic by countries – shares on export

	CZECH REPUBLIC								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
GERMANY	30,8	30,7	32,3	32,0	32,2	31,4	31,3	32,0	32,2
SLOVAKIA	8,7	9,2	9,0	8,8	9,0	9,1	8,9	8,4	9,0
POLAND	5,9	6,5	5,8	6,2	6,3	6,1	6,0	6,0	5,9
FRANCE	5,4	5,4	5,6	5,4	5,5	5,1	4,9	5,1	5,1
UK	5,0	4,8	4,9	4,8	4,5	4,8	4,9	5,1	5,3
ITALY	4,9	4,7	4,4	4,5	4,1	3,5	3,6	3,6	3,7
AUSTRIA	4,6	4,7	4,7	4,7	4,6	4,6	4,6	4,3	4,1
OTHERS	34,7	34,0	33,3	33,6	33,8	35,4	35,8	35,5	34,7

Source: World Bank (2017)

**Tab. J** Territorial structure of export of Slovakia by countries – shares on export

	SLOVAKIA								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
GERMANY	21,1	20,2	19,8	19,3	20,4	21,4	20,9	22,0	22,4
CZECH REP.	13,0	13,1	13,3	13,7	14,2	14,0	13,5	12,7	12,4
FRANCE	6,5	6,8	7,8	6,8	6,4	5,4	5,0	4,9	5,6
ITALY	6,3	5,9	6,0	5,5	5,0	4,6	4,6	4,6	4,5
HUNGARY	6,3	6,2	6,9	6,7	7,1	7,0	6,4	6,1	5,6
POLAND	6,2	6,6	7,0	7,3	7,3	8,1	8,3	8,2	8,3
AUSTRIA	5,8	5,7	5,9	6,8	7,0	6,6	6,2	6,1	6,0
OTHERS	34,8	35,5	33,3	33,9	32,6	32,9	35,1	35,4	35,2

Source: World Bank (2017)

**Tab. K** Territorial structure of export of Hungary by countries – shares on export

	HUNGARY								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
GERMANY	28,4	26,7	25,6	25,1	24,8	25,5	25,8	27,5	27,3
ITALY	5,6	5,3	5,7	5,5	5,0	4,6	4,7	4,6	4,7
FRANCE	4,7	4,7	5,5	5,0	4,7	4,6	4,4	4,5	4,6
AUSTRIA	4,5	4,9	4,6	4,9	5,7	5,8	5,6	5,5	4,8
UK	4,5	4,7	5,3	5,5	4,6	4,2	3,9	3,6	3,9
ROMANIA	4,5	5,3	5,3	5,4	6,1	6,0	5,7	5,5	5,3
SLOVAKIA	4,2	4,7	5,0	5,4	5,9	5,9	5,4	4,9	5,0
OTHERS	43,6	43,7	43,0	43,2	43,2	43,4	44,5	43,9	44,4

Source: World Bank (2017)

**Tab. L** Territorial structure of export of Poland by countries – shares on export

	POLAND								
	25,9	25,1	26,1	26,0	26,0	24,9	25,0	25,9	26,9
GERMANY	6,6	6,0	6,8	6,0	5,4	4,9	4,3	4,5	4,8
ITALY	6,1	6,2	7,0	6,8	6,1	5,8	5,6	5,6	5,6
FRANCE	5,9	5,8	6,4	6,3	6,5	6,8	6,5	6,4	6,8
UK	5,5	5,7	5,9	5,9	6,2	6,2	6,1	6,3	6,5
CZECH REP.	4,6	5,2	3,7	4,2	4,5	5,5	5,3	4,4	2,9
RUSSIA	3,8	4,0	4,2	4,4	4,4	4,4	4,0	4,1	4,4
NETHERLANDS	41,6	42,0	39,9	40,4	40,9	41,5	43,2	42,8	42,1
OTHERS	25,9	25,1	26,1	26,0	26,0	24,9	25,0	25,9	26,9

Source: World Bank (2017)

**Tab. M** Territorial structure of import of the Czech Republic by countries – shares on import

	CZECH REPUBLIC								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
GERMANY	28,1	26,8	26,7	25,5	25,8	25,5	25,9	26,2	26,0
CHINA	7,9	8,8	10,1	12,2	12,5	11,2	10,9	11,4	13,5
POLAND	5,7	5,9	6,4	6,4	6,6	7,1	7,6	7,7	7,9
SLOVAKIA	5,3	5,6	5,4	5,2	5,7	6,1	5,7	5,3	5,1
RUSSIA	4,8	6,4	5,2	5,4	5,4	5,7	5,4	4,1	3,0
ITALY	4,7	4,5	4,4	3,9	3,9	3,9	4,0	4,1	4,1
FRANCE	4,6	4,1	3,9	3,3	3,3	3,2	3,2	3,2	3,1
OTHERS	38,9	37,9	37,9	38,1	36,8	37,3	37,3	38,0	37,3

Source: World Bank (2017)

**Tab. N** Territorial structure of import of Slovakia by countries – shares on import

	SLOVAKIA								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
GERMANY	18,7	19,8	15,4	16,1	16,7	17,1	16,0	15,7	15,9
CZECH REP.	10,9	11,4	11,3	10,3	10,7	9,9	11,0	10,9	11,3
RUSSIA	9,2	10,7	8,8	9,6	11,2	9,9	10,0	8,0	5,3
CHINA	5,1	5,8	5,7	6,2	6,1	6,3	7,5	8,2	8,8
HUNGARY	5,1	5,0	4,7	4,3	4,1	3,7	4,4	4,8	5,0
REP. OF KOREA	5,1	5,8	6,8	8,0	6,4	9,5	8,6	7,3	6,6
POLAND	4,0	3,9	3,7	4,1	4,1	3,7	4,9	5,0	5,1
OTHERS	41,9	37,6	43,6	41,4	40,7	39,9	37,6	40,1	42,0

Source: World Bank (2017)

**Tab. O** Territorial structure of import of Hungary by countries – shares on import

	HUNGARY								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
GERMANY	26,8	25,5	24,9	24,0	23,9	24,7	25,0	25,4	26,2
RUSSIA	6,7	9,3	7,4	7,8	8,8	8,8	8,7	7,1	4,0
AUSTRIA	6,1	6,2	6,5	6,2	6,6	6,9	6,7	7,3	6,6
CHINA	5,4	5,6	6,4	7,1	6,0	5,7	5,4	5,0	5,3
ITALY	4,5	4,2	4,1	4,3	4,5	4,5	4,4	4,5	4,6
POLAND	4,0	4,0	4,1	5,3	4,6	4,7	4,9	5,2	5,5
SLOVAKIA	3,1	3,5	4,2	4,1	5,4	5,5	5,8	5,5	5,3
OTHERS	43,4	41,7	42,4	41,2	40,2	39,2	39,1	40,0	42,5

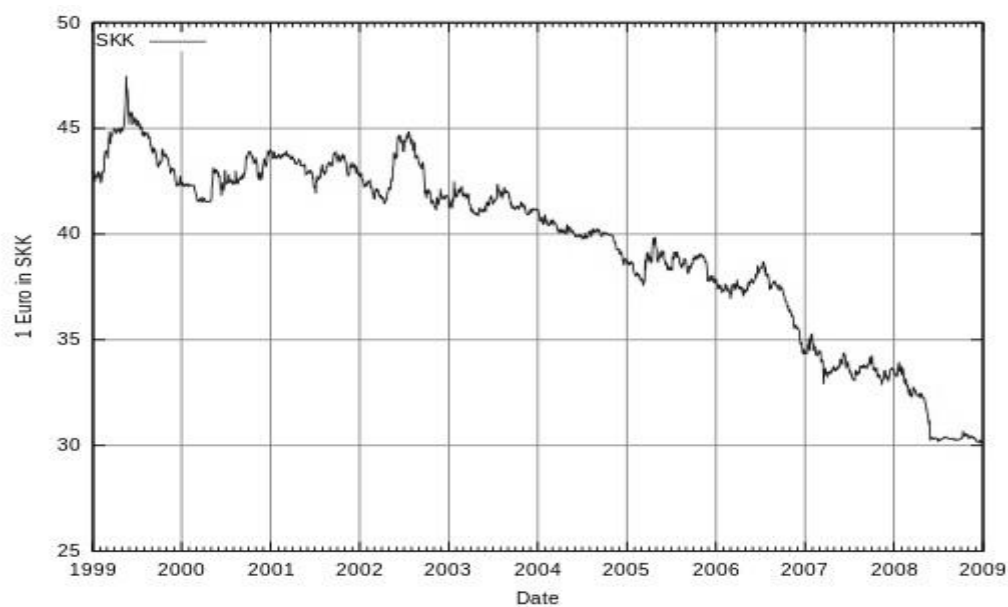
Source: World Bank (2017)

**Tab. P** Territorial structure of import of Poland by countries – shares on import

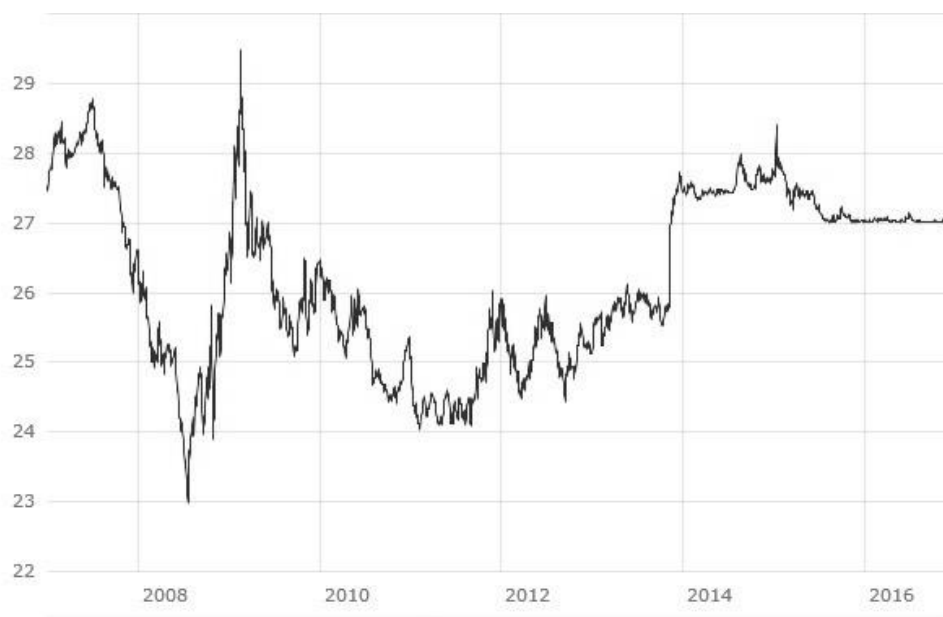
	POLAND								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
GERMANY	24,0	23,1	22,3	21,7	22,2	20,9	21,5	51,7	22,6
RUSSIA	8,7	9,8	8,6	10,5	12,2	14,6	12,3	10,8	7,6
CHINA	7,2	8,0	9,3	9,5	8,7	9,0	9,4	10,6	11,8
ITALY	6,8	6,5	6,8	5,6	5,3	5,0	5,2	5,3	5,2
FRANCE	5,1	4,7	4,6	4,3	4,2	3,9	3,8	3,7	3,7
CZECH REP.	3,5	3,6	3,6	3,7	3,7	3,6	3,6	3,5	3,4
NETHERLANDS	3,4	3,4	3,6	3,7	3,7	3,8	3,9	3,7	3,8
OTHERS	41,3	40,9	41,2	41,0	40,0	39,2	40,3	10,7	41,9

Source: World Bank (2017)

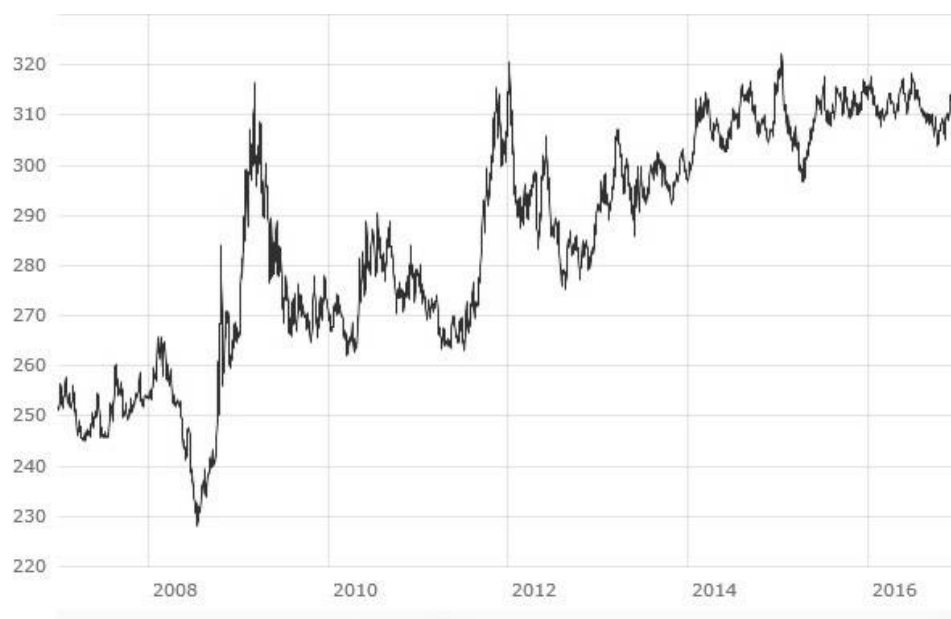




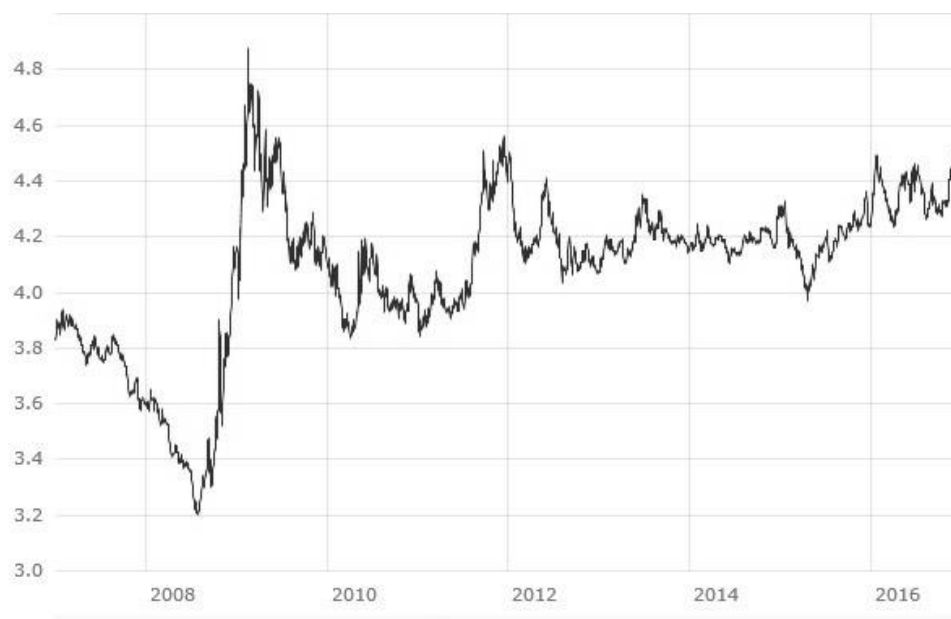
**Fig. C** Development of exchange rate of Slovak crown (SKK) in relation to 1 EUR (1999-2009)  
(Source: wikimedia.org, 2009)



**Fig. D** Development of exchange rate of Czech crown (CZK) in relation to 1 EUR (2007-2016)  
(Source: European Central Bank, 2017)



**Fig. E** Development of exchange rate of Hungarian forint (HUF) in relation to 1 EUR (2007-2016)  
(Source: European Central Bank, 2017)



**Fig. F** Development of exchange rate of Polish zloty (PLN) in relation to 1 EUR (2007-2016)  
(Source: European Central Bank, 2017)

## ISSUE CONNECTED WITH SENIOR CITIZENS AND AN AGING POPULATION

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### Abstract

Issues regarding senior citizens and an aging population will require greater attention in the long term. Finding a solution to this matter cannot be avoided. In 2050 the proportion of persons aged 65+ in the Czech Republic is predicted to be 32.2%. The systemic approach to creating active aging programmes has a direct impact on improving the quality of life of local communities and the balanced development of a socially responsible society. The aim of active aging programs at the municipal level should be to ensure the prolongation of active life, in line with the values and way of life of senior citizens. Based on the analysis of its own questionnaire survey, combined with EU-SILC 2015 data, the main barriers preventing municipal activities in relation to senior citizens were identified as follows: health condition, cost / financial situation and, surprisingly, lack of free time.

### Keywords

Active Aging Programme, Senior Citizens, Municipalities, EU-SILC.  
JEL Classification: D31, H75, I38.

## 1 Introduction

One of the most significant achievements of the last decade is the prolongation of life expectancy as a result of a significant improvement in health care, raising the standard of living (World Health Organization, 2002). For all countries, this fact presents a considerable challenge. In 2013, the proportion of persons aged 65+ in the Czech Republic was 16.8%. According to the medium version of the Czech Statistical Office projection (2013) the number will increase to 20.5% in 2020 and to 32.2% in 2050. It is necessary to work with these facts at the level of strategic documents in the formation of public policies.

However, senior citizens and indeed old age as such cannot always be perceived only in a negative way as a burden on public services (Sýkorová, 2006). The public should instead begin to perceive this phenomenon as under-used potential, a source of knowledge and experience, a nation's memory and as a resource for voluntary work (Siegrist, Wahrendorf, 2010). It is also important to emphasize the importance of the elderly in intergenerational relationships within the family, the local community and their importance in the overall cultural concept.

However, senior citizens are not the homogeneous unit they are often presented to be. Statistical data confirms the relatively large differentiation of living conditions of elderly groups of senior citizens. These are groups with different lifestyles and priorities. The situation of senior citizens in the Czech Republic varies according to gender, place of residence, retirement or other socio-economic characteristics (Czech Statistical Office, 2016a, EU-SILC data).

As indicated above, public administration should respond by trying to make use of this potential, for example through targeted active aging programmes. In the Czech Republic, these programmes are delegated to the level of municipalities under the principle of subsidiarity. At present, this issue is solved ad hoc on the basis of individual decisions of municipal councils according to the suggestions of social departments. For the sake of strategic decision-making, unfortunately, data are not yet available in the Czech Republic. There are case studies on selected topics such as leisure time for senior citizens (HOLCZEROVÁ, DVOŘÁČKOVÁ, 2013; JANIŠ, SKOPALOVÁ, 2016 etc.). Interesting information is also provided by the DIPEX project, which is directly geared towards elderly respondents and their experiences, such as

health, everyday life, social aspects of old age but also less positive topics, such as the end of life (Social Health Institute, 2016). For basic international comparisons, we can use data from Eurostat (2017a) which are predominantly of an economic nature. In the wider context of analysis there are the open data SHARE - Survey of Health, Aging and Retirement in Europe (2017).

Within the framework of the Research Institute of Labour and Social Affairs (Project – The Preference of Senior Citizens and the Reality of Their Economic Situation in Comparison with the Activities of the Municipalities in the Programme of Active Aging - Manual for Social Departments of Selected Municipalities) a questionnaire survey was carried out in the area of active aging in 2016. The results will make the planning and the logical structure of the activities focused on this area more efficient. A systemic approach to creating an active aging programme will have a direct impact on improving the quality of life of local communities and the balanced development of a socially responsible society. Of course, good practice should also be shared across the public sector which is created on the website of the National Network of Healthy Cities of the Czech Republic (2017). Cities have been inspired by methodologies of the World Health Organization (2007), they have a positive view of the aging population.

The aim of active aging programmes at the municipal level is to ensure the prolongation of active life, in accordance with the values and way of life of senior citizens, in their natural and familiar environment. However, there are many myths circulating about the elderly (World Health Organization, 2008). *Based on analyses of the survey data from the Research Institute of Labour and Social Affairs, it will be assessed what barriers senior citizens perceive as part of the participation in active aging programmes.* A complementary source for these analyses will also be the EU - SILC 2015 data, which focused more on the area of social and cultural participation and material and social conditions of individuals in the Czech Republic.

## 2 Methods and data

The evaluation of the amount and allocation of spending on active aging programmes, retirement effects and economic self-sufficiency of senior citizens are among the most topical issues. Possible data sources are data from administrative municipalities; or data provided by the Czech Statistical Office: Household Budget Survey or Survey of Income of Living Conditions (EU-SILC). However, no known publicly available data has yet provided us with comprehensive answers to questions from areas of active aging or values of senior citizens. That is why, in the framework of the implementation of the project The Preference of Senior Citizens and the Reality of Their Economic Situation in Comparison with the Activities of the Municipalities in the Programme of Active Aging - Manual for Social Departments of Selected Municipalities we collect own data in the form of a questionnaire survey in selected municipalities.

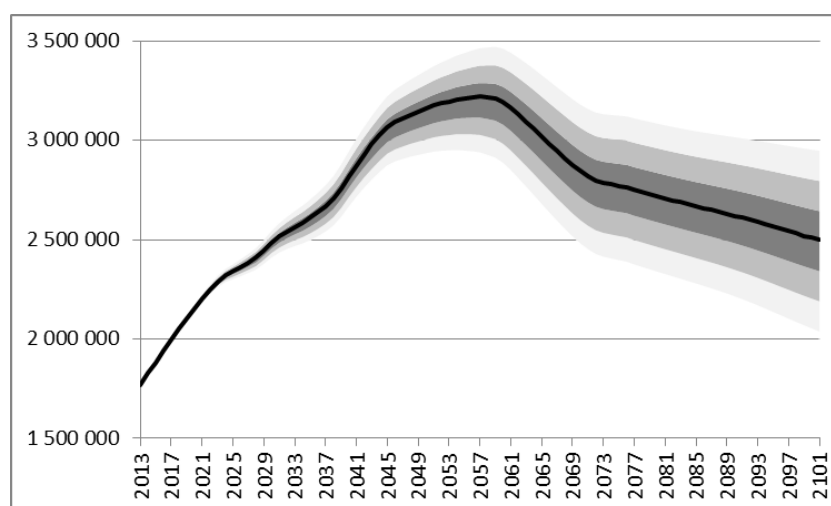
The questionnaire survey took place in Prague and Ostrava in the period May - June 2016. Quotation was used for the selection of respondents under conditions of observance of the representation of the main socio-demographic groups of the population. In addition to the regional distribution, the structure of the population in terms of gender and age was also taken into account. The sample only included residents of Prague and Ostrava between the ages of 60 and 84. The data collection was performed by face-to-face interviews, where trained interviewers conduct interviews with selected individuals directly in their homes. A total of 724 cases were analysed in the framework of the research (78% of respondents from Prague, 22% of respondents from Ostrava).

The main survey area, as outlined above, was the leisure time span of the elderly - issues related to leisure activities that the interviewed persons are taking part in or are interested in taking part in. The complementary areas of the survey were the areas of social activity, the involvement of respondents and the area of the health condition of respondents. Last but not least, the survey also dealt with issues of value important both for the personal life of respondents and for society as a whole. The questionnaire also included socio-demographic, economic and other classification questions for detailed analysis and evaluation of the data for project needs.

The data from the Czech EU - SILC 2015 are used as an additional source. The data investigates the economic and social conditions of households in the given country. The Czech Statistical Office (2016b) states that: "the purpose of the survey is to obtain representative data on the income distribution of individual types of households, data on the manner, quality and cost of housing, household facilities, long-term use, and working, material and health conditions of adults living in households ". The EU-SILC 2015 survey covers approximately 8,000 households (approximately 18,000 individuals) residing in the Czech Republic, of which the senior citizen respondents number 5.4 thousand.

### 3 Results and discussion

The Czech Republic had over 10.5 million inhabitants in 2015. Those aged over 65, accounted for more than 17.8 % of the population, amounting to 1.9 million of the total population (Eurostat, 2017b). All forecasts that can be found are unified in predicting a growing trend regarding future developments. On the other hand, the number of senior citizens is not the same. As shown in the following Figure No. 1, the Czech Statistical Office (2013) has three alternative scenarios for the number of senior citizens. According to the medium scenario, over 20.5 % of the total population of the Czech Republic in 2020 should be over 65+. In 2050 their number should increase to almost one third of the population, 32.2 % of the total population of the Czech Republic.



**Fig. 3** Forecast of the Czech population aged 65+ up to 2101  
(Source: Authors, based on Czech Statistical Office data, 2013)

The shift from an economically active life to economically inactive life may be associated with a drop in net disposable income for households of the elderly. If the household does not

prepare for this situation in advance, it becomes fully dependent on public services (Andrews, Philips, 2005). Aspects influencing the real level of income (mostly only pension) are the significantly different overhead costs of such households, which also depend on the price level at their place of residence. For this reason, the financial resources of pensioners left over for leisure and health care are different. However, the funds devoted to the programme of active aging in individual municipalities are also different.

Analyses of the Household Budget Survey data show that more than 50% of total income is used by senior citizens to pay for essential commodities: Food and Non-Alcoholic Beverages and Housing, Water, Electricity, Gas and other fuels (Beran, Godarová, 2017). On the other hand, according to international statistics (European Commission, 2015), the Czech Republic has long ranked among the countries where the elderly population is at a minimum risk of income poverty. Credit for this fact must go the functioning pension system that provides most retirees with a pension that exceeds the income threshold defined by Eurostat (CZK 10,220.00 / EUR 379.00 in 2015). This is particularly true of the internationally used AROP indicator (60)<sup>19</sup>. However, if we use the AROP indicators (70), the income poverty rate for senior citizens will increase from 9.4% to 24.3% (EU-SILC data 2015). In the breakdown of elderly households, we identify the most vulnerable group of single-person households of senior citizens as mostly female households (AROP (60) 20.8%, AROP (70) 53.7%).

### 3.1 Subjective perception of the financial and health situation of senior citizens

The most common problems of the elderly are low income and poor health condition (Sýkorová, 2006). Although according to international statistics the problem of poverty is recorded in a relatively small group, the subjective assessment of senior citizens shows higher values. In 2015, only about a third of these were able to easily manage on their incomes, while 27% had great difficulty or difficulty with it. Again, the breakdown is worse for single-person households, mostly women's households (38% of these households had a problem making ends meet). For a comparison of subjective perceptions, Table No. 1 shows the view of senior citizen and non-senior citizen households.

**Tab. 2** Subjective perception of the sufficiency of household incomes relative to their expenditures

senior citizen household	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
with great difficulty / difficulty	26%	25%	25%	30%	27%	28%	28%	32%	32%	31%	27%
with less difficulty	43%	43%	40%	42%	39%	39%	39%	37%	38%	38%	39%
fairly easy / easy / very easy	31%	32%	35%	29%	34%	34%	33%	31%	30%	31%	34%
nonsenior citizen household	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
with great difficulty / difficulty	32%	31%	28%	28%	29%	28%	28%	31%	32%	32%	27%
with less difficulty	35%	37%	34%	36%	35%	37%	37%	34%	36%	36%	39%
fairly easy / easy / very easy	34%	32%	38%	36%	37%	35%	35%	35%	32%	33%	34%

Source: Author, based on data EU-SILC 2005-2015.

The EU-SILC 2015 data also provides a subjective assessment of the health condition of respondents and the assessment of material and social circumstances in the optional section for 2015. In the following Tables No. 2 to 4 we can see how senior citizens assess their health

<sup>19</sup> AROP (60) - the at-risk-of-poverty rate is the share of people with an equivalised disposable income (after social transfer) below the at-risk-of-poverty threshold, which is set at 60 % of the national median equivalised disposable income after social transfers. Alternatively, the threshold is set at 50 % or 70 %.

condition. The most frequent answer is to choose an acceptable health condition. The relation between the subjective assessment and gender has not been proven, while the relation between the assessment of the state of health and the age of senior citizens has been confirmed as expected. Nevertheless, ambiguous results are obtained due to the household size rating. We cannot determine whether a better health condition is stated by senior citizens, because they live alone or because they do not live by themselves (care is provided), and therefore their health is perceived more positively.

**Tab. 2** Subjective perception of senior citizens' health condition by age (in 2015)

	health condition				
	very good	good	acceptable	bad	very bad
60-	6%	39%	50%	4%	1%
60 - 64	3%	38%	49%	8%	1%
65 - 69	2%	30%	53%	13%	2%
70 - 74	2%	22%	55%	18%	3%
75 - 79	1%	20%	51%	23%	5%
80 - 84	1%	10%	46%	36%	8%
85 - 89	1%	7%	43%	36%	13%
90+	2%	15%	28%	43%	13%
total	2%	26%	51%	18%	4%

Source: Author, based on data EU-SILC 2015.

**Tab. 3** Subjective perception of senior citizens' health condition by gender (in 2015)

	health condition				
	very good	good	acceptable	bad	very bad
man	2%	26%	52%	17%	3%
woman	2%	26%	51%	18%	4%
total	2%	26%	51%	18%	4%

Source: Author, based on data EU-SILC 2015.

**Tab. 4** Subjective perception of senior citizens' health condition by household size (in 2015)

	health condition				
	very good	good	acceptable	bad	very bad
1-person household – male	3%	22%	46%	23%	6%
1-person household – female	2%	20%	50%	23%	5%
2-person household	2%	28%	53%	14%	2%
3+ household	1%	31%	49%	17%	2%
total	2%	26%	51%	18%	4%

Source: Author, based on data EU-SILC 2015.

The second indicator of the subjective perception of the situation of the elderly is their perception of the possibility of regular leisure activities. Here, EU-SILC data show us that they do not have a financial security problem, regardless of the indicators (age, gender or household

size), as shown in our survey. Unfortunately, the EU-SILC data does not contain more information to identify other reasons, but health reasons or mobility options are primary for senior citizens.

**Tab. 5** Subjective perceptions of the financial possibilities of senior citizens by age (in 2015)

	Can I afford regular leisure activities?		
	yes	no, I cannot afford it	no, for other reasons
60-	50%	8%	42%
60 - 64	53%	4%	43%
65 - 69	47%	6%	47%
70 - 74	40%	4%	56%
75 - 79	34%	4%	63%
80 - 84	26%	4%	70%
85 - 89	18%	2%	80%
90+	11%	0%	89%
total	41%	5%	54%

Source: Author, based on data EU-SILC 2015.

**Tab. 6** Subjective perceptions of the financial possibilities of senior citizens by gender (in 2015)

	Can I afford regular leisure activities?		
	yes	no, I cannot afford it	no, for other reasons
man	45%	3%	52%
woman	39%	5%	56%
total	41%	5%	54%

Source: Author, based on data EU-SILC 2015.

**Tab. 7** Subjective perceptions of the financial possibilities of senior citizens by household size (in 2015)

	Can I afford regular leisure activities?		
	yes	no, I cannot afford it	no, for other reasons
1-person household – male	37%	6%	57%
1-person household – female	36%	8%	56%
2-person household	45%	3%	52%
3+ household	34%	5%	62%
total	41%	5%	54%

Source: Author, based on data EU-SILC 2015.



### 3.2 Barriers perceived by the elderly in participating in municipal activities

As stated in the introduction to the chapter, the questionnaire was followed by reasons, which we may call barriers, that prevent the elderly from participating in the municipalities' activities. By minimizing these barriers, the municipality could additionally involve voluntary senior citizens or increase participation. Based on the pilot testing of the questionnaire there were 11 possible barriers (+ free option Others). The most common barriers have been identified as: health condition, lack of time, price and financial situation. Among the Other barriers to participation were: lack of interest in the offered activities, laziness, inadequate time, lack of information, dislike of group activities. At least one barrier was perceived by 56% of respondents, of whom 42% perceived more than one barrier.

Expectations were high in health and financial issues. The low values of the negative experiences of respondents or their relatives regarding transport accessibility or barrier-free access can be seen as positive. The high values of lack of time were relatively surprising. The explanation of Hašková (2010), states the relativity of the perception of time - "what the child will see as eternity (2 hours of drawing), the pensioner will see as a moment." An additional explanation may be the increased frequency of babysitting (mostly women, younger age groups), or continued economic activity alongside retirement (e.g. part-time or temporary work).

**Tab. 8** Identified barriers by age (in 2015)

	Identified barriers to participation				
	60 - 64	65 - 69	70 - 74	75 - 79	total
lack of free time	26%	19%	13%	6%	18%
own health condition	11%	12%	26%	49%	20%
content of offered activities, services do not suit me	10%	7%	8%	7%	8%
price	18%	19%	15%	16%	17%
barrier-free entrance	0%	0%	2%	2%	1%
the need for systematic care of a close person	2%	2%	2%	1%	2%
financial situation	13%	11%	12%	19%	13%
accessibility / serviceability	1%	1%	3%	2%	2%
my own negative experience from past warnings and negative experiences of relatives or acquaintances	4%	4%	2%	2%	3%
worry / fear	1%	0%	0%	1%	1%
other	2%	2%	3%	1%	2%
	0%	1%	0%	4%	1%

Source: Author, based on data from survey.

Expectations were high in health conditions that positively correlate with age. For the oldest age group of 75-79, this barrier was perceived by almost half of the respondents. The barrier of lack of time with age is declining. Barriers of financial issues show stable values. This last barrier is already partly addressed by public administration through reduced service prices (transport, admission, etc.).

**Tab. 9** Identified barriers by gender (in 2015)

	Identified barriers to participation		
	man	woman	total
lack of free time	17%	19%	18%
own health condition	15%	23%	20%
content of offered activities, services do not suit me	10%	7%	8%
price	15%	19%	17%
barrier-free entrance	1%	1%	1%
the need for systematic care of a close person	1%	2%	2%
financial situation	10%	16%	13%
accessibility / serviceability	1%	2%	2%
my own negative experience from past	5%	2%	3%
warnings and negative experiences of relatives or acquaintances	1%	1%	1%
worry / fear	1%	3%	2%
other	2%	1%	1%

Source: Author, based on data from survey.

Respondents, generally women, perceived barriers more often than men. The most sensitive were women in the perception of the health barrier when the health condition as a barrier was perceived by almost 25%. The most perceived barrier for men was lack of time.

**Tab. 10** Identified barriers by household size (in 2015)

	Identified barriers to participation				
	1-person household – male	1-person household – female	2-person household	3+ household	total
lack of free time	10%	10%	25%	13%	18%
own health condition	15%	33%	13%	28%	20%
content of offered activities, services do not suit me	10%	8%	7%	10%	8%
price	15%	23%	16%	13%	17%
barrier-free entrance	0%	1%	1%	1%	1%
the need for systematic care of a close person	0%	1%	3%	3%	2%
financial situation	14%	23%	8%	12%	13%
accessibility / serviceability	3%	2%	1%	3%	2%
my own negative experience from past	4%	1%	4%	0%	3%
warnings and negative experiences of relatives or acquaintances	1%	1%	1%	0%	1%
worry / fear	3%	3%	1%	3%	2%
other	1%	1%	1%	1%	1%

Source: Author, based on data from survey.

A household where a senior citizen lives with other persons (except partners 'households) is less prone to the financial situation. This type of household perceives health as the biggest barrier, which may be one of the reasons for sharing the household. It is perceived even more as a barrier by single-person households of women (who generally perceive their own health as a bigger barrier, see Table No. 6). Two-member households (the partners' households) indicate lack of time as the largest barrier at the level of 25% of respondents surveyed.

#### 4 Conclusion

It is important to remember that issues regarding senior citizens and an aging population will require more attention in the long term. This matter cannot be avoided. Not only the Czech Republic, but all EU states should prepare for this situation.

The aim of active aging programmes at the municipal level is to ensure the prolongation of active life, in accordance with the values and way of life of senior citizens, in their natural and familiar environment and to try to raise awareness among the elderly, but also to break down the barriers that they perceive and which prevent them from engaging in activities.

Within the framework of the Research Institute of Labour and Social Affairs (Project The Preference of Senior Citizens and the Reality of Their Economic Situation in Comparison with the Activities of the Municipalities in the Programme of Active Aging - Manual for Social Departments of Selected Municipalities) a questionnaire survey was carried out, which monitored both leisure time content, as well as questions of values important both for the personal life of the respondents and for the whole of society. The outcome of this survey provides a unique opportunity to look at this issue through the eyes of the elderly.

The health barrier, the price / financial situation and, surprisingly, the lack of free time were identified as the biggest barriers. However, it is possible to subsequently explain the relative perception of time by different age groups or work activities (continued economic activity, babysitting). We should also positively perceive the low values of barriers: the negative experience of respondents or their relatives, the transport (non) availability or barrier (barrier-free access).

A systemic approach to creating an active aging programme along with sharing good practices between municipalities (in cooperation with non-governmental non-profit organizations) will certainly have a direct positive impact on improving the quality of life of local communities and the balanced development of a socially responsible society.

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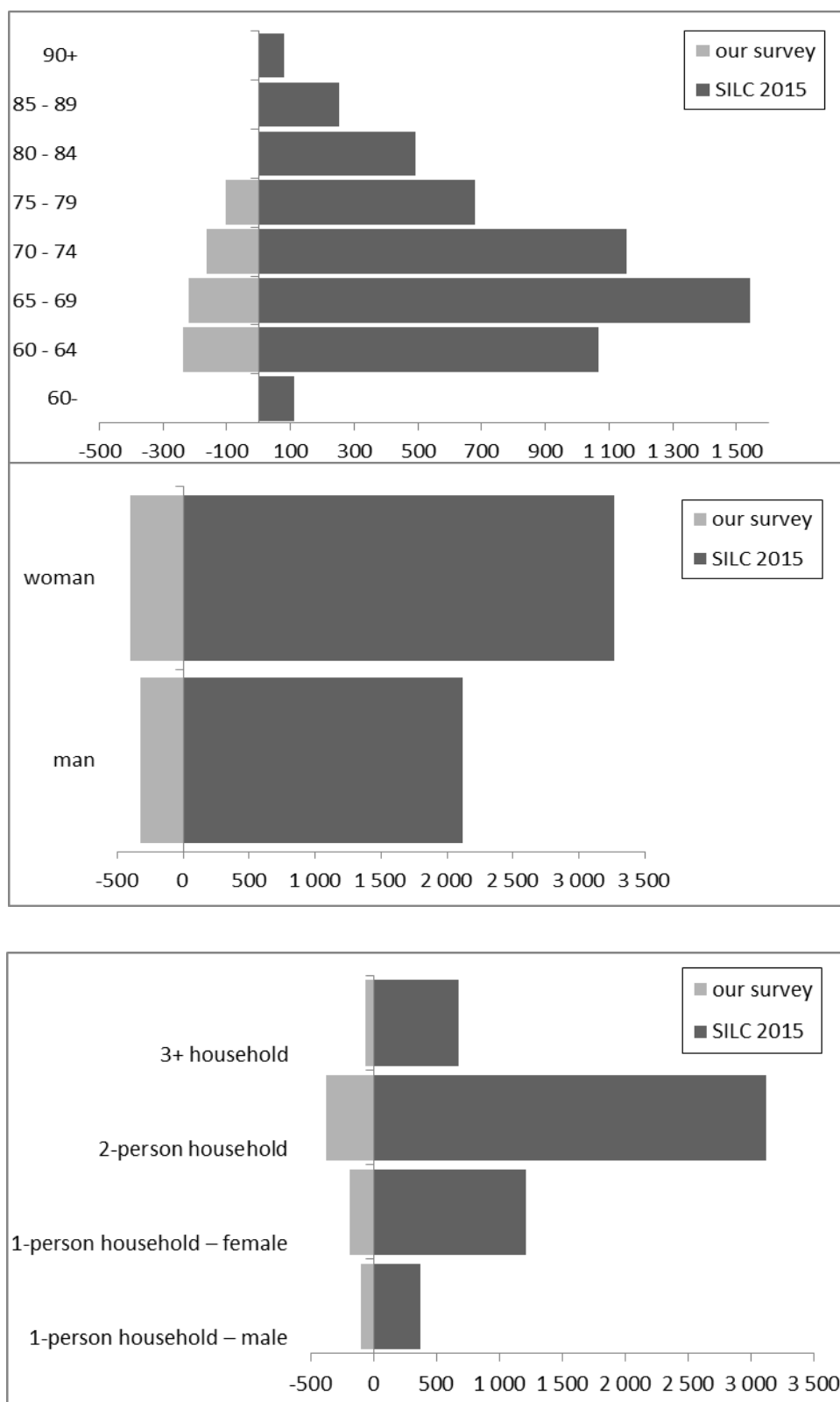
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## Appendix

Composition of sample survey data and EU-SILC data 2015 by age, gender and household size



## MIGRATION AND INTEGRATION POLICY IN A EUROPEAN CONTEXT

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### **Abstract**

The article deals with migration and integration policy in the European Union. Europe has undergone a number of changes during the 20th century, which have also influenced migratory policies in these countries. Importance of the policy is particularly important in the context of the migration crisis that has hit Europe. The European Union and the Member States had to respond to the situation. Without the laws and other necessary measures, it would not be possible to correct the status of foreigners on our territory or create suitable conditions for their integration. The security aspect and the importance of integration will be analysed. It deals with the issue of integration of foreigners into society

### **Keywords**

Integration Policy. Foreigners. Migration. Migration policy.  
JEL Classification codes F22, J61.

## **1 Introduction**

Migration of people is becoming more and more accessible; it is due to technological advances and the modernization of transport. Despite the benefits of the process which brings mainly for labour market, this process is linked to many negative issues, particularly in the form of security. Europe for centuries has been an emigrant continent. The migration balance began to reverse after the Second World War. Today, the countries of Europe are primarily immigration countries, and it is necessary to regulate and control the movement of people across borders. Straubhaar and Zimmermann (1993) mention the motives of economic migration that are attractive to migrants and refugees. In addition to demographic potential, these are also high economic standards and an increasing gap in economic growth between less developed countries and EU countries. Migration and the process of relocation of people are also important in Europe with regard to the Schengen area and the right to free movement of persons and the free movement of labour in its territory. The development of the European Union's migration policy is influenced by the economic and social situation, but it must also respond to political aspects. In recent years, migrations have often been linked to the migration crisis caused by the mass of refugees from the Asian and African continents that are coming to Europe to start a new life. Nowadays, states are forced to respond to the current migration situation. In connection with migration, attention must also be paid to the integration of foreigners. If the state wants to continue to maintain its economic development and society without serious cultural conflicts, it is important to have an effective integration program.

This article focuses on aspects of EU migration policy. It deals with the issue of integration of foreigners into society in the context of security. With regard to data availability, the article will analyse the period from 2008 to 2015 in the member states of the European Union. The aim of the article is to analyse migration and integration policy and to confirm or rebut the hypothesis that concerns security and growing fears of increasing in foreigners' crime; that is, with the increasing number of asylum applications, the rate of crime is rising in the EU Member States.

## 2 Migration

In addition to birth rates and mortality, migration is a key element of population development. It affects cultural and social change. Importance in the 20th century has risen sharply and the volume of migrants has multiplied. The process of migration is currently conditioned by globalization trends that have facilitated population shifts, feminisation of the migration flow, increasing the number of women migrating at work and taking account of security risks. Migration can be viewed from many perspectives. At the highest level, we can divide the intercontinental migration between the continents and intracontinental, if it is a migration between states on the territory of one continent. At a lower level, we can distinguish between international migration, ie migration between states and interregional, when migration flows comes between regions of one country (Brožová, 2012).

Migration is referred to in the literature as the mechanical movement of the population Lee (1966) defines migration very commonly as a permanent or temporary change of residence without specifying the requirements of distance movement, voluntary or essential whether international or interregional migration is concerned. Migration can be divided according to number of aspects. For the purposes of the thesis, the classification will be further used division according to the administrative-legal status in the host country. Appleyardd (1992), Rogers (1992) distinguish legally admitted immigrants, legally admitted temporary immigrants, temporarily legally qualified immigrants with higher qualifications, illegal immigrants, asylum seekers and refugees. Migration can also be broken down in terms of causes, and they are mainly based on the approach to migration. Migration theory attempts to describe the aspects of the migration process in a broader context. Mainly in the context of migrant integration into the new environment and its adaptation to new living conditions. Systematic analysis of migratory determinants begins to be dealt with by experts at the turn of the 19th and 20th centuries. Migration ceases to be seen only as a process of moving people from one place to another, but migration is associated with the issue of social ties left by the migrant in the source country and linking new ones to the target area. The founder of migration theory is Ravenstein (Corbett, 2010). He examined the regularity of moving people to London at the end of the 19th century. In addition to economic connections, migration has also been associated with other considerations, and the classical migration model that stood at the outset of migratory theories and which is based on many assumptions and its application to the real environment is very low, has begun to be expanded. The classical model was followed by neoclassical theory. Based on the level of research, these theories can be divided into theories dealing with micro level and theory at the macroeconomic level. Theories examining the macroeconomic level of migration address the causes of migration in terms of macroeconomic indicators in social, institutional, economic and geographic contexts. (Drbohlav, 2001) Macroeconomic theories deal with the differences in supply and demand for labour, when migrants leave less economically advanced areas with labour surpluses in areas with advanced labour shortages.

For example, Harris and Todaro in *Migration, Unemployment and Development: Two Sector Analysis* (Harris, Todaro, 1970) looked at the causes of high migration from developing, rural areas to industrial centres by analysing migration between developmental and advanced areas. Öberg (Öberg, 1995) described the theory of migration based on different wage rates as the fundamental law of interregional migration, which leads to the equalization of demand and supply on the labour markets in individual regions. Micro-level theories are based on an appreciation of the benefits of migration from the point of view of an individual. These approaches are based on a situation where an individual compares the cost of migration with the benefit he / she gains from moving. For example, a model of human capital that assumes that an individual is influenced by his / her own experience, the environment in which he / she



lives, personality attributes, and everyone evaluates the cost of migration and benefit individually. The theoretical basis of the human capital model was created in the 1960s. Sjaastad considered the main determinant of migration to be able to benefit from investment in human capital. His work followed the theoretical conclusions of Hick's of the 1930s. Sjaastad's model was subsequently extended by Todar, an increase in the number of factors influencing migrations over the length of the time period in which the migrant finds work in the new region, an indicator correlated with the unemployment rate in the region

### **3 Migration and Integration Policy in European Union**

Migration policy is a relatively young policy of the European Union, today is one of the most dynamic emerging policies. Cooperation on migration policy began in the early 1970s as a result of a series of terrorist attacks. (Fiala, Pitrova, 2009) Later, it responded to the immigration waves from Central and Eastern Europe in the 1990s. The Dublin Convention, the Convention determining the State responsible for examining asylum applications lodged in one of the EC Member States, has been established in order to guarantee every asylum seeker that only one Member State will examine its request and take a final decision. After the adoption of the Treaty of Amsterdam, it became part of the first pillar in 1999. The European Union adopted Regulation 343/2003 establishing a European electronic database of fingerprints for asylum seekers, foreigners detained while illegally crossing external borders, as well as aliens detained illegally in the EU. This has made it easier to check asylum applications. This was largely because the need for a common and comprehensive approach to the issue was emphasized. Migration policy should not only focus on combating illegal forms of migration and its consequences but also help to harness the benefits of legal migration.

Well-managed legal migration should benefit both third countries (their development) and the EU (flexible matching of the labour market needs in certain sectors and coping with unfavourable demographic developments, thus enhancing economic growth and competitiveness of the EU.) In 1999, there is a demand to develop a common European Asylum and Migration Policy that includes four aspects: partnership with countries of origin, a common asylum system based on the Geneva Convention, fair treatment of third-country nationals and management of migratory flows, and the concept of a global approach to migration, its main idea was to strengthen cooperation and dialogue with third countries, in particular Africa and the Mediterranean. A Blue Card Institute has been set up to make it easier and easier to obtain work permits for third-country workers In 2008, the European Council endorsed the European Pact on Immigration and Asylum, which sets out a unified approach to the management of immigration and asylum. Many experts have criticized this pact for too much emphasis on security and not on the human rights and economic needs of the European Union (Kavanova, 2008). Other changes in the area of migration policy have been brought about by the Treaty of Lisbon. The Treaty of Lisbon repealed the three pillar arrangements of the European Union. The Treaty of Lisbon defines the main objectives of EU migration policy - effective management of migratory flows, fair treatment of third-country nationals lawfully residing in the Member States, prevention and fight against illegal migration and the fight against trafficking in human beings. The aim is to suppress the abuse of disparities between national asylum systems and to ensure equal protection for all applicants. The aim of the common immigration policy is to ensure effective management of migratory flows, fair treatment of third-country nationals and the fight against illegal immigration.

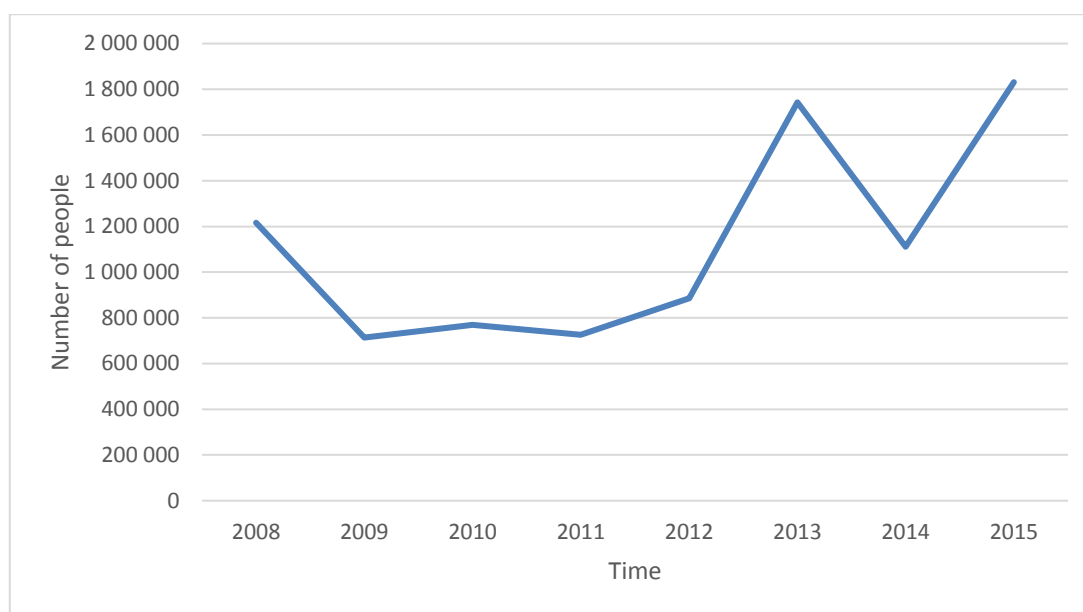
Integral policy is an important part of migration policy. The area of integration falls exclusively within the competence of the Member States. However, the EU is also paying

attention to it, because national approaches need to be coordinated, one country's failure may negatively affect other Member States. The goal of integration policy is to support the process of integrating immigrants into host societies. The prerequisite for successful integration of the alien into the host society is the mutual understanding of often different cultures and values. For the success of integration, it is necessary for the immigrant to adapt to the rules of the country, and the home country has provided space for expression of immigrant culture, allowing access to education or employment. The second aspect of the EU integration policy enshrined in the Lisbon Treaty is also to build a common European asylum system. The target group for integration is primarily citizens from non-EU countries who are legally resident in the EU. An important document is the European Pact on Migration and Asylum, adopted in 2008. It represents a comprehensive plan to harmonize EU asylum and migration policies.

The relationship between immigration and immigration policies is defined, for example, by Barša and Baršová (2005). According to the authors, immigration policy includes immigration and integration policies, asylum, border control, visas, tourism, seasonal work, etc. The immigration policy aims to determine the conditions under which foreigners can stay in the host country in the long term or permanently. Integration policies follow on immigration. Drbohlav (2001) defines three approaches to integration. The first is a discriminatory model that immigration perceives as temporary, and therefore there is no room for the development of integration. The second model is an assimilation model, foreigners are perceived as equal members of society, provided they are assimilated into society. The third model is a multicultural model. It treats immigrants as culturally diverse communities, perceives and supports their differences. Migration policy is currently based on the convergence of these models. Immigrants often concentrate on ethnic enclaves so that mass societies and communities can help ease adaptation. Successful economic and cultural integration leads to the abandonment of the community and the inclusion of the majority in society.

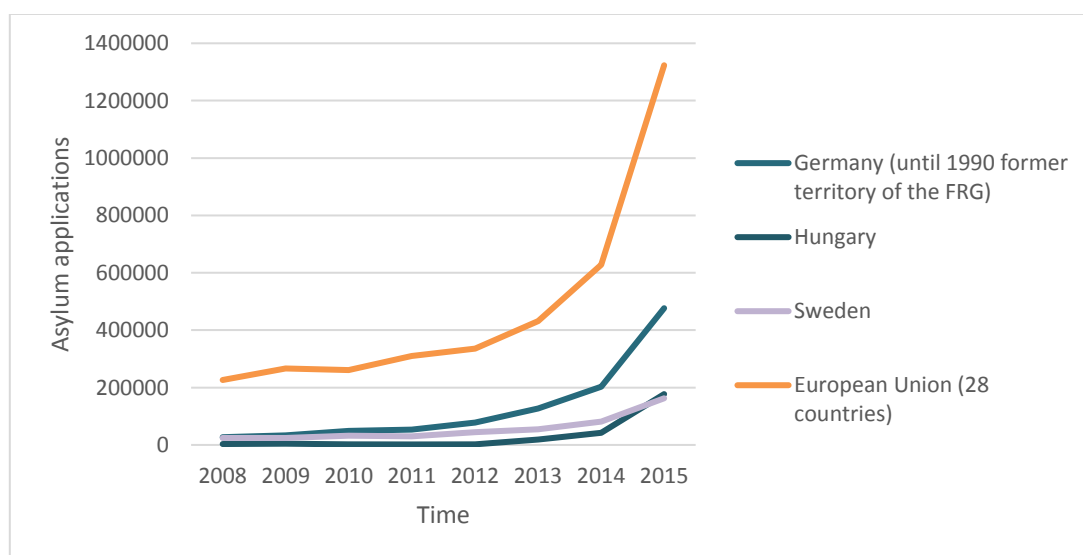
#### **4 Foreigners in the European Union**

During the second half of the 20th century, the countries of the European Union have faced a number of migratory flows that have taken place within the Union, despite its external borders. In particular, the external flows were shifting the population from the backward south to the northern countries and from the east to the west. In particular, the people of the European Union were targeted by post-communist countries, with an increased interest in the less developed countries. This was mainly about migration for economic and labour reasons. The people who came to the Member States were employed in less paid and less qualified work. Recently, the nature of migration has changed and Member States are facing an influx of people from African and Asian countries who are seeking asylum. The development of the number of foreigners in the European Union since 2008 is shown in the graph in Fig. 1. During the monitored period, the lowest number of immigrants in 2009 was 713 thousand people. It was in the immediate aftermath of the economic crisis when foreigners had to leave the host country because of the loss of employment. Since 2012, the number of foreigners has been rising sharply. In 2015 in the European Union lived 1 831 thousand of foreigners.



**Fig. 4** The number of foreigners (Source: Eurostat, 2017)

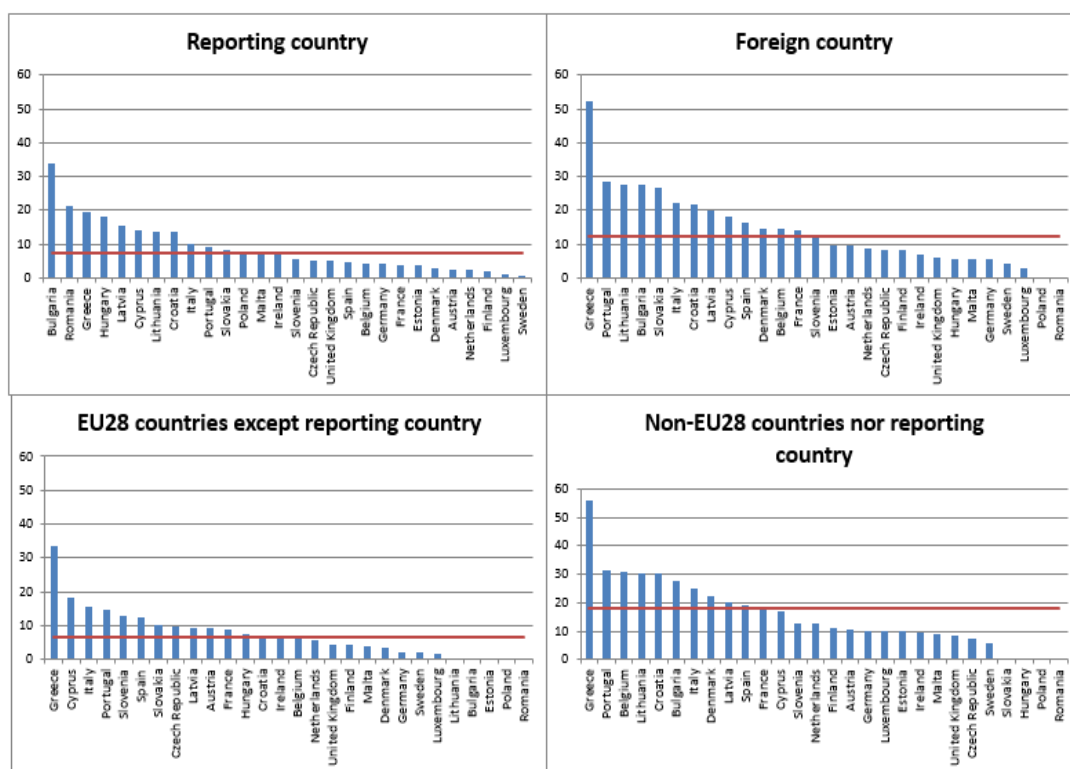
The graph of Fig. 2 shows the development of the number of asylum applications in the years 2008 to 2015 in the European Union. The number of asylum applications climbed from 226 thousand in 2008 to 1,323 thousand in 2015. The most significant increase was recorded in Germany (its share on all applications was 36 % in 2015), Hungary (13 % of all applications in 2015) and Sweden (12 % of all applications in 2015).



**Fig. 2** The number of asylum applications (Source: Eurostat, 2017)

For successful integration, an immigrant must be adapted to the country's rules, and the home country has provided scope for expressing immigrant culture, enabling access to education and employment. The economic and social aspects of immigration have become increasingly important in Europe. The European Union publishes an assessment of immigrant integration according to migrant integration indicators on Eurostat. These indicators follow the following

four areas, social inclusion, education, employment and active citizenship. For the next analysis, the material deprivation rate will be selected from the area of social inclusion. The countries of the European Union are compared in Fig. 3 with this index in terms of citizenship. The comparison shows that foreigners are affected by a higher degree of material deprivation than people with the nationality of the country. Comparing aliens from other EU Member States and third countries, a higher index value is recorded for third-country nationals. The amount of earnings, wages and the economic situation of migrants has been the subject of a number of analyzes. Barry R. Chiswick (1978) was involved in the relationship between men's earnings and the country of origin. He analyzed the relationship between the amount of earnings and the place of birth. Connectivity explored in the 1970s in America. The results show that an important attribute is labor market time. Immigrants are starting to work on the labor market at a lower wage than the indigenous population, but their earnings grow over the course of their lives and increase their experience faster. The question also arises the impact and importance of immigration on the level of earnings and the labor market situation for the domestic population. This question was dealt with by Ottaviano and Peri (2012). Based on the 1990-2006 data in America, it turned out that this effect is small. Similar situation in Great Britain was analyzed by Dustmann, Hatton and Preston (2005). With regard to the tightening of conditions for the employment of foreigners in the European Union and to the value of the deprivation index in reporting country, similar conclusions can also be expected on the European continent. Borjas (1987) adds that the amount of the immigrant's earnings also depends on the conditions, economic and political situation in the country from which the migrant comes.

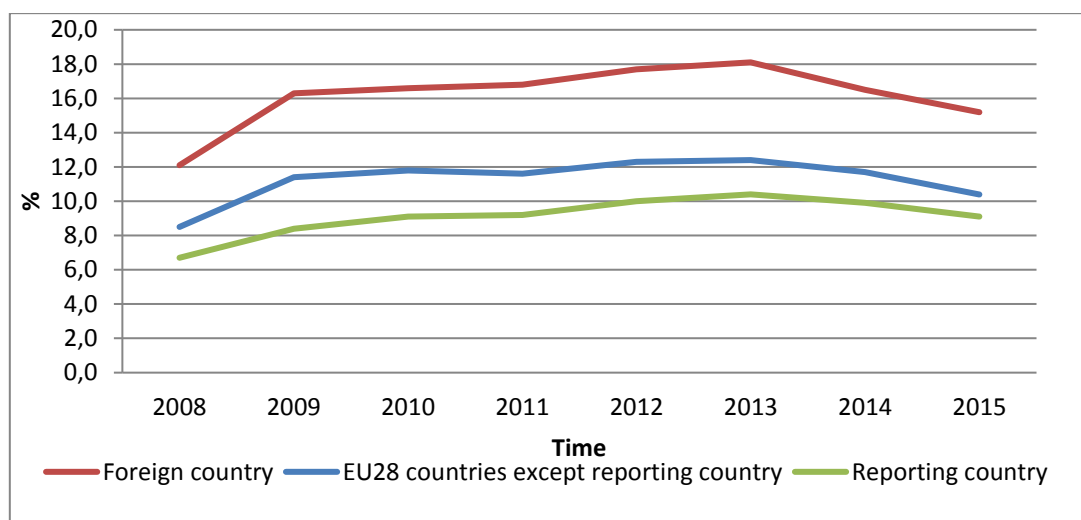


**Fig. 3** Material deprivation rate (Source: Eurostat, 2017)

An important attribute of integration is also education. The JRC Research Center (European Commission, 2017) published in december a study comparing the situation of

foreigners in EU countries. It is clear from its outcomes that the compulsory foreigners in the school are worse off compared to their classmates from the majority. However, in terms of labour market employment, immigrants are better off than the low-skilled domestic population. The problem remains that even highly qualified immigrants, compared with the majority often perform low-skilled jobs. The problem of brain drain has been dealt with, for example, by Docquier (2006).

The situation in the labour market is illustrated in Fig. 4. It compares the unemployment rate according to the nationality of the foreigners and the host country. Although the unemployment rate in selected categories is declining, the unemployment rate of foreigners from third countries is 6% higher than that of domestic residents and about 4% higher than that of non-EU nationals.



**Fig. 4** Unemployment rate (Source: Eurostat, 2017)

The analysis pointed on the differences in status of foreigners from member states from EU and from the third countries. The problem is also connected which integration of foreigners from third countries to the society, from their education, language.

The economic and social aspects of immigration have become increasingly important in Europe. Crime perpetrated by foreigners has a particular impact on the perception and position of foreigners in host areas. Becker (1968), Ehrlich (1973) have pointed out that crime is motivated mainly by economic factors and has drawn up a model of choice between crime and labour. People, according to this theory, decide whether to engage in criminal activity on the basis of a comparison of expected crime benefits and expected costs. Immigrants face worse economic conditions, so they can be more susceptible to criminal behaviour than the domestic population.

The following analysis will address the security attribute and will examine the relationship between the number of asylum applications, net migration and crime in the country.

The analysis of the relationship between the number of asylum applications and criminality will be done by means of a correlation analysis, by which the dependence of both variables will be tested and quantified. The correlation analysis will be compiled in statistical software Statistics 12. The analysis will be carried out at the level of the countries, ie the Member States of the European Union. The statistics will include indicators, the number of asylum applications per capita and number of crime per capita. Net migration will be add to the analysis for more

holistic view on the situation. The analysis will be performed for the data from 2015 and they will be drawn from Eurostat. Based on the tests performed on the normal probability distribution, the Spearman correlation coefficient defined by (Hindls, 2006) was used for the correlation analysis (1):

$$r_{i_x r_{i_y}} = 1 - \frac{6 \sum (i_x - i_y)^2}{n(n^2 - 1)} \quad (1)$$

where  $i$  expresses the sequence number of the variable in the ordered row and  $n$  is the number of cases. The results of the correlation coefficient are from -1 to 1, and if the correlation coefficient is close to +1, it can be concluded that there will be a strong direct dependence between the quantities and, if close to -1, there will be a strong indirect dependence among the variables. If the coefficient is equal to 0, the dependence between the quantities does not exist. The results of the correlation analysis are shown in Tab. 1.

The conclusion of the correlation analysis shows that there is a dependence among the variables. The dependence is statistically significant. It means that with the increasing number of asylum applications, the number of crimes per capita is increasing. Also higher net migration is in positive correlation with crime. Although the correlation analysis is statistically significant, it must be said that only the qualitative aspect is not decisive, the criminal behaviour will be influenced by a number of other factors, age, education, employment, integration process. It could be object of other analysis.

**Tab. 3** Results of correlation analysis

Variable	Net migration	Asylum application	Crime
Net migration	1,00	0,72	0,79
Asylum application	0,72	1,00	0,62
Crime	0,79	0,62	1,00

Source: Eurostat, 2017

## 5 Conclusion

This article deals with the analysis of aspects of migration and integration policy in the countries of the European Union. Different European countries have developed different approaches to managing international migration in the past. The reason was the difference between migratory flows, social conditions, but also political traditions and cultures. During the second half of the 20th century, the pressure to build common immigration policy principles has been stepped up. Areas where cooperation at EU level is already developed include joint border control, asylum unification or permanent residence permits. In addition, in recent years, it has sought to work together in the field of labour migration management, tackling the problem of the presence of irregular migrants or cooperating with third countries in order to better link migration and development.

Integration policy is an integral part of migration policy. Its importance has gained importance in recent years. Compared to migration policy, integration does not affect EU law to such an extent, and Member States have considerable autonomy in this area. The European

Union, in the context of integration, publishes a number of indicators that assess the level of involvement of foreigners in society. Some indicators were selected for the purposes of work, so that all areas of interest were affected. The conclusions show that a higher degree of integration into society is reported by foreigners arriving in the host country from other EU Member States than those coming from third countries. An important aspect of migration is also security. The second part of the analysis was concerned with the number of foreigners and security. The correlation analysis confirmed the positive dependence between the variables. The present article provides only a basic overview of the development of the number of foreigners in the European Union in recent years and points to the main aspects of migration.

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## DLOUHODOBÁ NEZAMĚSTNANOST VE VYBRANÉ MĚSTKÉ ČÁSTI OSTRAVY LONG-TERM UNEMPLOYMENT IN SELECTED MUNICIPAL PART OF OSTRAVA

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### **Abstract**

Long-term unemployment is considered to be one of the biggest labour market problems. The aim of the article is to evaluate long-term unemployment in the selected municipal part of Ostrava and to identify the risk factors that determine this long-term unemployment. Data for the article were used from sources of the Labour Office of the Czech Republic. More than two thirds of the total number of unemployed are after factual adjustment of long-term unemployment in the selected municipal part long-term unemployed, that showed the results of the research. The risk factors that determine long-term unemployment are health restrictions, higher age, low education, care for a child under 15 years of age. This factors determine long term unemployment not only separately but also in mutual combination.

### **Keywords**

Labour market, Unemployment, Exclusion.  
JEL J29, J64, J21

## **1 Úvod**

Dlouhodobá nezaměstnanost bývá považována za jeden z největších problémů trhu práce, toto téma nabývá na intenzitě v době ekonomické konjunktury, kdy ze strany poptávky trhu práce je zaznamenán akutní nedostatek pracovníků, přestože Úřad práce České republiky eviduje značné množství dlouhodobě nezaměstnaných. Předmětem tohoto příspěvku je dlouhodobá nezaměstnanost a determinanty dlouhodobé nezaměstnanosti. Placená účast, respektive neúčast na trhu práce má v dnešní době velmi významný vliv nejen na možné riziko chudoby, ale také na další dimenze sociálního vyloučení, neboť účast na trhu práce je zahrnuta do okruhu širších sociálních vazeb.

Cílem příspěvku je zhodnotit dlouhodobou nezaměstnanost ve vybrané ostravské městské části a určit rizikové faktory, které tuto dlouhodobou nezaměstnanost determinují.

Struktura článku se skládá z pěti kapitol. Druhá kapitola obsahuje zdroje dat a metody použité v tomto článku. Výsledky budou uvedeny v kapitole třetí a čtvrté, nejdůležitější poznatky budou shrnuty v závěru.

## **2 Rešerše literatury**

Brožová (2012) definuje dlouhodobě nezaměstnané jako osoby, které jsou nezaměstnané více než jeden rok. Takové osoby přicházejí o pracovní zkušenosti, neboť nejsou v kontaktu se svým oborem působnosti, a to vede k zaostávání jejich teoretických i praktických dovedností v daném oboru. Dlouhodobá nezaměstnanost tak vede k zastarávání lidského kapitálu. Becker (1994) definuje lidský kapitál jako souhrn vlastností, dovedností a znalostí získaných během života, a to studiem, pracovním výcvikem nebo zkušenostmi. Lidský kapitál lze rozdělit na specifický, který je možno využít pouze v konkrétním podniku a kapitál obecný, který je možno využít ve více typech zaměstnání. Dlouhodobá nezaměstnanost vede k zaostávání obou složek lidského kapitálu, jak uvádí Becker (1997). Dlouhodobá nezaměstnanost ve svém konečném

důsledku vede k situaci, kdy se osoby dlouhodobě nezaměstnané stávají osobami nezaměstnatelnými.

Dlouhodobě nezaměstnaní, kteří byli původně nedobrovolně nezaměstnanými, se postupně stávají dobrovolně nezaměstnanými a zvyšují přirozenou míru nezaměstnanosti. Dlouhodobě přetrvávající vysoké míry nezaměstnanosti vedou ke zvýšení přirozené míry nezaměstnanosti v budoucím období, tento jev se nazývá hystereze trhu práce. Fakt, že dlouhodobá nezaměstnanost neklesá i v době ekonomického růstu je projevem hystereze na trhu práce. Počet dlouhodobě nezaměstnaných zůstává v čase poměrně stabilní a podíl dlouhodobě nezaměstnaných se pak vyvíjí opačným směrem než hospodářský cyklus. V konjunkturální fázi ekonomického cyklu se tak celková míra nezaměstnanosti snižuje, zatímco podíl dlouhodobě nezaměstnaných roste. Za této situace je potom aktivní politika zaměstnanosti, která je zaměřená na zvyšování poptávky po práci tvorbou nových pracovních míst, neúčinná a vede pouze k inflačním tlakům a rozpočtovým deficitům (Šimek, 2015).

Nezaměstnanost, zvláště ve své masové podobě, která se objevovala v krizových obdobích minulého století, vyvolávala podle Mareše (2002) otázku, jestli nezaměstnaní netvoří vlastní specifickou sociální třídu neboli deklasovanou vrstvu. Skupina nezaměstnaných je však natolik heterogenní, rozdílná nejen svými sociálními charakteristikami a svým postojem k nezaměstnanosti, že nelze hovořit o specifické sociální skupině. Určité skupiny, a to především mladí a dlouhodobě nezaměstnaní sice mají tendence ztotožňovat se s nezaměstnanými, avšak u starších pracovníků je tendence i po propuštění ztotožňovat se se svou bývalou profesí. Nezaměstnanost s sebou přináší sociální stigma a tendence nezaměstnaných je spíše snažit se tuto skupinu opustit, a ne se s ní identifikovat. Nezaměstnané tak nelze označit jako jednu sociální třídu. V současné době hovoříme tedy o nové deklasované vrstvě. Jako charakteristiky této nové deklasované vrstvy jsou považovány dlouhodobá nezaměstnanost, přerušovaná pracovní kariéra, trvalé uplatnění na sekundárním trhu práce a závislost na sociálních dávkách. Kritériem odluky nové deklasované vrstvy od společnosti je povaha jejího příjmu, kdy se jedná o sociální příspěvky v různé formě, a ne o placené zaměstnání. Nová deklasovaná vrstva se tak neformuje jako ucelená společenská skupina. Nová deklasovaná vrstva vyvolává nezáměr k vlastnímu osudu a pocit odloučení od společnosti a hodnot, které v ní převládají, a je zdrojem ohrožení integrity, sociální koheze a zpochybnění identity jejích členů.

Šimek a Balcar (2009) analyzovali dlouhodobě nezaměstnané v Moravskoslezském kraji, kdy jako datový zdroj sloužili nezaměstnaní evidovaní v tomto kraji k 30. 6. 2009. Do vlastní podrobné analýzy bylo zahrnuto 21653 dlouhodobě nezaměstnaných. Autoři došli k závěru, že osobní charakteristiky jsou extrémně významnými faktory, které ovlivňují riziko dlouhodobé nezaměstnanosti. Atribut, jenž představuje skutečnost, že osoba vyžaduje zvláštní pomoc, zvyšuje pravděpodobnost dlouhodobé nezaměstnanosti o 50 %. Zdravotní postižení zvyšuje tuto pravděpodobnost o téměř 30 % a taktéž péče o nezaopatřené dítě zvedá pravděpodobnost rizika dlouhodobé nezaměstnanosti o 30 %. Mezi další významné atributy poté patří vzdělání, pohlaví a věk.

### 3 Metody a data

Pro účely tohoto článku budou použita data, která ze své interní databáze poskytl Úřad práce ČR. Jedná se o data, která obsahují informace o evidovaných uchazečích o zaměstnání, kteří byli evidováni k 31. 7. 2017 jako uchazeči o zaměstnání na ÚP ČR a mají trvalé bydliště v ostravské části Mariánské Hory a Hulváky. Základní soubor, který byl použit k analýze dlouhodobé nezaměstnanosti, obsahuje anonymizované údaje o 765 osobách. Charakteristiky těchto osob jsou součástí tabulky 1. Městská část Mariánské Hory a Hulváky byla vybrána z

důvodu toho, že patří mezi středně velké městské části a vzhledem k nutnosti úpravy dat ručně se jedná o vhodnou městskou část, kdy ostatní části jsou buď velmi malé, nebo naopak poměrně velké a ruční úprava dat by byla časově velmi náročná.

V článku budou použity 2 ukazatele dlouhodobé nezaměstnanosti, a to dlouhodobá nezaměstnanost a upravená dlouhodobá nezaměstnanost. Ukazatel dlouhodobé nezaměstnanosti je oficiální ukazatel ÚP ČR, který za dlouhodobě nezaměstnaného považuje uchazeče o zaměstnání, který je evidovaný déle než 12 měsíců. Tento oficiální ukazatel vychází pouze z poslední evidence uchazeče o zaměstnání. Ukazatel upravené dlouhodobé nezaměstnanosti na rozdíl od oficiálního ukazatele reflektuje předchozí historii na ÚP ČR a zohledňuje v sobě tak opakovanou nezaměstnanost. V článku tedy budou analyzovány všechny osoby, které byly evidovány jako uchazeči o zaměstnání k 31. 7. 2017 a nejsou vedeny jako osoby dlouhodobě nezaměstnané. Tento postup vyžaduje analýzu komplexního záznamu uchazeče o zaměstnání, zejména jeho evidenční historie na ÚP ČR, textového záznamu a poznámek, které byly vytvořeny jednotlivými pracovníky zprostředkování zaměstnání. Vzhledem k časové náročnosti analýzy záznamů jednotlivých uchazečů o zaměstnání byla tedy vybrána městská část Mariánské Hory a Hulváky, která se pro účely tohoto článku jevila jako nejvhodnější.

Tato data budou zpracována pomocí statistické deskripce a kontingenčních tabulek, které umožňují zobrazit vzájemný vztah dvou a více statických znaků pomocí tabulky, nebo grafického aparátu. Kontingenční tabulky slouží kromě popisu četností jednotlivých kombinací dvou a více statistických znaků také k testování statistických hypotéz (Hendl, 2015).

**Tab. 1** Charakteristiky uchazečů o zaměstnání evidovaných k 31. 7. 2017 na ÚP ČR s trvalým bydlištěm v městské části Mariánské Hory a Hulváky

Charakteristika	Muži	Ženy	Celkem	Podíl (Celkem)
<b>Počet (osoby)</b>	388	377	765	100,0 %
<b>Délka evidence</b>				
do 30 dnů	32	29	61	8,0 %
do 1 roku	171	143	314	41,1 %
nad 1 rok	185	205	390	51,0 %
<b>Vzdělání</b>				
Bez vzdělání	3	1	4	0,5 %
Neúplné základní	6	7	13	1,7 %
Základní + praktická škola	167	170	337	44,1 %
Nižší střední odborné	12	13	25	3,3 %
Střední odborné (vyučen)	129	103	232	30,3 %
ÚSV	10	9	19	2,5 %

ÚSO (vyučení s maturitou)	10	9	19	2,5 %
ÚSO s maturitou (bez vyučení)	27	45	72	9,4 %
Vyšší odborné	1	2	3	0,4 %
Bakalářské	6	6	12	1,6 %
Vysokoškolské	15	11	26	3,4 %
Doktorské (vědecká výchova)	1	0	1	0,1 %
Neuvedeno	1	1	2	0,3 %
<b>Příslušnost k rizikové skupině</b>				
Fyzické osoby do 25 let	14	8	22	2,9 %
Fyzické osoby nad 50 let	148	117	265	34,6 %
Absolventi	11	6	17	2,2 %
Fyzické osoby, které potřebují zvláštní pomoc	11	5	16	2,1 %
Zdravotně postižení, nebo jiné zdrav. omezení	190	149	339	44,3 %
Těhotné, kojící ženy a matky do 9 měsíce po porodu	0	15	15	2,0 %
Fyzické osoby pečující o dítě do 15 let	4	136	140	18,3 %
Osoby s nízkým vzděláním (A - E podle KKO V)	189	191	380	49,7 %

Zdroj: Úřad práce (2017), vlastní úprava

#### 4 Dlouhodobá nezaměstnanost

Tabulka 2 zobrazuje absolutní a relativní počty nezaměstnaných (celkem za obě pohlaví), a to před a po analýze osobních záznamů jednotlivých uchazečů o zaměstnání, kteří byli evidováni na ÚP ČR k 31. 7. 2017 a zároveň měli trvalé bydliště v ostravské městské části Mariánské hory a Hulváky. Ukazatel nezaměstnanosti ukazuje, že podíl frikčně nezaměstnaných, tedy osob, jejichž evidence byla do 30 dnů, je 8,0 %. Dlouhodobě nezaměstnaných bylo 51,0 %, zbytek připadl na osoby, jejichž délka evidence na ÚP ČR byla v rozmezí od 31 dnů do 1 roku. Ukazatel upravené nezaměstnanosti ukazuje, že podíl frikčně nezaměstnaných je 5,4 %, podíl frikčně nezaměstnaných tedy poklesl o 2,6 procentních bodů. Počet osob nezaměstnaných v rozmezí od 31 dnů do jednoho roku poklesl na 25,0 %, tedy o 16,1 procentních bodů. Naproti tomu počet dlouhodobě nezaměstnaných vzrostl o 18,7 procentních bodů, v absolutním vyjádření se tedy jedná o 143 dlouhodobě nezaměstnaných, jejichž délka poslední evidence byla méně než jeden rok, avšak při zohlednění předchozí historie na ÚP ČR byli nezaměstnaní déle než je tato hranice, která určuje dlouhodobou nezaměstnanost. Z hlediska osobních charakteristik těchto 143 osob, které věčně spadají do dlouhodobé nezaměstnanosti, se jedná o velmi obtížně umístitelné osoby, neboť zpravidla byla jejich evidence přerušena z důvodu sankčního vyřazení ze strany ÚP. K sankčnímu vyřazení se přistupuje v případě neplnění povinností uchazeče. Vzhledem k faktu, že tyto uchazeči nebyli

schopni splnit elementární povinnosti, které jim stanovil ÚP, je velmi pravděpodobné, že uplatnění těchto osob na trhu práce bude poměrně nízké, neboť povinnosti plynoucí pro zaměstnané osoby jsou značně převyšující povinnosti nezaměstnaného evidovaného na ÚP.

**Tab. 2** Nezaměstnanost a upravená nezaměstnanost uchazečů o zaměstnání evidovaných k 31. 7. 2017 na ÚP ČR s trvalým bydlištěm v městské části Mariánské Hory a Hulváky

Délka evidence	Nezaměstnanost	Podíl (N)	Upravená nezaměstnanost	Podíl (UN)
do 30 dnů	61	8,0 %	41	5,4 %
do 1 roku	314	41,1 %	191	25,0 %
nad 1 rok	390	51,0 %	533	69,7 %

Zdroj: Úřad práce (2017), vlastní úprava

Tabulka 3 zobrazuje charakteristiky dlouhodobě nezaměstnaných (DN) a upravených dlouhodobě nezaměstnaných (UDN), sloupec podíl poté zobrazuje podíl u jednotlivých ukazatelů dlouhodobé nezaměstnanosti. Rozdíl v relativním vyjádření vzhledem ke vzdělanosti je u obou ukazatelů vcelku minimální, naopak rozdíl je vidět u obou ukazatelů s přihlédnutím k příslušnosti k jednotlivým rizikovým skupinám na trhu práce. U fyzických osob nad 50 let pokleslo relativní vyjádření jejich zastoupenosti v rámci dlouhodobé nezaměstnanosti ze 45,9 % na 38,7 %, což představuje pokles o 7,2 procentních bodů. Obdobně je tomu u osob s nějakou formou zdravotního omezení, tady se jedná o pokles z 61,3 % na 52,2 %, tedy o 9,1 procentních bodů. Vzhledem k výše uvedenému je tedy možné, že osoby starší 50 let a osoby s nějakým druhem zdravotního omezení plní povinnosti ÚP a nejsou sankčně vyřazovány v takové míře. Naopak relativní nárůst je sledován u osob s nízkým vzděláním, a to nárůst o 3,2 procentních bodů, což by mohlo znamenat, že tyto osoby mají problémy s plněním základních povinností, která jsou ÚP stanovena, respektive s plněním ostatních povinností. Rovněž je obsažena v upravené dlouhodobé nezaměstnanosti skupina osob, která nepatří do žádné rizikové skupiny a dlouhodobá nezaměstnanost těchto osob tkví především v jejich osobnostních rysech.

**Tab. 3** Charakteristiky dlouhodobě nezaměstnaných a upravených dlouhodobě nezaměstnaných uchazečů o zaměstnání evidovaných k 31. 7. 2017 na ÚP ČR

Charakteristika	DN	Podíl na DN	UDN	Podíl na UDN
<b>Počet (osoby)</b>	390	100,0 %	533	100,0 %
<b>Vzdělání</b>				
Bez vzdělání	1	0,3 %	2	0,4 %
Neúplné základní	5	1,3 %	12	2,3 %
Základní + praktická škola	198	50,8 %	277	52,0 %
Nižší střední odborné	8	2,1 %	15	2,8 %
Střední odborné (vyučen)	114	29,2 %	155	29,1 %
ÚSV	7	1,8 %	9	1,7 %
ÚSO (vyučení s maturitou)	10	2,6 %	12	2,3 %
ÚSO s maturitou (bez vyučení)	29	7,4 %	31	5,8 %
Vyšší odborné	0	0,0 %	0	0,0 %
Bakalářské	3	0,8 %	4	0,8 %
Vysokoškolské	12	3,1 %	13	2,4 %
Doktorské (vědecká výchova)	1	0,3 %	1	0,2 %
Neuvedeno	2	0,5 %	2	0,4 %
<b>Příslušnost k rizikové skupině</b>				
Fyzické osoby do 25 let	6	1,5 %	13	2,4 %
Fyzické osoby nad 50 let	179	45,9 %	206	38,7 %
Absolventi	0	0,0 %	4	0,8 %
Fyzické osoby, které potřebují zvláštní pomoc	16	4,1 %	16	3,0 %
Zdravotně postižení, nebo jiné zdrav. omezení	239	61,3 %	278	52,2 %
Těhotné, kojící ženy a matky do 9 měsíce po porodu	3	0,8 %	11	2,1 %
Fyzické osoby pečující o dítě do 15 let	88	22,6 %	113	21,2 %
Osoby s nízkým vzděláním (A - E podle KKO)	213	54,6 %	308	57,8 %

Zdroj: Úřad práce (2017), vlastní úprava

## 5 Dlouhodobá nezaměstnanost rizikových skupin

Kapitola 5 bude pracovat již pouze s upravenými dlouhodobě nezaměstnanými. Jednotlivé rizikové skupiny byly vybrány na základně charakteristik, které sleduje ÚP. Tyto charakteristiky primárně vycházejí ze zákona 435/2004 Sb., o zaměstnanosti, ve znění pozdějších předpisů, kde se uvádí, že při zprostředkování zaměstnání se věnuje zvýšená péče uchazečům o zaměstnání, kteří ji pro svůj zdravotní stav, věk, péči o dítě nebo z jiných vážných důvodů potřebují. ÚP tedy sleduje faktory, které mají předpoklad být vážnou překážkou pro uplatnění uchazeče o zaměstnání na trhu práce, na základně těchto faktorů jsou poté definovány jednotlivé rizikové skupiny, které jsou následující:

- Fyzické osoby do 25 let,
- fyzické osoby nad 50 let,
- absolventi,
- fyzické osoby, které potřebují zvláštní pomoc,
- zdravotně postižení, nebo jiné zdrav. omezení,
- těhotné, kojící ženy a matky do 9 měsíce po porodu,
- fyzické osoby pečující o dítě do 15 let,
- osoby s nízkým vzděláním (A - E podle KKO).

Z tabulky 4 vyplývá, že se pouze u 5,6 % upravených dlouhodobých nezaměstnaných nevyskytuje žádný rizikový faktor, to tedy znamená, že 94,4 % věcně dlouhodobě nezaměstnaných má alespoň jednu charakteristiku, která může být překážkou pro uplatnění na trhu práce. Největší relativní zastoupení mají osoby, u nichž se vyskytují jeden, respektive 2 rizikové faktory, z celkového počtu věcně dlouhodobě nezaměstnaných se jedná o 34,7 % pro jeden faktor a 38,1 % pro 2 faktory. Takřka jedna pětina dlouhodobě nezaměstnaných má 3 rizikové faktory. Vazba evidence dlouhodobé nezaměstnanosti a rizikových faktorů je zobrazena v tabulce 5.

**Tab. 4** Kumulace rizikových faktorů u dlouhodobě nezaměstnaných evidovaných k 31. 7. 2017 na ÚP ČR s trvalým bydlištěm v městské části Mariánské Hory a Hulváky

Počet rizikových faktorů	Muži	Ženy	Celkem	Podíl (Celkem)
0	19	11	30	5,6 %
1	98	87	185	34,7 %
2	98	105	203	38,1 %
3	42	60	102	19,1 %
4	4	9	13	2,4 %
Celkem	261	272	533	100,0 %

Zdroj: Úřad práce (2017), vlastní úprava

**Tab. 5** Délka evidence ve vztahu k rizikovým faktorům u dlouhodobě nezaměstnaných evidovaných k 31. 7. 2017 na ÚP ČR s trvalým bydlištěm v městské části Mariánské Hory a Hulváky

Délka dlouhodobé nezaměstnanosti	Počet rizikových faktorů					
	0	1	2	3	4	Celkem
1 - 2 roky	8	38	40	17	1	104
2 - 5 let	1	49	59	24	0	133
5 - 10 let	3	33	47	33	1	117
Déle než 10 let	0	1	14	11	10	36
Upravení dlouhodobě nezaměstnaní	18	64	43	17	1	143
Celkový součet	30	185	203	102	13	533

Zdroj: Úřad práce (2017), vlastní úprava

Tabulka 6 zobrazuje kumulaci rizikových faktorů u dlouhodobě nezaměstnaných. Nejčastěji se vyskytuje rizikový faktor nízkého vzdělání, a to v 57,8 % případů. U 74 osob se jednalo pouze o tento jeden rizikový faktor, ve 127 případech se jednalo o tento faktor v kombinaci s jiným faktorem. V těchto 127 případech byla nejčastěji zastoupena kumulace nízkého vzdělání a péče o dítě do 15 let, a to ve 44 případech, v 54 případech se jednalo o kumulaci nízkého vzdělání a zdravotního postižení nebo jiného zdravotního omezení. Kumulace nízkého vzdělání s dalšími dvěma faktory se objevuje v 94 případech, nejčastěji se jednalo o kombinaci se zdravotním omezením a věkem nad 50 let, a to v 62 případech. Obdobně je tomu u osob se zdravotním postižením, kdy u 41 osob se jednalo o jediný rizikový faktor. Kumulace rizikového faktoru zdravotního omezení s jiným faktorem nastala ve 128 případech, kdy v 68 případech se jednalo o kombinaci s věkem nad 50 let, kombinace s nízkým vzděláním byla již popsána výše a jedná se o 54 případů. U kombinace zdravotního postižení s dalšími dvěma faktory se opět jedná o kumulaci s nízkým vzděláním a věkem nad 50 let, a to opět v 62 případech. Rizikový faktor vyššího věku, tedy fyzické osoby nad 50 let, byl třetí nejčastější rizikový faktor, kumulace tohoto faktoru s faktory ostatními je obdobná jako u předchozích dvou rizikových faktorů. Rizikové faktory vyššího věku, zdravotního postižení a nízkého vzdělání jsou tedy nejčastějšími a nejvýznamnějšími v návaznosti na dlouhodobou nezaměstnanost, kdy se tyto rizikové faktory v mnoha případech kombinují navzájem a dochází tak k jejich kumulaci. Tyto faktory tak determinují dlouhodobou nezaměstnanost. Významná je také kumulace nízkého vzdělání a péče o dítě do 15 let věku.



**Tab. 6** Struktura kumulací rizikových faktorů u dlouhodobě nezaměstnaných evidovaných k 31. 7. 2017 na ÚP ČR s trvalým bydlištěm v městské části Mariánské Hory a Hulváky

Rizikový faktor	Počet rizikových faktorů						
	0	1	2	3	4	Celkem	Podíl
Celkem	30	185	203	102	13	533	100,0 %
Fyzické osoby do 25 let	0	0	9	4	0	13	2,4 %
Fyzické osoby nad 50 let	0	36	88	71	11	206	38,7 %
Absolventi	0	2	1	1	0	4	0,8 %
Fyzické osoby, které potřebují zvláštní pomoc	0	0	0	7	9	16	3,0 %
Zdravotně postižení, nebo jiné zdrav. omezení	0	41	128	96	13	278	52,2 %
Těhotné, kojící ženy a matky do 9 měsíce po por.	0	1	2	6	2	11	2,1 %
Fyzické osoby pečující o dítě do 15 let	0	31	51	27	4	113	21,2 %
Osoby s nízkým vzděláním (A - E podle KKO)	0	74	127	94	13	308	57,8 %

Zdroj: Úřad práce (2017), vlastní úprava

## 6 Závěr

Výsledky analýzy osob evidovaných na ÚP v ostravské části Mariánské hory a Hulváky, ukázaly, že počet upravených dlouhodobě nezaměstnaných dosahuje takřka 70 % z celkového počtu nezaměstnaných. Vzhledem k faktu, že mezi ostatními uchazeči o zaměstnání, kteří nespádají do upravené dlouhodobé nezaměstnanosti, se nacházejí osoby, které mají podobné charakteristiky jako dlouhodobě nezaměstnaní, lze předpokládat, že tyto osoby se v následujícím časovém horizontu mohou stát osobami dlouhodobě nezaměstnanými. Za předpokladu, že obdobný stav na trhu práce se nachází v celém městě Ostrava, respektive v celém Moravskoslezském kraji je vhodné používat takové nástroje, které reflektují příčiny této dlouhodobé nezaměstnanosti a jsou schopny zmírnit dopad těchto příčin na dlouhodobou nezaměstnanost, kdy jako tyto faktory byly identifikovány zdravotní postižení či omezení, vyšší věk, nízké vzdělání, péče o dítě do 15 let věku, a to nejen samostatně, ale také ve vzájemné kumulaci mezi sebou. Toto vše ovšem platí za předpokladu, že stav, který se nachází v ostravské městské části Mariánské Hory a Hulváky je totožný, nebo podobný jako ve zbylých městských částech Ostravy, respektive v ostatních okresech Moravskoslezského kraje.

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## **CORPORATE SOCIAL RESPONSIBILITY AS A TOPIC OF ECONOMIC POLICY**

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### **Abstract**

The major source of economic policies is the state, which in order to meet its goals governs the various aspects of society. One of these aspects is corporate social responsibility. Corporate social responsibility can be identified in corporate activities aimed at caring for employees, environmental protection, ethical management, etc. Corporate social responsibility is one of the fundamental targets of the Europe 2020 strategy, and it contributes to meeting the objectives of the Treaty on the European Union concerning sustainable development. When a company takes on social responsibility, they are taking on an obligation to conduct themselves in such a manner so as to contribute to the sustainable development of the enterprise as well as of the state and society as a whole. Enterprises normally include information concerning sustainable development and corporate responsibility in their annual reports. Through economic policy instruments, the state regulates the legislative environment for businesses in terms of financial reporting, ecology and employment – the key elements of social responsibility. The objective of this paper is a quantitative analysis of the information reported in the 2015 annual reports of the largest enterprises in the Slovak Republic in terms of facts concerning social responsibility.

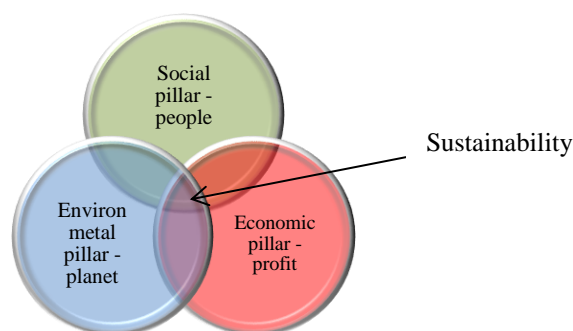
### **Keywords**

Economic policy, Corporate Social Responsibility, Sustainable Development, Annual Report.  
JEL Classification codes from the list: E60, F60, M40.

## **1 Introduction**

At present, the business situation is increasingly complex. Issues such as environmental impacts, ethical business management, poverty, education of the population, and the lack of natural resources are more frequently debated. As the creator of economic policy, the state manages different areas of society. One of these is corporate social responsibility (hereinafter CSR). Corporate social responsibility is one of the fundamental targets of the Europe 2020 strategy, and it contributes to meeting the objectives of the Treaty on the European Union concerning sustainable development. Sustainable development is a matter for the world and therefore also for individual states. Everyone contributes to sustainable development, i.e. government, enterprises, employees, but also individuals. When a company commits to social responsibility, they are committing to conduct themselves in such a manner so as to contribute to the sustainable development of the enterprise as well as of the state and society as a whole. Adoption of social responsibility in the individual countries of the European Union is based on three basic pillars, the so-called triple-bottom-line (refer with: Fig. 1):

1. social - people,
2. environmental - planet,
3. economic – profit.



**Fig. 5** Triple-bottom-line (Source: KUNZ, 2012)

The enterprise that has adopted the concept of social responsibility, is not just making profits but also takes into account the people and the environment in which it operates. These three pillars should be implemented by enterprises reporting CSR in their business processes and should become an integral part of their strategic plans.

Europe 2020 is the European Union's strategy to ensure economic growth. The Market economy and its changes have a major impact on setting the business objectives, ways to achieve them, and allocating resources. Depending on the impact of the external and internal environments, each enterprise has different needs and is trying to choose the right strategy to achieve its objectives. Five goals are set to implement the Europe 2020 objectives (refer with: Tab. 1), which need to be transformed into national targets.

**Tab. 1** Objectives of the Europe Strategy 2020

Objective		Objective description
1.	Employment	Increase the employment rate of the population aged 20-64 to 75 %.
2.	Research & Development	Increase the level of R & D investment to 3 % of EU GDP.
3.	Climate change and energy sustainability	Climate / energy should achieve the 20/20/20 targets (20 % emission reduction, 20 % renewable energy, 20 % reduction in energy consumption).
4.	Education	The proportion of early school leavers should be reduced to less than 10 % and at least 40 % of young people should have a university degree.
5.	Combating poverty and social exclusion	Reduce the number of people at risk of poverty by 20 million.

Source: VIDOVÁ, 2015.

These goals should also be implemented by enterprises in their plans as much as possible.

CSR can be defined as a concept of business that expresses enterprise orientation towards objectives and seeks to fulfil the economic, social and environmental aspects of activities where the enterprise is responsible beyond the legal standards (Németh, 2016). Corporate social

responsibility is one of the fundamental targets of the Europe 2020 strategy, and it contributes to meeting the objectives of the Treaty on the European Union concerning sustainable development. In September 2015, the document Transforming our World: Agenda 2030 for Sustainable Development (hereinafter Agenda 2030) was approved at the extraordinary United Nations (hereinafter UN) Summit in New York. Agenda 2030 sets the general framework for countries in the world to eliminate poverty and achieve sustainable development by 2030. Agenda 2030 also includes an action program from Addis Ababa approved by the UN in July 2015. (ENVIROPORAL, 2015) Agenda 2030 for Sustainable Development contains 17 sustainable development objectives of sustainable development and 169 related sub-targets for the period 2015-2030, balancing all aspects (social, environmental and economic) of sustainable development.

The implementation of these objectives involves a close co-operation between the European Union (hereinafter EU) and the state at one level, and at the same time co-operation between the state and enterprises at the second level. The European Commission works with managing authorities in EU countries and regions to promote intelligent, sustainable and inclusive growth. The role of the Slovak Republic was to submit to the European Commission the National Reform Program of the Slovak Republic and the Stability Program. Slovakia set its national targets in the National Reform Program. It is the main strategic document of the Slovak Government, representing national measures to achieve sustainable development and the objectives of the Europe 2020 Strategy. The Stability Program of Slovakia was approved for the years 2016-2019 on 29 April 2016. The program was submitted to the European Commission within the framework of the European Semester, aiming at better coordination of budgetary and structural policies, taking into account the rules of the Stability and Growth Pact and the Europe 2020 Strategy. The stability program presents the development of the fiscal position, the anticipated economic development and the description of the budgetary policy measures to achieve the objectives set in the medium term. For the years 2017-2019 it presents in a clear and detailed form the fiscal objectives of the Slovak Republic for the purposes of European supervision and domestic public debate (Uznesenie č. 160, 2016).

Dynamic business environment is subject to various changes, fluctuations and trends. The response to how to manage this environment is to take appropriate decisions to ensure the balance of social, environmental and economic aspects of business, thus all three attributes of the CSR strategy. The CSR strategy as a starting point for sustainable development must be fully linked to enterprise strategy. Each enterprise should try to choose the right strategy to achieve its goals, depending on its different needs. It can be said that enterprises are also connected to the environment through CSR, and they can use the CSR concept to their advantage.

The Slovak Republic is also progressing in the direction of the Europe 2020 Strategy and on 6th May 2015 the Slovak Parliament approved the Act 130/2015 amending and supplementing Act No 431/2002 on accounting (hereinafter the Accounting Act). The changes to the Accounting Act arose from the transposition of European Parliament and Council Directive 2013/34/EU on the annual financial statements, consolidated financial statements and related reports of certain types of undertakings, amending Directive 2006/43/EU of the European Parliament and of the Council and repealing Council Directives 78/660/EEC and 83/349/EEC (hereinafter Directive 2013/34/EU), and transposition of the Directive 2014/95/EU of the European Parliament and of the Council amending Directive 2013/34/EU as regards the disclosure of non-financial and diversity information by certain large undertakings and groups (hereinafter Directive 2014/95/EU). Certain provisions relating to the change in the content of

the annual report in the context of CSR shall take effect 1 January 2016, whilst some will not take effect until 1 January 2017.

Large companies in particular have a number of ways to inform about CSR activities. One way to inform a wide range of information users is through the annual report of the enterprise. A number of points in respect of the CSR content of the annual report have even been transposed into the Accounting Act. The annual report should include, in addition to financial information, non-financial information that is key to CSR or business sustainability. In particular this information relates to CSR and is defined in the Accounting Act:

- information related to the expected future business development,
- information related to the cost of research and development activities,
- information related to events of particular importance that occurred after the end of the accounting period for which the annual report is being prepared,
- information regarding development of the enterprise, about its condition and the significant risks and uncertainties the enterprise is exposed to. The information should be in the form of a balanced, comprehensive analysis of the status and development forecasts and contain important financial and non-financial indicators, including information on the impact of the enterprise's business on the environment and on employment, with reference to the relevant data in the financial statements.

With effect from 1 January 2017, a public interest entity is required under the Accounting Act to provide non-financial information on the development, conduct, position and environmental, social and employment-related impact of the business's activities, information on human rights and information on combating corruption and bribery (social responsibility), stating in particular the following information:

- a brief description of the business model,
- description of the main risks of an enterprise's impact on corporate social responsibility,
- description and results of using the policy of corporate social responsibility applied by the enterprise,
- a reference to information on the amounts recognized in the financial statements and an explanation of these amounts in terms of their impact on corporate social responsibility, if appropriate,
- significant non-financial information about the enterprise's activities by individual activities.

The aim of Directive 2014/95/EU is to improve the coherence and comparability of non-financial information throughout the Union by including a non-financial statement in annual reports. The non-financial statement should contain at least information about:

- environmental, social and employment matters,
- respect for human rights and combating corruption and bribery,
- description of the policies and their outcomes and risks,
- supplying and subcontracting chains to identify actual and potential negative impact.

Until now, however, the non-financial statement has not been incorporated into the Slovak legislation as a separate statement.

## **2 Literature review**

CSR is based on the assumption of corporate responsibility towards the company, the state and the employees. Tomáš Baťa placed great emphasis on keeping his employees accountable to themselves and to their surroundings. For example, Tomáš Baťa would never entrust a job

involving the handling of money to a worker who had no money or who did not know how to manage money. The explanation is that if someone cannot manage their own money, how can they manage the money of others? (Petříková, Janků, 2016). CSR can be defined as a concept of business that expresses enterprise orientation towards objectives and seeks to fulfil the economic, social and environmental aspects of activities where the enterprise is responsible beyond the legal standards (Németh, 2016). At present, the debate on the relationship between sustainable development and CSR is developing. While both concepts have different bases, they use overlapping concepts, with some authors highlighting CSR as an important part of sustainable development. CSR has begun to integrate concepts associated with the concept of sustainable development (Kunz, 2012). CSR communication has become increasingly important as a means of demonstrating and documenting that businesses not only talk about, but take action regarding CSR (White, Nielsen, Valentini, 2017).

The CSR strategy is reflected in national and transnational legal standards to lead enterprises toward policies of sustainable development. By applying social responsibility as a prerequisite for sustainable development, the social, environmental and economic environment is formed. (Directive 2013/34/EU). CSR reports have received considerable scholarly attention in recent years and most research has focused on the emergence of CSR reporting (Marimon, Alonso – Almeida, Rodríguez Alejandro, 2012, Hahn a Kühnen, 2013). Enterprises have wide discretion in choosing what they publish, which leads to information from CSR reports coming from different areas. (Lock, Seele, 2016).

Large corporations, and especially large multinational corporations, that have a significant footprint in terms of environment and sustainability, human rights protections, treatment of workers, and global transactions that are vulnerable to charges of bribery and corruption, must anticipate public pressure of information and take actions to minimize regulatory investigations, and address concerns for institutional investors and other external stakeholders. (Sethi, Martell, Demir, 2017).

Earth's life-support system is facing megaproblems of sustainability. One important way of how these problems can be addressed is through innovation. The idea of responsible innovation is that new products should not damage the health of consumers and the general public, new processes should be safe for workers and everyone involved, and neither of these should pollute or harm the environment in any way. Innovation governance, understood as the process of regulating the creation and implementation of innovation, tries to account for these risks of innovation and technology development. (Voegtlin, Scherer, 2017)

Some scientists have noted that the changes in the global normative environment have prompted many corporations to pledge commitment to CSR efforts - especially in the form of principles -based, certification - based, and reporting-based standards such as the UN Global Compact, ISO14001, and global reporting initiative (GRI) (Behnam, MacLean, 2011). In the Slovak Republic, an enterprise fulfils the condition for the publication of information on the environmental impact of business activities, among other things, by monitoring environmental costs (Antalová, 2016).

The Code of Conduct presents business expectations and standards, and is committed to promoting corporate culture based on ethics and lawful conduct, respecting human rights, it describes ethical risks and helps to recognize and address ethical issues. Responsible entrepreneurship is presented through the ethical conduct of the enterprise toward all stakeholders, implemented in every area of business activity, represents economic and ethical action for the purpose of sustainable development of the enterprise (Dubcová, 2014). How the business behaves in a market environment, how effective the company is, and how it will be perceived and evaluated by others depends on the quality of managers' access to enterprise

management, efficiency and cost-effectiveness, and adherence to legal and ethical principles of corporate governance. (Záležáková, 2016). In the last few decades, companies have shown a growing interest in integrating social aspects into their strategies with the aims of achieving both sustainable development and competitive advantage. This process has been understood as a belief that a social strategy or corporate social responsibility (CSR) provides an increase in corporate social performance and brings with it an improvement in the financial performance of the company (Arevalo, Aravind, 2015).

### **3 Methods and data**

The purpose of the paper was to investigate whether enterprises report on CSR in their annual reports and whether economic, social or environmental information was predominant.

The object of the survey is the companies in the Slovak Republic which are required to present information on social responsibility in their annual report. We used the FinStat website ([www.finstat.sk](http://www.finstat.sk)) to filter companies for subsequent analysis as well as to obtain annual reports. The first 30 enterprises for the sample of analyzed enterprises were selected and sorted according to balance sheet total as at the date of the financial statements for the year 2015 following the simultaneous fulfilment of these two conditions:

1. they are enterprises that are subject to audit of the financial statements and the annual report because the audited enterprises are required to prepare the annual report,
2. they are enterprises having any sort of production as their object.

The established criteria allow to select just such a representative sample of enterprises in the SR, which with their production in the long term are the most involved in the growth of gross domestic product SR (hereinafter GDP). At the same time, they are among the largest employers in the SR and all three aspects of CSR (social, environmental and economic) are related to the subject of business.

We analyzed the research:

- a) how many enterprises reported in their annual report on CSR by publishing relevant information,
- b) we monitored the annual reports for the areas on which the enterprises reported CSR, and
- c) the extent to which companies have published information in annual reports from individual CSR areas: social, environmental and economic.

To measure the extent of reporting information, we used the number of pages in the annual reports. A relevant page was one where more than 50 % of the information was of a social, economic or environmental nature. We excluded pages with a lower percentage of information.

The paper analyzed data from the annual reports for the 2015 accounting year, as the annual reports of the 2016 enterprises were not published until the paper was posted. The results of the analyses are presented in their absolute quantitative and relative terms.

### **4 Results and discussion**

Sustainable development is the starting point for corporate social responsibility, a market economy with renewable resources, but also awareness of the impact of personal responsibility as an individual. As in other countries of the European Union, there are companies in the Slovak Republic whose activities take account of social responsibility and contribute to sustainable development. The Sustainable Development Strategy of the Slovak Republic is based on the objectives of the European Union's Sustainable Development Strategy. In the following



analysis we deal with the presented CSR information (based on three basic pillars, i.e. social, environmental and economic) in the annual reports of selected companies.

With the implementation of the CSR strategy or sustainable development, businesses become key businesses. Prior to beginning the analysis, companies that have yet to publish an annual report were winnowed out from the sample. So far, 3 enterprises out of 30 have not released an annual report for the 2015 reference period. We have not included these businesses in the analysis. The remaining 27 enterprises presented information on the application of CSR was presented in their 2015 annual reports.

The classification according to the classification of economic activities and industry - SK NACE branches, which include the production of selected 27 enterprises, are the automotive, tourism, gastronomy, woodworking and paper industry, information technology, construction, transport, logistics and in particular the energy and mining sectors. There are up to 10 enterprises (37%) in the energy and mining sector of 27. In this sector, the 10 enterprises are active in the production, distribution, sale of electricity, steam and cold air distribution and collection, treatment, supply of drinking and service water. In terms of the subject-matter of the business in which they are included, they are enterprises characterized by the fact that they employ a large number of employees. The largest employer from the selected sample of companies for 2015 is the Železnice Slovenskej republiky. The exact number of employees according to the annual report for 2015 is 14 066. The two employees of the selected production companies are CM Europe Power Slovakia, s.r.o. and Best Hotel Properties, a.s. Their number of employees ranges from 100 to 149 employees. The remaining companies employ 150 to 9 999 employees.

From the selected sample, 18 enterprises (70 %) published CSR information on the social aspect, 17 enterprises (63 %) on the environmental aspect and 27 enterprises (100 %) on the economic aspect (refer with: Tab. 2).

**Tab. 2** Publication of CSR aspect in the annual report

CSR aspect	Social	Environmental	Economic
Number of enterprises	19	17	27
Percentage of enterprises (%)	70	63	100

Source: Own processing.

According to the analysis, not every enterprise has disclosed information concerning all aspects (all three pillars) of CSR. Fifteen enterprises reported on all aspects of CSR, which is 56 % of the selected sample of enterprises. Six out of 27 enterprises (22 %) published information concerning one or two aspects of CSR. Regardless of whether companies in the annual report expressed their opinion on one, two or three aspects of CSR, the economic aspect always prevailed.

Among enterprises that published information on all three aspects of CSR, economic information prevailed in 13 enterprises, which represents 86 %, and social or environmental CSR information prevailed in only 2 cases. (refer with: Tab. 3)

**Tab. 3** Publication of information of CSR aspect in the annual report

Publication of information of CSR aspects in the annual report	Number of enterprises	Relative expression (%)
Information published in 3 aspects of CSR	15	56
Prevailing aspect of information:		
social	1	7
environmental	1	7
economic	13	86
Information published on 2 aspects of CSR	6	22
Prevailing aspect of information:		
social	0	0
environmental	0	0
economic	6	100
Information published in 1 aspect of CSR	6	22
Prevailing aspect of information:		
social	0	0
environmental	0	0
economic	6	100
Total	27	100

Source: Own processing.

An analysis of the disclosure of CSR information in the annual report also requires an analysis of the social, environmental and economic aspects of CSR information. The following table provides an analysis of CSR information in terms of the extent thereof in the annual reports (refer with: Tab. 4).

The extent of the annual reports of the selected enterprises, that we worked for research was in the extent of the minimum number of pages was 6, maximum number of pages was 188, median 54 pages and arithmetic mean 58 pages.

We have found that the maximum amount of information concerning the social aspect is 21 % of the overall annual report. Since some companies published no information concerning the social aspect, the total number of pages is 0 and the percentage of the total amount of social information in the annual report is therefore 0 %. The median value is 2 %, which represents an average of 1 page. The average content of any given CSR information in the annual report is 3 %, which represents an average of 1 page. (refer with: Tab. 4)

In the environmental aspect of CSR, the minimum number of pages is 0, due to the fact that the selected businesses did not publish any CSR information on the environmental aspect and therefore the minimum percentage of pages in percentage terms is 0 %; the social aspect has similar results. Conversely, the maximum number of pages published in this aspect was 26 pages and the maximum range of environmental information is 45 % of the entire annual report. The median in terms of the environmental aspect is the same as the social aspect of CSR, i.e. 2 % of the entire annual report, and the number of pages is 1. Based on the analysis of environmental information reporting in the annual report, the average of the reported information is 6 % and the average number of pages of published environmental information is 3 (refer with: Tab. 4)

The analysis shows that the range of economic CSR information is considerably broader than social and environmental CSR information in annual reports. The minimum range is 17 % and the maximum is 100 %. The average value is 60. The average amount of information in the annual report is 58 %, so economic information largely outweighs social and environmental information. Where the extent of information in annual reports is expressed in page numbers, the minimum number of pages in the annual report is 2 and the maximum number of pages is 120. The average value is 26 pages and the average number of pages published on economic CSR is 36. (refer with: Tab. 4)

**Tab. 4** Analysis of CSR information published the annual report

Aspect of CSR	Minimum scope of information in annual reports		Maximum scope of information in annual reports		Median		Arithmetic mean	
	No. of pages	Relative expression (%)	No. of pages	Relative expression (%)	No. of pages	Relative expression (%)	No. of pages	Relative expression (%)
Social	0	0	10	21	1	2	1	3
Environmental	0	0	26	45	1	2	3	6
Economic	2	17	120	100	26	60	36	58

Source: Own processing.

#### 4.1 Social aspect (pillar)

The social pillar is mainly related to employee care and the creation of suitable conditions for them. If enterprises approach their employees responsibly by creating a suitable work environment, providing benefits or career growth, they have an impact on increasing the satisfaction of their employees and at the same time increasing labour productivity.

The annual reports of selected enterprises were monitored as to whether an enterprise supports employee training as part of its CSR. Analysis shows that more than half of enterprises (52 %) support training for their employees. Given that the object of selected enterprises was production, many employee training programs primarily (14 enterprises representing 52 %) concerned increasing expertise in specific hazardous work. However, with respect to CSR, 3

enterprises behave responsibly beyond the legal standards and provide their employees with training beyond legal standards. (refer with: Tab. 5)

**Tab. 5** Employee training

Social aspect of CSR	No. of enterprises that published information	Relative expression (%)	No. of enterprises that did not publish information	Relative expression (%)	Total no. of enterprises	Relative expression total (%)
The enterprise provides training programs	14	52	13	48	27	100
Of which it provides educational programs – beyond the legal standards	3	21	11	79	14	100

Source: Own processing.

In the annual reports, most businesses report on their systematic and targeted focus, in particular, on supporting children and youth, their education and health, promoting science, culture and sport. Businesses put an emphasis on training all groups of employees in line with the needs of business development and its strategy. At present, the trend of training employees through educational programmes prevails. Information frequently appeared in the annual reports about educational programmes such as trainee program, talent management, motivational meetings. Some enterprises build relationships with local vocational schools and allow their students to gain practical experience. Corporate social responsibility enables an enterprise to have a skilled workforce that helps it achieve its goals at a high level.

#### **4.2 Environmental aspect (pillar)**

An enterprise that has regard for the world around us tries to create the conditions for a better future. Large manufacturing enterprises in particular use the annual report as a way of informing about their environmental activities. When implementing an environmental policy, it is important to realize that this is an area that needs to be applied not only within the enterprise but also in relation to the external environment.

The analysis shows that 17 enterprises (63 %) out of 27 are focused on environmental protection, which means that more than half of enterprises are indifferent to the environment (refer with: Tab. 2). Out of the 17 enterprises, 6 enterprises reported about research and development costs, which in relative terms represents 35 %. Conversely, 11 enterprises, i.e. 65 %, did not have research and development costs. Six out of 17 enterprises reported on the application of EMAS or ISO 14001 standards, and 11 companies did not comment in their annual report. (refer with: Tab. 6)

**Tab. 6** Environmental aspect of CSR

Environmental aspect of CSR	No. of enterprises that published information	Relative expression (%)	No. of enterprises that did not publish information	Relative expression (%)	No. of enterprises together	Relative expression total (%)
Environmental Protection	17	63	10	37	27	100
of which research and development costs	6	35	11	65	17	100
of which the application of standards EMAS, ISO 14001	6	35	11	65	17	100

Source: Own processing.

From the information provided in the annual reports we can conclude that enterprises are not indifferent to the environment and are introducing various protective regimes, controls, and treatment facilities in relation to environmental protection. They create jobs for professionals who specialize in environmental protection. A very positive point is that enterprises are creating an awareness in their annual reports that all business activities can affect the environment and that these activities must be managed professionally and responsibly so as to preserve the environment for future generations.

A successful enterprise does not simply offer quality products, the essence of its success lies in strict requirements to eliminate negative environmental impacts. By using environmental tools, it can achieve better environmental protection and improve its bottom line. The most reliable indicators reflecting the effective use of environmental tools include:

- reducing material and energy flows,
- reduction of pollutants,
- reduction of environmental costs.

Some manufacturing enterprises presented in their annual reports their focus in line with the International Standard ISO 14001 Environmental Management System (ISO 14001) and EMAS, the Eco-Management and Audit Scheme (EMAS).

ISO 14001 is part of ISO 14000, international standards issued by the International Organization for Standardization - ISO. It is the most widely used standard for environmental management. It requires the enterprise to identify all the environmental impacts of its business. The standard defines environmental objectives and introduces measures to improve performance through processes in areas of high priority. The main elements of this standard are (ISO 14001, 2016):

- environmental policy,
- planning,
- introduction and operation,
- control and corrective actions,

- management evaluation.

The role of EMAS is to promote the continuous improvement of environmental behaviour of organizations based on systematic and objective monitoring and evaluation of the effectiveness of environmental management. ISO 14001 standards are the basis for EMAS. Emphasis is placed on these areas of EMAS (EMAS, 2017):

- consistent compliance with environmental legislation,
- monitoring and assessing environmental behaviour through appropriate indicators,
- active communication with the public and other stakeholders on the impact of the organization on the environment and its environmental behaviour and its intentions to improve,
- actively engaging their own employees in the process of improving environmental behaviour.

EMAS makes it possible to evaluate and compare the level of environmental behaviour of organizations across the European Union's economic area and to award those who fully comply with the scheme's rules the prestigious EMAS brand.

In the Slovak Republic, an enterprise fulfils the environmental disclosure requirement concerning the environmental impact of its activities by monitoring environmental costs. Costs related to environmental protection include (Antalová, 2016):

- costs of waste disposal,
- charges for removal, sorting, storage and disposal of waste,
- depreciation of waste treatment facilities, waste water and emissions, and maintenance costs for the installations concerned,
- fines for violating environmental laws,
- the cost of environmental liability insurance,
- reserves for the treatment, purification and elimination of contaminated water and emissions emitted into the air.

### **4.3 Economical aspect (pillar)**

The goal of any business is to make a profit. The company's profit can then be used in other areas of CSR. In 2015, out of 27 enterprises, 24 enterprises achieved an economic result - profit, which represents 89% and the economic result - lost was achieved by 3 enterprises (11%). When analyzing the annual reports, we focused on those businesses that earned 2015 earnings and tracked down how many companies published a proposal for distribution the result - profit in its annual report. The analysis showed that out of 24 enterprises, 20 enterprises (83%) published a proposal for the distribution of economic result - profit in the annual report and 4 enterprises (27%) out of 27 did not publish this information in the annual report. (refer with: Tab. 7)

**Tab. 7** Proposal for distribution of economic result – profit in annual reports

Economic result	No. of enterprises	Relative expression (%)
Economic result - profit	24	89
Of which		
publication of proposal for distribution of economic result – profit	20	83
non-publication of proposal for distribution of economic result – profit	4	27
Economic result - lost	3	11
Total	27	100

Source: Own processing.

On the basis of the analysis, all enterprises from selected sample of 27 report on the economic aspect of CSR (refer with: Tab. 2). Of these, 25 enterprises, accounting for 93 %, have disclosed their financial statements as part of the annual report. Of the 27 enterprises, 2 enterprises, representing 7 %, published the financial statements independently. This means that the financial statements are not part of the annual report, but published separately. Additional information from the financial statements was not disclosed by the selected companies in the annual reports. (refer with: Tab. 8)

**Tab. 8** Economic aspect CSR

Economic aspect of CSR	No. of enterprises that published information	Relative expression (%)	No. of enterprises that did not publish information	Relative expression (%)	No. of enterprises total	Relative expression total (%)
Publication of economic information	27	100	0	0	27	100
Of which						
- publication of the financial statements as part of the annual report	25	93	0	0	25	100
- publication of the financial statements separately	2	7	0	0	2	100

Source: Own processing.

In terms of the economic aspect, businesses presented their customer relationship information in their annual reports. Sometimes this aspect can be included in the social aspect, but in our opinion it is a cross - sectional combination of economic and social. In their annual reports, enterprises describe building long-term relationships with customers. The main goal was to provide customers with quality products, resulting in a reduction in customer complaints. If businesses want to achieve this goal, they must constantly strive to adhere to business terms.

In addition to customer relationships in this aspect of CSR, enterprises draw attention in their annual reports to the Code of Ethics. However, only 8 out of 27 enterprises reported in the annual report information on the Code of Ethics, which is only 30 % (refer with: Tab. 9). Through the Code of Ethics, enterprises commit to creating and maintaining a working environment of mutual trust in which everybody who works for the enterprise is treated with respect and dignity. The priority is to apply the principle of fair remuneration and to prevent and avoid discrimination. The Code of Ethics contains all these commitments, and enterprises adapt them to their own need following the principles of sustainable development.

Some enterprises (5 enterprises (19 %) of the sample) included in their annual reports a Corporate Governance Report, as enterprises are aware that clearly defined relationships and communication between owners, business management and employees are a prerequisite for good corporate governance (refer with: Tab. 9).



**Tab. 9** Disclosure of the Code of Ethics and the Corporate Governance Report in the annual report

Economic aspect of CSR	No. of enterprises that published information	Relative expression (%)	No. of enterprises that did not publish information	Relative expression (%)	No. of enterprises total	Relative expression total (%)
Code of Ethics	8	30	19	70	27	100
Corporate Governance Report	5	19	22	81	27	100

Source: Own processing.

## 5 Conclusion

Today's business environment is dominated by the trend to meet current needs without compromising the needs of future generations. A dynamic, constantly changing environment requires a change in the way you do business. One way is to introduce a CSR strategy into your business strategy. Adopt decisions that ensure the balance of social, environmental and economic aspects of business, all three attributes of the CSR strategy. These three pillars should be implemented by businesses reporting CSR in their business processes. For successful implementation of CSR, it is imperative that it be targeted, planned, managed, and becomes part of the enterprise strategy. This shows that CSR is an integral part of business.

Some authors are starting to discuss the relationship between sustainable development and CSR. Sustainable development is a starting point for CSR, a market economy with renewable resources, but also awareness of the impact of personal responsibility as an individual. As in other EU Member States, there are enterprises in the Slovak Republic that also focus their activities on the implementation of CSR and thus are contributing to sustainable development.

The Slovak Republic is moving along the same course as the Europe 2020 Strategy. The result is the transposition of EU directives into the Slovak legislation, namely into the Accounting Act in terms of annual reports. In addition to financial information, non-financial information should be disclosed in the annual report. At present, there is an effort toward the harmonisation and comparability of non-financial information in the Member States of the European Union by including a non-financial statement in annual reports. The non-financial statement should contain information about environmental, social and employment matters, respect for human rights and combating corruption and bribery, and a description of policies and their outcomes and risks, supply and subcontracting chains to identify actual and potential negative impact. Until now, however, the non-financial statement has not been incorporated into the Slovak legislation. The importance of a given aspect of CSR from an enterprise perspective can be judged by the extent of these aspects published in the relevant annual report.

With the implementation of a CSR strategy as a starting point for sustainable development in the state, enterprises become key. The annual reports of manufacturing enterprises were selected prior to beginning the analysis. According to the analysis, not every enterprise has disclosed information as to all aspects (all three pillars) of CSR. The annual reports of fifteen

enterprises reported on all aspects of CSR, which is 56 % of the selected sample of enterprises. From the analysis of the published CSR information, we can conclude that businesses did not disclose information that is balanced in respect of the scope of their annual reports.

The annual reports of enterprises from a social perspective provide information on their systematic and targeted focus, in particular, on supporting children and youth, their education and health, promoting science, culture and sport. Enterprises have put emphasis on training all groups of employees in line with the needs of business development and strategy. In addition to educating their employees, businesses have also disclosed benefits provided to their employees. In analyzing annual reports, we focused on employee training. The analysis of annual reports shows that more than half of businesses (52 %) support training for their employees. Given that the object of selected enterprises was production, many employee training programs primarily (14 enterprises representing 52 %) concerned increasing expertise in specific hazardous work. However, with respect to CSR, 3 enterprises behave responsibly beyond the legal standards and provide their employees with training beyond legal standards.

By analyzing the annual reports of selected enterprises, we can conclude that enterprises are not indifferent to the environment because 17 enterprises out of 27 have some form of corporate environmental policy, accounting for approximately 63 % of the sample selected. An enterprise that in the context of its corporate social responsibility has regard for the world around us seeks to create the conditions for a better future. Some manufacturing companies point out to users of annual reports that the manufacturing enterprise is operating in accordance with the international standard ISO 14001 Environmental Management System and EMAS, the Eco-Management and Audit Scheme. The role of these standards is to promote the continuous improvement of environmental behaviour of organizations on the basis of systematic and objective monitoring and evaluation of the effectiveness of environmental management. According to the analysis, 6 enterprises out of 17 report the application of an environmental management system to improve environmental behaviour, a small percentage of the selected sample (35 %). The same number of enterprises report information on research and development costs, i.e. 6 out of 17 enterprises (35 %).

The goal of any business is to make a profit. The company's profit can then be used in other areas of CSR. In 2015, out of 27 enterprises, 24 enterprises achieved an economic result - profit, which represents 89% and the economic result - lost was achieved by 3 enterprises (11%). When analyzing the annual reports, we focused on those businesses that earned 2015 earnings and tracked down how many companies published a proposal for distribution the result - profit in its annual report. The analysis showed that out of 24 enterprises, 20 enterprises (83%) published a proposal for the distribution of economic result - profit in the annual report and 4 enterprises (27%) out of 27 did not publish this information in the annual report. As regards the economic aspect of CSR, manufacturing enterprises expressed their commitment to building long-term supply and customer relationships. Sometimes this can be included in the social aspect, but in our opinion it is a cross - sectional combination of economic and social aspects. Responsible business improves the image of the business outwardly, positively influences its image and attracts new customers. In the analysis, we monitored whether the annual reports also included the Code of Ethics and the Corporate Governance Report. In the Code of Ethics, businesses commit to creating and maintaining a working environment of mutual trust, in which everyone who works for the enterprise is treated with respect and dignity. Responsible entrepreneurship is presented through ethical conduct of the enterprise toward all stakeholders and represents economic and ethical conduct for the sustainable development of the enterprise. Eight (30 %) of the 27 enterprises published information on the implementation of a Code of Ethics. The Corporate Governance Report precisely defines the relationship and communication between

owners, business management and employees. This report is a requisite for good business management, which dictates how businesses will operate in the external environment. Unfortunately, only 5 (19 %) out of 27 enterprises published a Corporate Governance Report. From the analysis results, we can conclude that a large number of enterprises do not disclose information about the Code of Conduct or the Corporate Governance Report.

It follows from this information that the need to take into account CSR is a necessary requirement for achieving the enterprise's goals. CSR is not a concept whereby enterprises do not benefit and have no effect or profit, but it points out that, in addition to their own benefit, enterprises should benefit both current society and future generations by thinking about the future. The structure of the annual report should reflect information on CSR to the extent of disclosure of information on the various aspects of CSR that are essential to the enterprise. We can judge which aspect is important to the enterprise by the extent of the published information on each CSR aspect.

The analysis of the 2015 annual reports before the entry into force of the revised requirements for the content of the annual report contained in the Act on Accounting created the basis for further research in the field to include the perspective of the economic policy of the Slovak Republic after the new rules are introduced.

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## MARCOECONOMIC COMPETITIVENESS: THE NON-MEASURABLE INDICATORS IN THE VISEGRAD GROUP PLUS COUNTRIES

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### Abstract

This paper discusses the macroeconomic competitiveness of the Visegrad Group Plus countries. This kind of competitiveness is divided into measurable (qualitative) input and output indicators and non-measurable (quantitative) indicators, as economic performance, government and business efficiency and infrastructure. The aim of this paper, besides the description of development of non-measurable competitiveness indicators and its comparison, is to find out if the disparities in the field of this kind of competitiveness among countries exist or not. Two assumptions were set: first – the disparities among monitored countries exist, second – the values of factors values have improved between years 2004 and 2013. These assumptions were verified firstly through the method of standard deviation and secondly through the coefficient of variation, the first one was confirmed and second one was rejected.

### Keywords

Business Efficiency, Economic Performance, Government Efficiency, Infrastructure, Macroeconomic Competitiveness, Standard Deviation, Variation Coefficient.

### JEL Classification

H11, O57, R11.

## 1 Introduction

Economic theory considers international competitiveness as a complex category, which is useful to evaluate on many levels: corporate, industry, economy-wide, an integrated whole block. The international competitiveness can be measured by two kinds of indicators, both those measurable – quantitative – including the indicators of inputs (costs) and outputs (measurable results), as well as non-measurable, in other words, the qualitative ones. Measurable data include only a part of competitiveness and are calculated at the basis of hard data. Non-measurable indicators, respectively indicators difficult to be measured, include comprehensive competitiveness of the economy and use both hard data and soft data (questionnaire surveys captures indicators that cannot be measured with hard data), which may be biased on subjective views of correspondents.

From the definition of macroeconomic competitiveness and its measurement it is obvious that both measuring methods have certain negatives. The first one is not sufficiently explicit due to its incompleteness; the second one comprises signs of subjectivity due to the lack of an objective concept (Majerova and Horuckova, 2014).

Non-measurable output indicators, or complex (multi-criteria) methods for evaluating competitiveness, try to capture competitiveness in the widest range and to provide an overall view of competitiveness of individual economies. They try to analyze different factors of competitiveness and use both hard data (statistics) and soft data (questionnaires). The result is a scale – ranking – of calculated values for each country. The aim of these measurements is to provide a comprehensive comparative data for foreign investors as well as for representatives of political, information and business sphere about potential problems regarding

competitiveness, and evoke an activity leading to its gradual increase. As it was already mentioned, the disadvantage is some subjectivity in the evaluation of soft data, which may lead to incorrect evaluations and conclusions (Saisana, Tarantola and Saltelli, 2005).

In the last two decades, two ways of measuring the comprehensive competitiveness became significant: the measuring of Institute for Management Development (IMD) and measurement of the World Economic Forum (WEF), where the both institutions publish the results of their measurements in yearbooks. This chapter deals with the first measurement of IMD. The countries' position were investigated, namely in the field of economic performance, government efficiency, infrastructure, business efficiency, in the years 2004 to 2013.

In the last two decades, two ways of measuring of comprehensive competitiveness became significant: the measuring of Institute for Management Development (IMD) and measurement of the World Economic Forum (WEF), where both the institutions publish the results of their measurements in yearbooks. This paper deals with the first mentioned - the measurement of IMD. The positions of countries were investigated in the fields of economic performance, government efficiency, infrastructure and business efficiency in the period of 2004 to 2013.

## **2 Literature review**

Definitions of macroeconomic competitiveness are very difficult. There is no general agreement on the meaning of this term and there are tens of definitions to be found in literature. Nevertheless, this term is not practically present in economic dictionaries.

Economic competitiveness is a concept that expresses synthetic ability of countries to penetrate their goods and services to foreign markets and gain comparative benefits from the international exchange (Hindls et al., 2003). This is an older definition which identifies competitiveness with success of a country in the international trade. The important condition of competitiveness in this case is success in international markets. More modern approaches introduce additional conditions that must be performed so that the country would be classified as competitive. These conditions include mainly maintaining a high level of employment or a high quality of life for the population.

Competitiveness implies productivity, efficiency and profitability. Yet, this is not the aim itself. In particular, it aims to achieve an increasing quality of life and social well-being. Generally speaking, by increasing productivity and efficiency in terms of international specialization, competitiveness is the basis for increasing the incomes of the population in a non-inflationary way (Cheshire and Gordon, 1995).

Competitiveness includes a large number of meanings. This economic term has a long history (Reinert, 1995). A frequent use of this term occurred during the 1980's and 1990's. Such interest was probably related to the changes in global economy at that time. At that time, a tremendous debate emerged between economists and social scientists about the importance of a concept of competitiveness (Fageberg, 1996). Some (Krugman, 1994) were characterized as "a dangerous obsession". However, the term is still widely used at a national and a regional level (Huggins, 2003; Kitson et al., 2004). Competitiveness is a set of institutions, policies and factors that determine the level of productivity. (Kramer, 2006). Other definitions may be found in (Cellini and Soci, 2002) or (Garelli, 2014). Although the individual definitions differ in some aspects, they have certain common features. Competitiveness is connected with the output of economy, both in the form of GDP growth, or in the form of income of population, or actual standard of living.

### 3 Methods and data

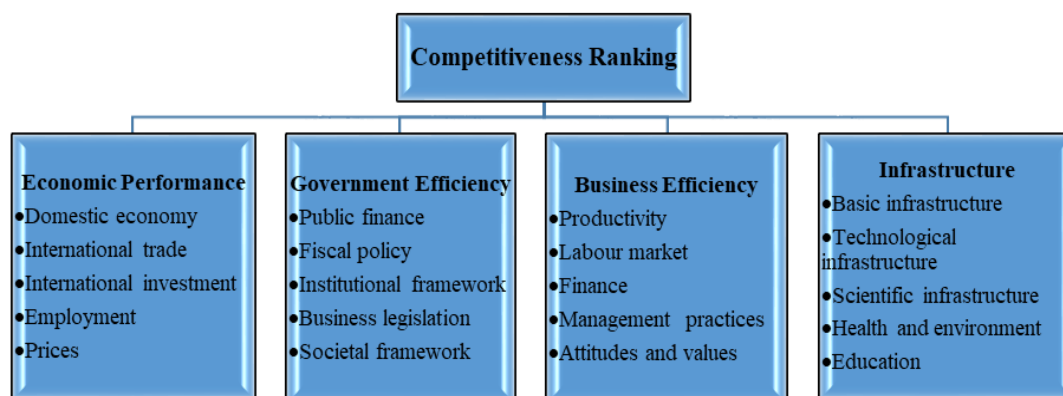
In all international comparisons of competitiveness and economic performance, gross domestic product (GDP) is used, which, in terms of statistics, is an output of the system of national accounts. The overall macroeconomic aggregate of production, therefore, expresses the newly created value in the national economy, increased by the consumption of the fixed capital over the reference period (Hronova et al., 2009). This indicator is easily accessible in the statistics of the countries concerned, and for international comparison, there is a consensus. The definition of the monitored items is internationally aligned with the system of national accounts and hence the contents of the resulting indicator. GDP is primarily a gross value added in the national economy, so it is used to assess the economic performance of the country.

Efficiency of the government assesses that the government tries hard to increase the efficiency of public expenditure, especially by improving the budgetary process and financial management at the central and local administrative level. For example, well-drafted legislative rules that adjust the procedure of the ministries and other central government bodies in the drafting and negotiation of forthcoming legislation. They define as precisely as possible the requirements regarding the content and form of the legislation under preparation. (EUR-LEX, online).

We can determine the effectiveness of business depending on the profit achieved by the company. It can be considered as a general definition of business efficiency. Infrastructure refers to the material technical equipment and security of a company or a country (transport, communication, energy, etc.). The infrastructure is, in the most general sense of the word, a set of interconnected structural elements that keep the whole structure together. It is typically used for structures that are created artificially.

The IMD competitiveness ranking can be assessed by the above mentioned four competitiveness (input) factors, each with five sub-factors (see Figure 1):

- Economic performance with 83 criteria expresses macroeconomic evaluation of the domestic economy.
- Government efficiency has 73 criteria and displays an extent to which government policies are conducive to competitiveness.
- Business efficiency with 71 criteria and extent to which the national environment encourages enterprises to perform in an innovative, profitable and responsible manner
- Infrastructure contents 115 criteria and expresses to which basic, technological, scientific and human resources meet the needs of business.



**Fig. 6** Sub-factors of Non-measurable Indicators of Competitiveness (Source: authors' own according to IMD, 2016)

### 3.1 Methods

Various methods are used for different parts of the research: description, analysis, comparison and two kind of statistical methods. The aim of this paper, besides the description of development of non-measurable competitiveness indicators and their comparison, is to find out if the disparities among countries exist or do not exist in the field of these kinds of competitiveness. Two assumptions were set: the first one – disparities among the monitored countries exist, the second one – the values of factor values have improved between 2004 and 2013. These assumptions were verified firstly through the method of standard deviation and secondly through the coefficient of variation.

If we want to assess the relative magnitude of the deviated data to the average, the coefficient of variation is used. We calculate it when we compare the data variance of the same variable with different average. Coefficient of variation then indicates the participation of standard deviation on an arithmetic average, as shows (1)

$$CV = \frac{SD * 100}{\bar{x}} \quad (1)$$

, where SD is standard deviation,  $\bar{x}$  is average value of factor. Standard deviation measures the relative difference in the competitiveness factors. For this reason, the relative position of each economy in the scale of values it can be more accurately assessed. First, the mean value for the whole population for each criterion is calculated and then the standard deviation could be calculated, see equation 2:

$$SD = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}} \quad (2)$$

, where x is original value of factor and n is size of this value.

A small degree of variation indicates small mutual diversity (or high similarity) of the variables values, which also indicates that the mean value (i. e. average) is good characteristics of general size of the variables values in the file in this case. Conversely, high variability indicates large mutual differences of the variables values, which also indicates that the calculated parameters of the middle of the file are good characteristics of general values of the variables in the file in this case.

### 3.2 Data

The annual data of the Visegrad Group Plus countries are used for the period of 2004 and 2013 as the basis of figures and tables. The IMD World Competitiveness Yearbooks (IMD, 2008-2017) are the main sources of the data; the countries were evaluated in terms of important economic indicators, and the ranking of all these countries was found out (see Table 1). This ranking of the individual V4+ countries, of all 64 countries in the world, was detected with respect to the obtained results, the resulting data was commented on.

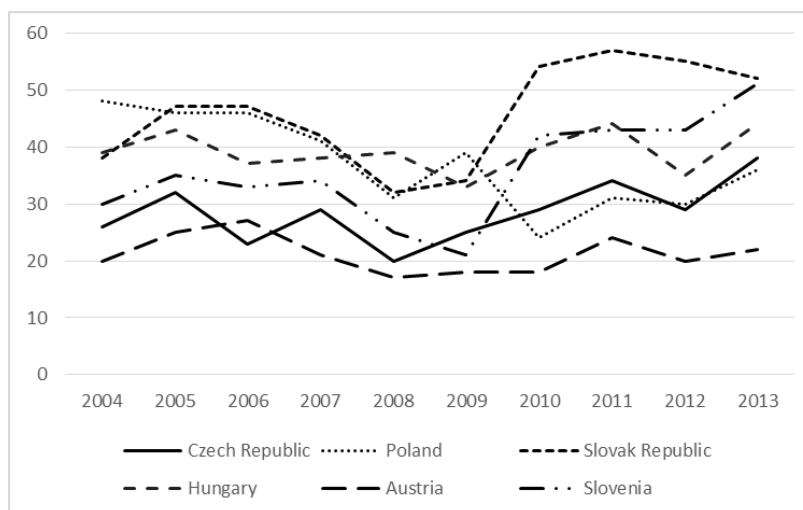


Tab. 1 Overall Rankings in 2004-2013

GEO/TIME	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Czech Republic	36	30	28	32	28	29	29	30	33	35
Poland	48	48	50	52	44	44	32	34	34	33
Slovak Republic	33	34	33	34	30	33	49	48	47	45
Hungary	35	31	35	35	38	45	42	47	45	48
Austria	13	17	13	11	14	16	14	18	21	22
Slovenia	38	43	39	40	32	32	52	51	51	55

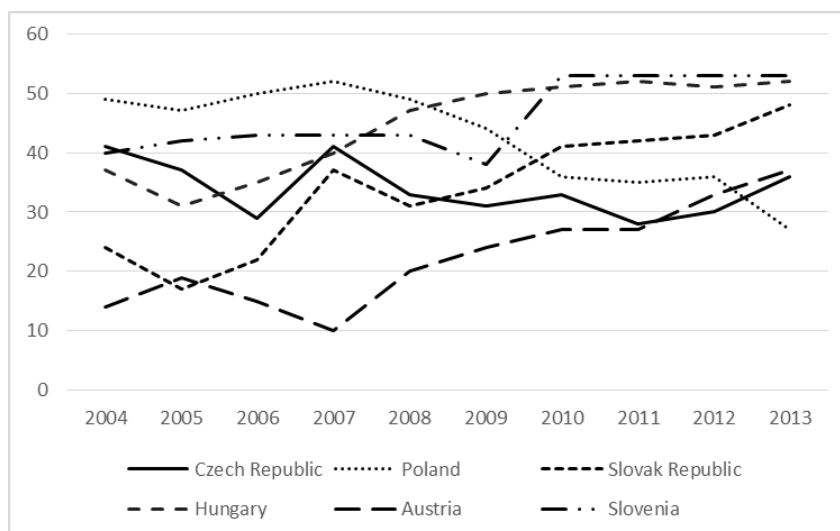
Source: authors' own according to IMD (2008-2017).

In Figure 2, the economic performance was compared. The ranking of individual countries of the Visegrad Group Plus out of the 64 surveyed countries is stated here, the lowest position, the better. The best position within the surveyed period occupies Austria, and then by the Czech Republic. It is followed then by Hungary, Poland, which achieved the biggest improvement, than Slovenia and the worst position occupied by Slovakia. However, Slovakia is the only country which improved its position in the last three monitored years.



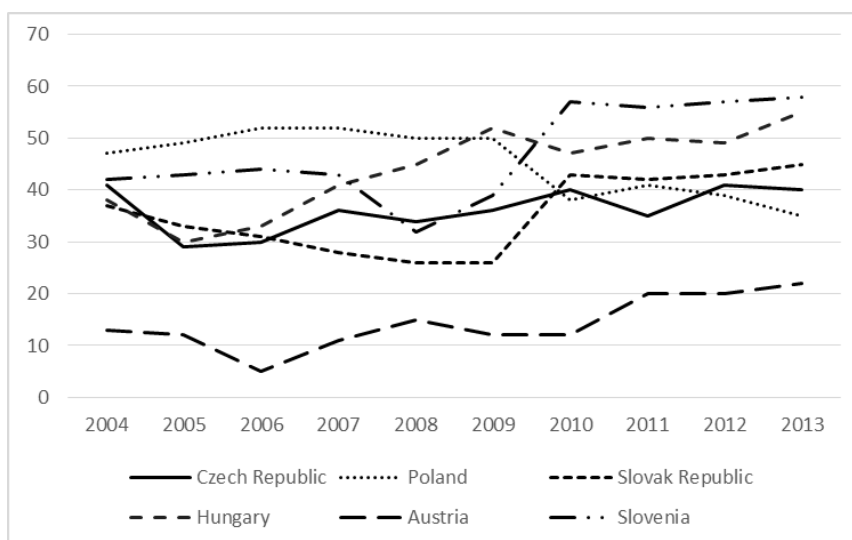
**Fig. 7** Economic Performance in 2004-2013 (Source: IMD, 2008-2017 and authors' own calculations)

In Figure 3, the government efficiency was compared. The best position within the surveyed period is occupied by Austria, followed by the Czech Republic, Slovakia, then Hungary and the worst position belongs to Slovenia. The last three mentioned countries reported the worsening in the ranking of this factor, Poland and the Czech Republic made the biggest step to improvement of the government efficiency within the whole V4+ group.



**Fig. 8** Government Efficiency in 2004-2013 (Source: IMD, 2008-2017 and authors' own calculations)

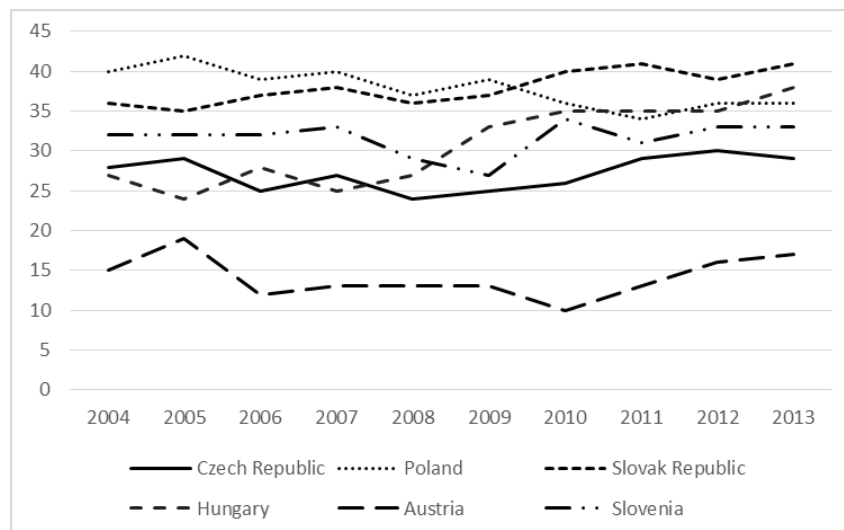
In Figure 4, the efficiency of business was analysed. The best position within the surveyed period is held by Austria with the best improvement in the last monitored years, followed by the Czech Republic and Poland, which has the best results in development of this sub-factor, followed by Slovakia, Slovenia and Hungary (with a relative stability of business efficiency in the last monitored years).



**Fig. 9** Business Efficiency in 2004-2013 (Source: IMD, 2008-2017 and authors' own calculations)

In Figure 5, the infrastructure was compared; the V4+ countries did not rank higher than to the 42<sup>nd</sup> position of 64 countries. The best position within the surveyed period is held by Austria, then the Czech Republic, followed by Slovenia, Poland, Hungary and Slovakia.

Slovenia is the most variable in sense of instability; on the other hand the Czech Republic is the most stable.



**Fig. 10** Infrastructure in 2004-2013 (Source: IMD, 2008-2017 and authors' own calculations)

#### 4 Results and discussion

Statistical methods were used to verify the set up assumptions on the basis of obtained data, namely the standard deviation and the coefficient of variation.

The standard deviation, the average value and the variation coefficient of each country of the Visegrad Group Plus are shown in Table 2. Assuming that the value of the coefficient higher than 50 indicates a disparity in the data file and the use of average value is statistically not very suitable. From the table it is apparent that in almost all countries the validity of using the average value for the verification of the existence or absence of disparities can be affirmed, because the highest value of this coefficient is 36.

Tab. 2 Average Values of Competitiveness Ranking

Region	S	$\bar{x}$	V
<i>Czech Republic</i>			
Economic Performance	5.045	28.50	17.701
Government Efficiency	4.460	33.90	13.156
Business Efficiency	4.142	36.20	11.443
Infrastructure	1.990	27.20	7.316
<i>Austria</i>			
Economic Performance	3.124	21.20	14.736

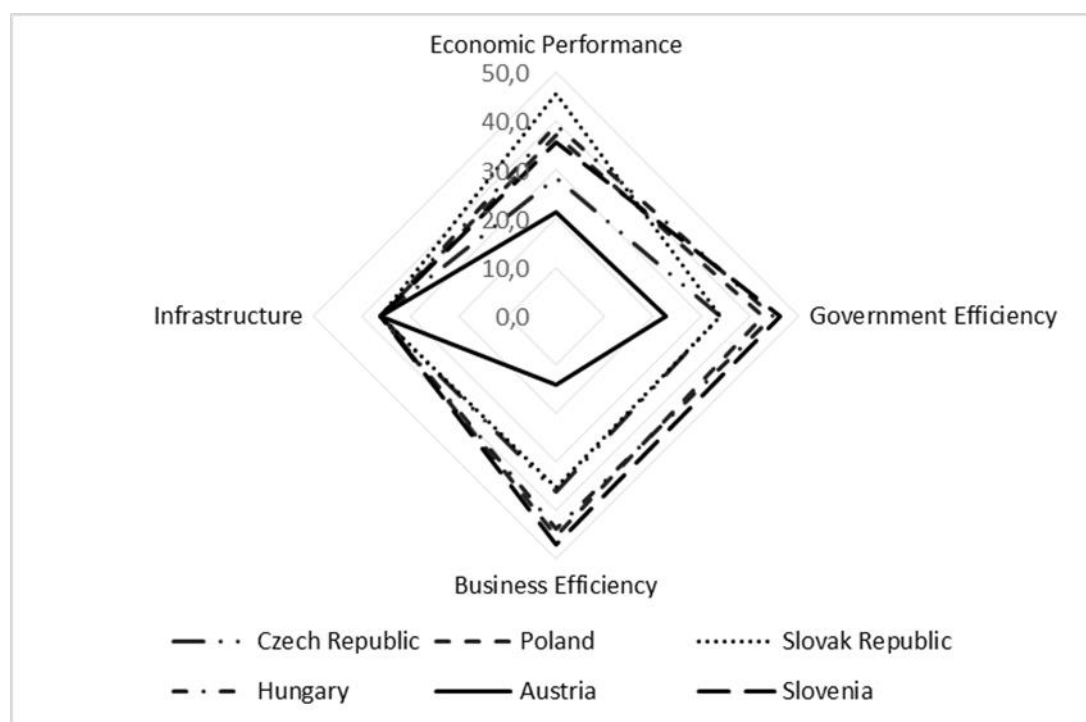
Government Efficiency	8.163	22.60	36.121
Business Efficiency	4.895	14.20	34.471
Infrastructure	2.508	14.10	17.787
<i>Hungary</i>			
Economic Performance	3.516	39.20	8.969
Government Efficiency	7.632	44.60	17.111
Business Efficiency	7.861	44.00	17.867
Infrastructure	4.755	30.70	15.489
<i>Poland</i>			
Economic Performance	7.705	37.20	20.711
Government Efficiency	7.966	42.50	18.742
Business Efficiency	6.067	45.30	13.393
Infrastructure	2.343	37.90	6.182
<i>Slovak Republic</i>			
Economic Performance	8.506	45.80	18.573
Government Efficiency	9.700	33.90	28.614
Business Efficiency	7.144	35.40	20.181
Infrastructure	2.049	38.00	5.393
<i>Slovenia</i>			
Economic Performance	8.684	35.70	24.325
Government Efficiency	5.822	46.10	12.628
Business Efficiency	8.700	47.10	18.471
Infrastructure	2.010	31.60	6.361

Source: authors' calculations according to IMD (2008-2017)

Based on set first assumptions – disparities exist – the average values of factors of non-measurable competitiveness were calculated in the period from 2004 to 2013 and entered for better orientation to the radar chart – quadrangle, see Figure 6. A higher sub-factor values mean

a worse position, therefore, a smaller and more regular the shape means a better position of the economy and more competitive country.

If there were no differences between economies, graphical presentation would be one small quadrangle. The best position was occupied by Austria, followed by the Czech Republic and Slovak Republic. The worst situation, especially in the field of government and business efficiency, was reported to Poland, Hungary and Slovenia, which have the minimal differences of the competitiveness factors. As we can see, the differences between economies exist in the reporting period.



**Fig. 11** Disparities in Visegrad Group Plus in 2004-2013 (Source: IMD, 2008-2017 and authors' own calculations)

The second assumptions was verified according to shape of individual quadrangles of monitored economies in the years 2004, 2008 and 2013. It was set, at the beginning, that Visegrad Group Plus countries improved their positions. As we can see in the Appendix the situation in the field of the non-measurable competitiveness improved only in case of Poland. This economy achieved the best improvement in the field of government efficiency; on the other hand, the situation was not improved in the field of infrastructure. The Czech Republic reported relatively stable development without any significant fluctuations, but the ranking of economic performance worsened. The deterioration in the monitored values occurred in Austria (particularly in terms of business and government efficiency) and in Slovenia in all factors except infrastructure.

## 5 Conclusion

Using the analysed data, we have found out which country of the Visegrad Group Plus has the best position in the field of macroeconomic competitiveness, namely regarding its non-measurable indicators. Two assumptions were set – the first about disparities in competitiveness

ranking factors and the second about the improvement of these factors. Based on the results of these indicators of each country, the ranking of individual country-specific indicators was evaluated.

We used the data of the World Competitiveness Yearbook of the International Institute for Management Development, which belongs to one of the most cited rankings, so the results of this report served as a basis for the analysis. It is necessary to remember that this report uses soft data in its measurements, which can deform the results of evaluations, as they reflect the wishes and requirements of respondents of the questionnaire survey. These major economic indicators were assessed: economic performance, government efficiency, infrastructure and business efficiency for the period of 2004 to 2013.

According to the analysis of the factor values of competitiveness (as the results of the 64 countries' ranking), using the coefficient of variation, we found that the monitored economies show disparities in the values of non-measurable competitiveness factors, the greatest differences exist in business efficiency, then in government efficiency. Moreover, the development of these factors did not improve, with the exception of Poland, the countries deteriorated their positions in the monitored period.

The first assumptions about disparities in competitiveness was confirmed, on the other hand the second assumptions about improvement of factors of competitiveness was rejected – only Poland achieved better results, the rest of the monitored countries worsened their conditions for competitiveness.

## Acknowledgement

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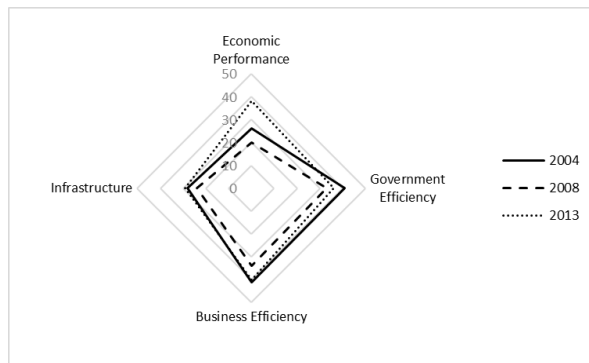
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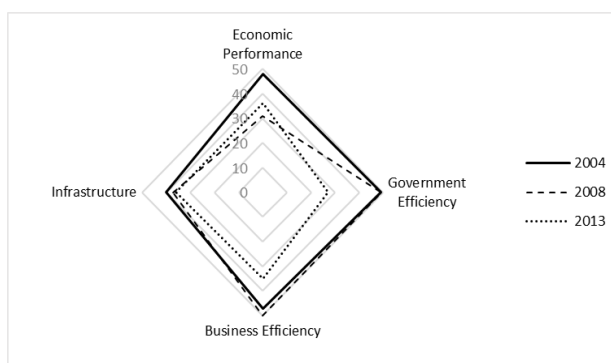
## Appendix

### Development of Non-measurable Factors in 2004, 2008 and 2013

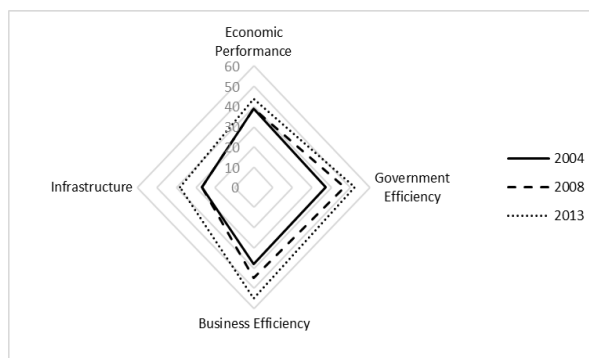
#### Czech Republic



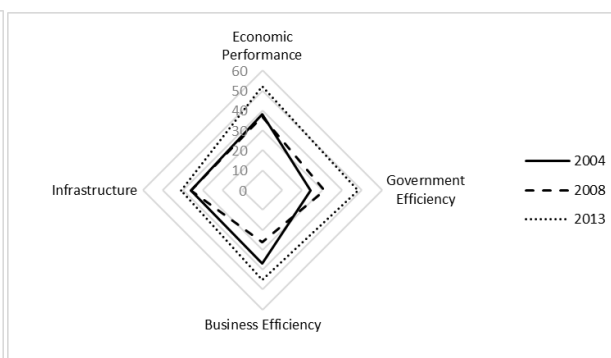
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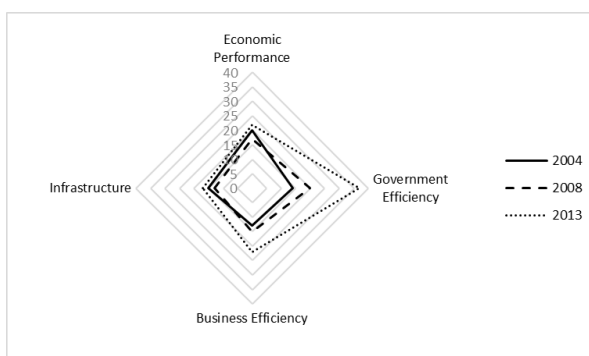
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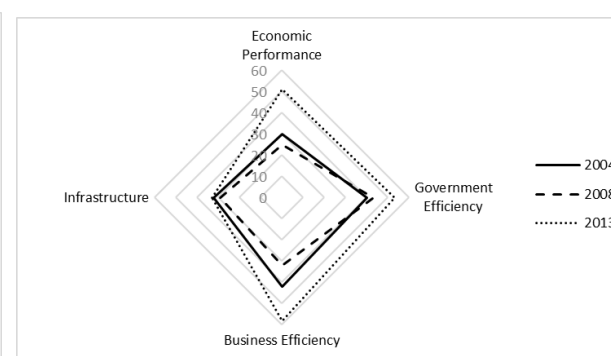
#### Slovak Republic



#### Austria



#### Slovenia



Source: authors' own



## POPULATION AGING, ECONOMY DEVELOPMENT: A CROSS-NATION CONCERN

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### **Abstract**

The aging population in the world has fast growing in last 50 years. The demographic structure shifting in main countries is significant with the proportion rising of population aged 65 and over. Process of population aging is shaping the economic development in most of the developed and developing countries. The aim of this paper is to illustrate the relation between the economic development and population aging using data on 49 countries and to examine changing of the capability of economy to bear the pressure caused by demographic shift in those countries in last 50 years. The results indicate that the process of population aging with its economic development is common phenomenon in countries with big size of population. China is not the only one which facing to the problem of “aging before its rich”. There is positive correlation between the process of population aging and economic growth in the populous country. The demographic shift is stable, while the fluctuation of economic growth weaken the capability for nations to mitigate the negative impact of elder population.

### **Keywords:**

Population aging; Economic development; GNI

### **Introduction**

The world population are aging dramatically and aging population is challenging the whole world in new century. The definition of population aging in economic and social respects refers to the dynamic increasing of proportion of elder persons of total population in one nation or region. This kind of shift of demographic structure towards to older age of labor force, lower productivity in society, which caused the significant damage to economy [1].

According to the definition of United Nations, the society which has the proportion of person aged 60 and over of total exceeds 10% or the proportion of persons aged 65 and over exceeds 7% is considered as “aging society”. The society with persons aged 65 and over of total over 14% be considered as the “aged society and over 21% be considered as “hyperactive aged society” [2]. In this paper, we take the definition of “aging population” with the size of persons aged 65 and over exceeds 7% of total population in a country or region.

In 2015, the percentage of population aged 65 and over of total was 8% in the world. Aging population started in developed regions in the earlier of twentieth century. The France and Sweden had its proportion of elder persons which aged 65 and over more than 7% in the very beginning of last century [3]. Since the mid - twenties century, the developed and developing countries around world became to undergo the aging society, virtually every country[4].

Demographic structure of population around world is experiencing a historically change. Shown as Table 1, the number of “aging society” and “aged society” kept increasing in last 50 years. In 1970, there were 44 countries and regions that share of person aged 65 and over of total over 7% in this planet. In 2016, there were 85 countries and regions of all 218 countries and regions in whole world has entered “aging society” with over 7% their persons who aged 65 and over.

The number of “aged society” in the all counties are higher today with an accelerating growth. The number of countries and regions that share of population aged 65 and over 14% was zero in 1970. The highest proportion of population aged 65 and over of its total population was 13.6 %, in Germany. Today, the number of “aged country” reach 48. The time of the number of “aging society” raised from 44 to 67 takes 20 years. In addition, as the same time, the number of “aged society” raised from zero to 23. In following 15 years, the number of countries with over 7% of total citizens who aged 65 and over increased by 18 (from 67 to 85) and the number of countries with over 14% of total population aged doubled from 23 to 48. That is evident accelerating growth of aging world.

**Table 1: Number of “Aging Society” and “Aged Society” around world, 1970–2016**

<b>Year</b>	<b>Aging Society</b>	<b>Aged Society</b>	<b>Year</b>	<b>Aging Society</b>	<b>Aged Society</b>
1970	44	0	2000	67	23
1975	46	6	2005	74	31
1980	51	8	2010	78	31
1985	52	7	2015	85	44
1990	58	11	2016	85	48
1995	63	18			

*Source: World Bank, World Develop Indicators 2016*

As the most “hyper aged society”, Japanese proportion of persons aged 65 and over of total was 26.6 % in 2016. Italy, the second rank of “hyper aged society”, which had 22.7% of total population aged 65 and over. With the largest size of population, the share of elder persons (aged 65 and over) in China was 7.07 % in 2001, and it increased rapidly to 10.12% in 2016 [5].

Moreover, the pace of process of population aging in China is much faster than those developed countries and most developing countries. China is moving fast to an aging society and aged society. According to “World Development Indicator 2016” [6], Japan took 35 years to increase its share of aging individuals from 5% to 10%. It took 33 years for China to get its share of aging population over 10% from 5%.

The UN [7] predicted that 13.5 % of total population in China will be aged 65 and over in 2025 and reach at 16.67% in 2030. China has 30 years to transfer from “aging society” to “aged society”. In contrast, the developed courtiers, France took 115 years, Sweden took 85 years and the United States took 69 years for the proportion of population aged over 65 years to double from 7% to 14% [8].

The first section of this paper is the introduction about the population aging process in the world. The second section discusses the trend of and correlation between the economic growth and population aging in populous countries in different period in the history. The third section explores the elasticity between the economic growth and pace of population aging with

comparable data of various countries. It examines the economic capability of nations to mitigate the potential effect of demographic changes.

## **Aging population and economic development**

Population aging is kind of success story in human development history [7] [9]. With the development of economy in human society, the lower fertility rate and longer life expectancy drives the accelerating process of population aging [10]. Moreover, in the developing country, typically in China, the public health and medical technology achieved great improvement in last decades [8].

The research on the effect of population aging to economic growth are abundant and rich in the long term. The main point from the early research are the rising of aging population would slowdown the growth of economy, decline the saving in one country, weaken the productivity of economy and reduce the personal taxes and total revenues in developing and developed countries [10] [11] [12] [13] [14].

The research concerned to Chinese aging issue started from 1990. Wu [15] indicated that the future policy in China should improve the health service to the public, reform the social pension system, encourage the re-employment, which could mitigate the effect of aging.

## **Correlation of aging population and economic development in different period**

The experience shows the evidence that the developed country have more heavy problem of aging population than the developing country. The common sense is that economy body that has the higher-level economic development has better health care of local citizen, longer life expectancy of people, matured pension system and social assistance system. Mi [16] used the GDP per capita in his paper to measure the relation between development of economy and degree of aging population. His analysis shows that all economy bodies which has GDP per capita 10,000 USD and over of all countries with population size over 50 million, the proportion of aged 65 and over in these country were more than 12%, excepted Mexico. Moreover, the countries that has GDP per capita lower than 10,000 USD, the share of aging population (65 and over) of total were less than 8% in 2005. Ma [3] took GDP per capita to compare the aging issue of Japan, China and Korea and stated that China is not ready in its economic side for the aging population challenge.

The size of population varies for the countries in this world. The demographics of one country drives its economic and social development. The pattern of country with huge population size is significantly different with the economy with small size population [16]. Considering the effectiveness of this analysis, in this paper, we chose 49 countries for the analysis. These countries are Top 49 countries for its population size in the world and the minimum population size of those countries was 28 million by the end of 2016, shown in Appendix A.

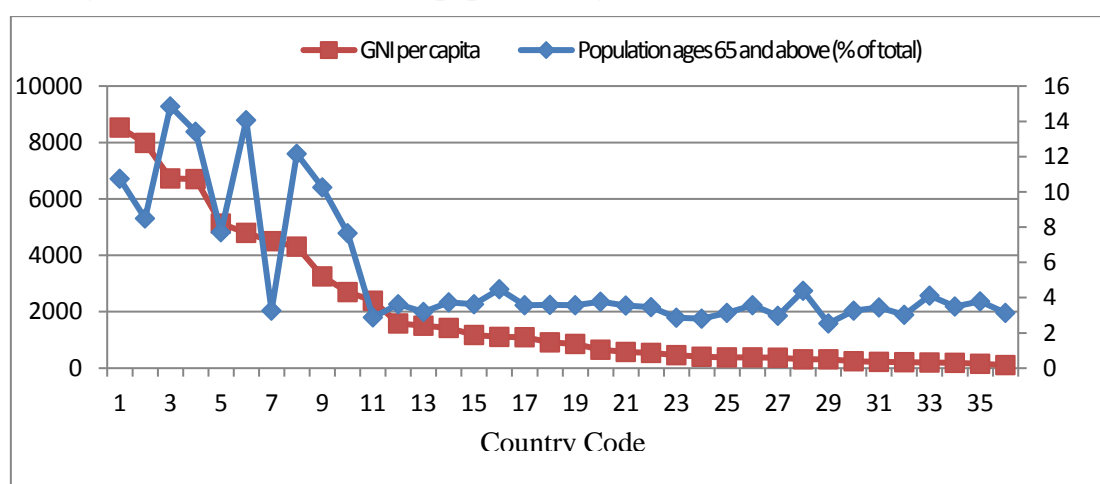
In those Top 49 countries, twenty countries are “aging society” with over 7% of total population are aged 65 and over. Peru and Vietnam, another two big developing countries, have its share of population aged 65 and over of total population are really close to this critical line. This proportion of Peru was 6.98% and the number of Vietnam was 6.92% in 2016. Ten countries in Top 49 group had the proportion of population aged 65 and over of total passed 14% in 2016.

The leading countries were Japan, which had with 26.56% of total population aged 65 and over, followed by Italy (22.7%) and Germany (21.3%).

Compared with gross domestic product (GDP), gross national income (GNI) based on income side of citizens in one country. GNI measures the income of domestic and abroad residents of one country, which decides the standard of persons' health consciousness and environment, social security etc. in one area. The GNI is more available to describe the economic development related to the change of demographic in one country.

In the paper, we take GNI per capita to measure the level of development of one economy body. The point of percentage of population that aged 65 and over indicates the process of aging. The figure 1 shows the GNI per capita of counties<sup>20</sup> and its GNI per capita in 1975.

**Figure 1: GNIPC and ratio of population aged 65 and over of 49 counties in 1975**



Source: World Bank, World Develop Indicators 2016

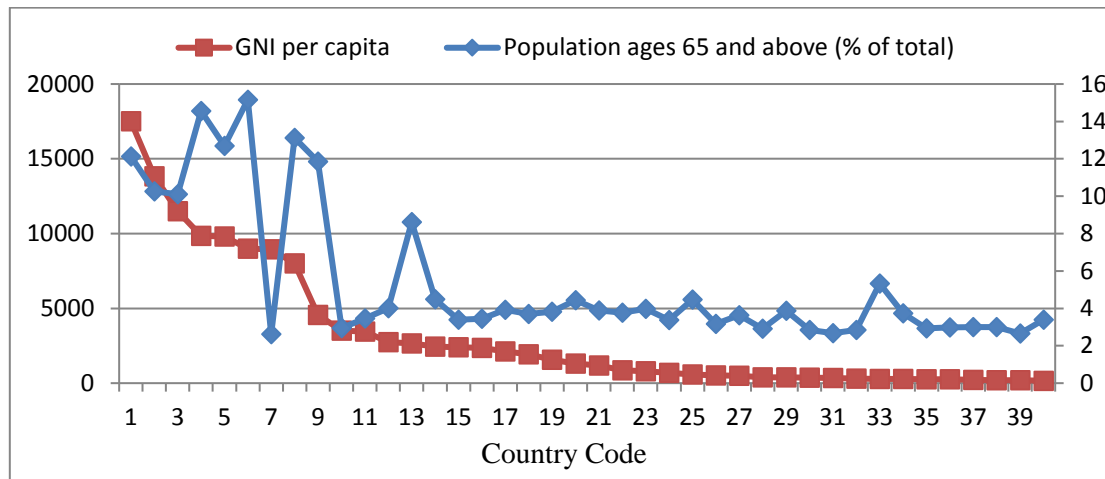
Shown in figure 1, the proportion of population aged 65 and over of total in all countries with GNI per capita over 3,000USD in 1975, except Saudi Arabia, were over 7%. The all counties left were less developed countries with GNI per capita less 2,000USD and the share of population aged 65 and over were less than 4%. The leading countries for its GNI were United States, Canada, Japan, Germany, France and United Kingdom, following by Saudi Arabia, the richest developing country based on its oil business. The top countries were Germany, France and United Kingdom for the higher proportion of aged population of total. The rate of aged population of Japan was less than United States and Canada in 1975.

In 1975, the “one child policy” did not be implement in China. The proportion of population aged 65 and over of total in China was 4.11%, this number were higher than this indicator in lots of developing countries of this 36 countries in this year, such as Korea Rep (3.785) and

<sup>20</sup> The countries are (listed by the order from No.1 to No.36): United States, Canada, Germany, France, Japan, United Kingdom, Saudi Arabia, Italy, Spain, Argentina, Venezuela RB, South Africa, Iran Islamic Rep., Mexico, Brazil, Turkey, Peru, Algeria, Malaysia, Korea Rep., Colombia, Morocco, Congo Dem Rep., Nigeria, Philippines, Thailand, Sudan, Egypt, Arab Rep., Ghana, Kenya, Indonesia, Bangladesh, China, India, Pakistan, Nepal. The data of rest countries of Top 49 are not available in 1975 in WDI 2016.

Thailand (3.58%). However, Chinese GNI per capita was 200 USD, which only little higher than Nepal in 1975 before its reform and opening.

**Figure 2: GNIPC and ratio of population aged 65 and over of 49 counties in 1985**



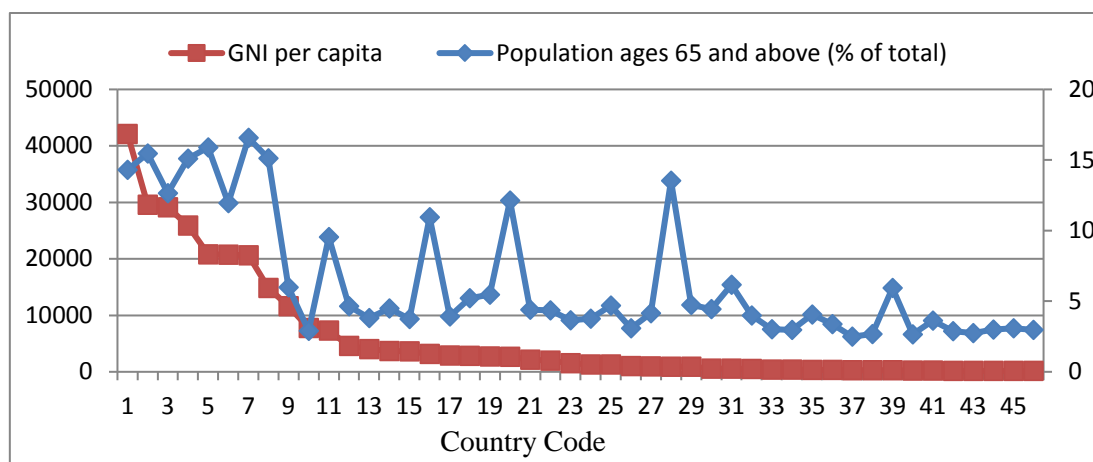
Source: World Bank, World Develop Indicators 2016

The figure 2 shows the GNI per capita of 40 countries<sup>21</sup> of this Top 49 group and its GNI per capita in 1985. The ranking of higher GNI per capita of developed countries had little change. Japan became the third richest countries in this group. The ratio of proportion of persons aged 65 and over of total in Japan was 10.11%, which less than other developed countries which GNI per capita over 8,000USD.

It is clear that most countries, which had GNI per capita less than 4,000USD in 1985, their degree of aging population of total citizens, were less than 5%. However, three countries did not match this. They showed that high proportion of aging population and low GNI per capita in this figure. The first is Spain, the “earliest developed country” since centuries ago, had high proportion of aging population of total, lower GNI per capita compared with other developed countries. The second is Argentina, the former top developing country, after its failure of economic and political reform, the GNI per capita in Argentina dropped from 2,700 USD in 1975 to 2,650 USD in 1985. The third country is China, the proportion of aged 65 and over of total citizens in China was 5.33% and Chinese GNI per capita was 290 USD in 1985. The proportion of aged person increased about 1.2% during these 10 years in China, which was significant fast rising compared with other developing countries. Korea Rep had 4.48% proportion aging 65 or over of total population.

<sup>21</sup> The countries are (listed by the order from No.1 to No.40) United States, Canada, Japan, Germany, France, United Kingdom, Saudi Arabia, Italy, Spain, Iran Islamic Rep, Venezuela, Iraq, Argentina, Korea Rep, Algeria, South Africa, Mexico, Malaysia, Brazil, Turkey, Colombia, Peru, Thailand, Morocco, Egypt, Arab Rep, Philippines, Indonesia, Sudan, Pakistan, Nigeria, Ghana, Kenya, China, India, Congo. Dem. Rep., Mozambique, Bangladesh, Ethiopia, Uganda, Nepal. The data of rest countries of Top 49 are not available in 1985 in WDI 2016.

**Figure 3: GNIPC and ratio of population aged 65 and over of 49 counties in 1995**



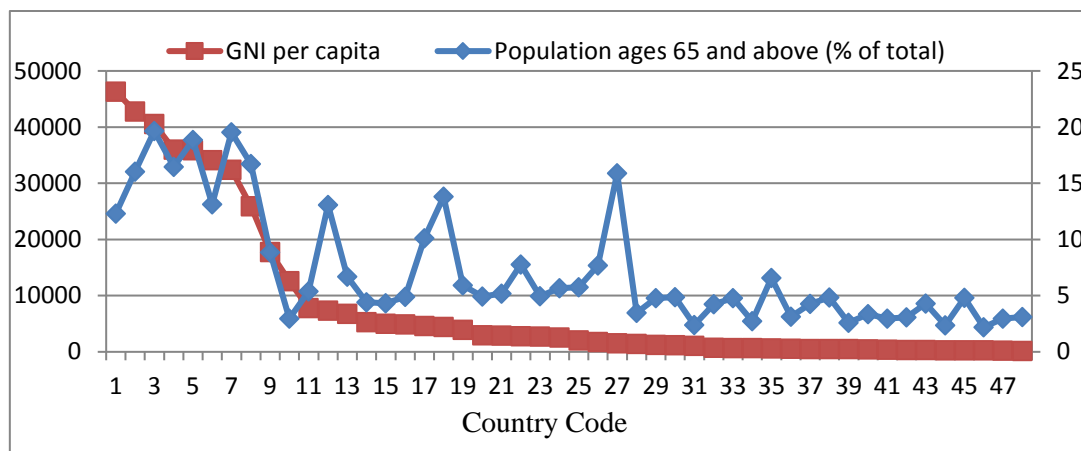
Source: World Bank, World Develop Indicators 2016

The figure 3 shows the GNI per capita of 46 countries<sup>22</sup> of this Top 49 group and its GNI per capita in 1995. Japan became the richest country with its GNI per capita. The Top 5 countries has no different with the countries of ten years ago. However, the difference between the proportions of aged 65 and over in Japan with the ratio in other developed countries became smaller.

Those countries belong to former “Soviet Union” area, had low GNI per capita for their crashed economy in 1995 with high ratio of proportion aged 65 and over of total, such as Ukraine and Russia. From 1985 to 1995, the proportion of aged 65 and over of total citizens in China increased from 5.33% to 6.16% and the number in Korea Rep. increased from 4.48% to 5.98% with its rapidly economic development. Korea Rep. were the eighth ranking for its GNI per capita (11,160 USD) in 1995. For the developing countries else, the curve of aging ratio in this graph shows more fraction than before.

<sup>22</sup> The countries are (listed by the order from No.1 to No.46) Japan, Germany, United States, France, United Kingdom, Canada, Italy, Spain, Korea Rep., Saudi Arabia, Argentina, Mexico, Malaysia, Brazil, South Africa, Poland, Venezuela, Turkey, Thailand, Russian Federation, Colombia, Peru, Algeria, Iran Islamic Rep., Morocco, Philippines, Indonesia, Ukraine, Egypt Arab Rep., Uzbekistan, China, Pakistan, Sudan, Ghana, India, Bangladesh, Angola, Kenya, Vietnam, Uganda, Nepal, Nigeria, Tanzania, Mozambique, Ethiopia, Congo Dem. Rep.. The data of rest countries of Top 49 are not available in WDI 2016.

**Figure 4: GNIPC and ratio of population aged 65 and over of 49 countries in 2005**

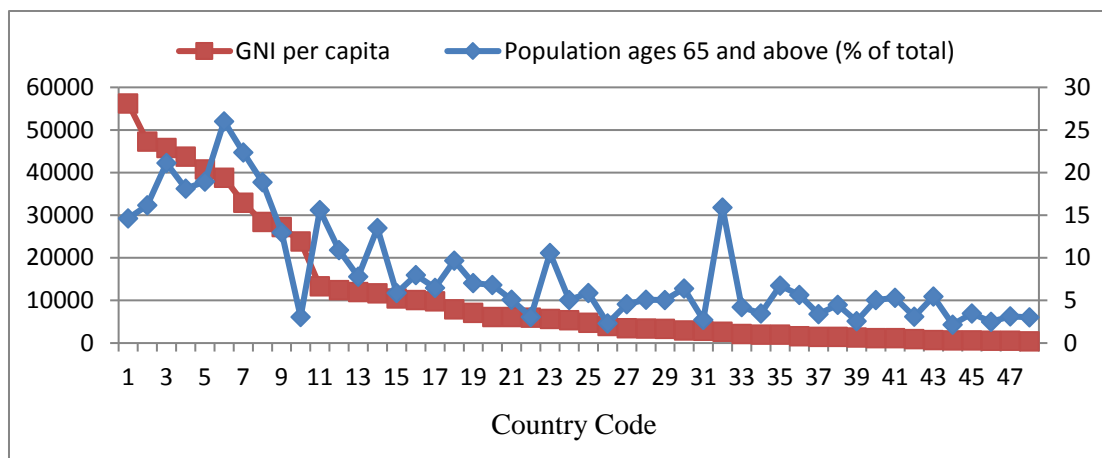


Source: World Bank, World Develop Indicators 2016

The figure 4 shows the GNI per capita of 48 countries<sup>23</sup> of this Top 49 group and its GNI per capita in 2005. There was no difference for the leading countries in ranking of GNI per capita. By contrast, the changes of the share of individuals aged 65 and over were significant in those countries. The ratio of aging population of Japan reached to 19.65% from 14.3% (in 1995), as the highest ratio in the world. The share of aging persons of United States declined from 12.65% to 12.19% after ten years. This number of Canada only increased 1.1% and there was almost no change to this ratio in United Kingdom. The proportion of aged 65 and over of total citizens in China was 7.69 % and Chinese GNI per capita was 1,760 USD in 2005. In addition, the ratio of aging in Korea Rep. was 8.86%, which higher than Chinese data.

<sup>23</sup> The countries are ( listed by the rank from No.1 to No.48) United States, United Kingdom, Japan, France, Germany, Canada, Italy, Spain, Korea Rep., Saudi Arabia, Mexico, Poland, Turkey, Malaysia, South Africa, Venezuela, Argentina, Russian Federation, Brazil, Iran Islamic Rep., Colombia, Thailand, Algeria, Peru, Morocco, China, Ukraine, Philippines, Indonesia, Egypt Arab Rep., Angola, Pakistan, India, Nigeria, Vietnam, Sudan, Bangladesh, Uzbekistan, Kenya, Ghana, Tanzania, Mozambique, Nepal, Uganda, Myanmar, Afghanistan, Congo Dem Rep., Ethiopia. The data of rest countries of Top 49 are not available in 2005 in WDI 2016.

**Figure 5: GNPPC and ratio of population aged 65 and over of 49 countries in 2015**



Source: World Bank, World Develop Indicators 2016

The figure 5 shows the GNI per capita of 48 countries<sup>24</sup> of this Top 49 group and their GNI per capita in 2015. The most aged country was Japan, which economy developed with low growth rate during those ten years. The change of degree of aging population in Korea Rep. was remarkable, which increased from 8.86% in 2005 to 12.97% in 2015. The proportion of aged 65 and over of total citizens in China was 9.68 %, which exceeded by Thailand (10.56%) in 2005.

The figure 1 to figure 5 shows the evidence of experiential conclusion of population aging. The development of economy leads increasing of life expectation, lower fertility which are main factors to drive population aging [1]. The higher level of economic development drives higher degree of population aging [16]. There is no doubt that former Soviet Union area (Poland, Ukraine and Russian Federation) and Argentina, both were developed economy in the history although they have bad economic development now. Moreover, the higher growth of economy in one area has the faster process of population aging, such as the experience in Japan, Korea Rep and China.

The change of population structure is more stable than the change of economic development. The demographic change effected by complicated reasons, also the social and culture factors in long term. The economy condition can changed in short period to mitigate or aggregate the challenge of population aging, such as in Argentina.

The phenomenon of population aging are not uniform across countries. The speed of aging in East Asia area is much faster than the other area in the world. Japan, Korea Rep., Thailand, Vietnam and China had the experience in last 40 years for their rapid population aging. By the contrast, the United States and Canada shows different patterns of their demographic structure changing. The process of population these two countries were slower than those developing

<sup>24</sup> The countries are ( listed by the order from No.1 to No.48) United States, Canada, Germany, United Kingdom, France, Japan, Italy, Spain, Korea Rep., Saudi Arabia, Poland, Argentina, Turkey, Russian Federation, Malaysia, Brazil, Mexico, China, Colombia, Peru, South Africa, Iraq, Thailand, Iran Islamic Rep., Algeria, Angola, Philippines, Indonesia, Egypt Arab Rep., Morocco, Nigeria, Ukraine, Uzbekistan, Sudan, Vietnam, India, Ghana, Pakistan, Kenya, Bangladesh, Myanmar, Tanzania, Nepal, Uganda, Ethiopia, Afghanistan, Mozambique, Congo Dem. Rep.. The data of rest countries of Top 49 are not available in 2015 in WDI 2016.



countries and other developed countries, because of their easy immigration policy, which brings younger labor force.

Without doubt, the demographic policy implemented very important role to the change of structure of population. However, there are many debates about whether the “one child policy” would be the key factor of the population aging in China. Wang [2] simulated the scenario without the “one child policy” in China and illustrated this demographic policy is main reason of the population aging in China. Mi [16] states that the population aging were phenomenon around world with the varied demographic policy in each country, the population aging was the result of economic development, not very closed with the demographic policy.

The proportion of aged 65 and over was over 4% in 1975 in China, which was higher than the other developing countries in those 49 countries, before the policy of “one child”. Both Korea Rep and Thailand showed higher speed of population aging in their countries. The demographic policy would not be the key factor of Chinese population aging problem now. China is not the only developing country to face the population aging, which called by research as “aged before its rich” [17].

#### **The growth and rate of growth of aging population in top 49 countries**

Countries have very different rates to undergo aging. Table 1 focuses on top 14 countries those have over 5% increasing of proportion of aged 65 and over from 1967 to 2016 in Top 49 group.

Japan had the largest percentage point increasing in share between 1967 and 2016. The 20% of total population in Japan transferred to aged 65 and over. In these listed countries, three of those countries were economy body that aging population less than 4% in 1967, they were China, Thailand and Korea Rep. Nine of those countries were developed countries with high percentage (over 7%) of proportion of its individuals aged 65 and over in 1967, excepted Japan. The developed economy had much higher increasing in the absolute term.

**Table 1 The change of percentage of population aged 65 and over of total in top 14 counties  
(from 1967 to 2016)**

	Country Name	1967 (%)	2016 (%)	Increased percentage in share of aging (%)
1	Japan	6.45	26.56	20.11
2	Italy	10.50	22.71	12.21
3	Spain	9.08	19.17	10.09
4	Korea, Rep.	3.50	13.44	9.94
5	Poland	7.37	16.19	8.82
6	Canada	7.79	16.57	8.78
7	Germany	12.93	21.27	8.34
8	Ukraine	8.46	16.16	7.70
9	Thailand	3.47	10.95	7.49
10	France	12.40	19.35	6.94
11	Russian Federation	7.06	13.79	6.73
12	China	3.57	10.12	6.55
13	United Kingdom	12.54	18.35	5.81
14	United States	9.71	15.03	5.32

*Source: World Bank, World Develop Indicators 2016*

However, Table 2 shows the set of countries, which had growth rate of share of 65 and over increased over 100% in those 49 countries from 1967 to 2016. The ranking of countries based on the relative changing of share of aging population are very different with the ranking in Table 1, which focus on the absolute value changing from 1967 to 2016. Japan still is top one country, which had most heavily pressure of population aging. The over triple times of share of aging population of total increased in Japan since 1967. The number of percentage of aging population in Korea Rep quadrupled from 3.5% in 1967 to 13.44% in 2016. The following countries are developing countries. Thailand and China both had double sizes of increasing of aging population in 2016. By the contrast, the share of individual aged 65 and over of total in United Kingdom only increased 46%, this term increased 55% in United Nations and 64% in Germany from 1967 to 2016.

**Table 2 The changing of percentage of population aged 65 and over of total in top 14 counties (from 1967 to 2016)**

	Country Name	1967 (%)	2016 (%)	Growth Rate (share of aging population)
1	Japan	6.45	26.56	312%
2	Korea, Rep.	3.50	13.44	284%
3	Thailand	3.47	10.95	216%
4	China	3.57	10.12	183%
5	Venezuela, RB	2.47	6.43	160%
6	Brazil	3.39	8.25	143%
7	Colombia	3.29	7.33	123%
8	Poland	7.37	16.19	120%
9	Italy	10.50	22.71	116%
10	Canada	7.79	16.57	113%
11	Spain	9.08	19.17	111%
12	Turkey	3.85	7.96	107%
13	Nepal	2.82	5.64	100%
14	Peru	3.49	6.98	100%

*Source: World Bank, World Develop Indicators 2016*

Cross- country differences in the history of aging process takes the different threaten to each country. Because the rich countries entered the “aging society” early than the poor one, and have lower process of population aging now. The developed countries maybe easier to mitigate the negative impacts of population aging because their better economy, and their social and economic structure which formed with the process of population aging.

The developing countries have faster pace of population aging than the former “aging countries”, especially the East Asia countries. These countries were poor and less developed without the preparation of this challenge in economic and social side in the history. The key challenge is keep the synchronous development of economy and process of aging.

### **The Elasticity between aging population and economic development**

It is not easy to state that the speed of process aging over or delay to the development of economy in one country. Mi [16] introduced the elasticity between GDP per capita and share of population aging to test elasticity between these two items with two years data from 2003 to 2005 in several countries. We consider that this kind of elasticity illustrate the capability of one country to mitigate the negative impact during certain terms. The higher development of economy means the improvement of social security, health care and more social pension contribution. On the anther side, the falling of the economy development drives the budget of former item and less investment of economic body.

In this paper, the time interval is 5 years to illustrate the pressure caused by population aging and the toleration of national economy. Method to measure the elasticity between the process of population aging and economic development as followed:

$$E_y = \frac{\Delta aging / aging_y}{\Delta GNIpc / GNIpc_y}$$

$$\Delta aging = aging_y - aging_{y-5}$$

$$\Delta GNIpc = GNIpc_y - GNIpc_{y-5}$$

Where  $E_y$  is the elasticity in year  $y$ ,  $aging_y$  is the percentage of population aged 65 and over of total in year  $y$ .  $GNIpc_y$  is the GNI per capita of that country in year  $y$ .

Table 3 shows the elasticity of top 15 counties based on its  $E_y$  calculated from 1970 to 2016 (the elasticity of 2016 in the last column takes data of changing of population aging and GNI per capita during 2015 to 2016). This table excluded those counties that had minus change of GNI per capita or share of aging population in any each 5 years. When the elasticity more than 1, the capability of economic development to mitigate the pressure of aging population is weak. The lower elasticity (keep both of growth of economic development and population aging are positive) means more capability for one country to bear the pressure of its population aging.

In 1975 and 1980, the elasticity in China was 0.14 and 1.45. China had the highest elasticity in all these countries at that time. It is because the very low economy development (cause by the culture revolution) during 1970 to 1980 before its reform and opening, although the point of percentage of aging population of total in ten years only increased 1%, from 3.76% in 1970 to 4.7% in 1980.

Japan, also had the pressure from population aging in those years, the share of individuals aged 65 and over of total increased 2% from 6.8% in 1970 to 8.9% in 1980. However, Japanese economy development did well during those years. The elasticity of Japan in 1975 and 1980 was only 0.07 and 0.14.

From the third column in table 3, this indicator in China dropped. In 1985, the value of elasticity in China was 0.42, and kept low value in following 30 year, which was 0.43 in 1990, 0.14 in 1995, 0.16 in 2000, 0.13 in 2005, 0.06 in 2010 and 0.18 in 2015. Those 30 years is the fast developing period for Chinese economy. Although the proportion of aged 65 and over of total increased about 5% and passed the critical line (7%) in 2001, the pressure of aging population even less than former time.

In 2016, based on calculation of one-year data, this indicator in China was 1.22. That is the first time that the elasticity between population aging and economic development in China back over one again since 1980. The lower economic development exposed the pressure of demographic change in China. However, the lower development of economy is the main feature of Chinese “new normal” economy [18].

In 1985, the indicator of elasticity in Japan jumped to 2.07, and it kept increasing from 1990. It was 0.12 in 1990, 0.4 in 1995, 1.3 in 2005 and 2.0 in 2010. Since the rate of growth of GNI per capita were minus in term of 1995 to 2000 and 2010 to 2015, the elasticity of Japan in this two

period are not included in this table. The countries in South America were in leading position since 2000. The data of Peru was 8.10 in 2000,

**Table 3 excluded the counties had minus change GNI per capita or share of aging population in each 5 years period.**

	C.Cd	E <sub>1975</sub>	C.Cd	E <sub>1980</sub>	C.Cd	E <sub>1985</sub>	C.Cd	E <sub>1990</sub>	C.Cd	E <sub>1995</sub>	C.Cd	E <sub>2000</sub>	C.Cd	E <sub>2005</sub>	C.Cd	E <sub>2010</sub>	C.Cd	E <sub>2015</sub>	C.Cd	E <sub>2016</sub>
1	CHN	0.14	CHN	1.45	JPN	2.07	COL	1.52	CAN	4.94	PER	8.10	BRA	8.02	JPN	2.04	BRA	3.72	KOR	2.83
2	NPL	0.12	ARG	0.82	THA	0.56	CHN	0.43	MAR	1.51	DZA	7.25	JPN	1.31	KOR	1.07	POL	3.62	USA	2.68
3	TUR	0.12	CAN	0.25	CAN	0.45	IDN	0.35	BGD	1.22	BRA	2.76	VEN	0.60	USA	0.98	CAN	2.13	PHL	1.48
4	USA	0.11	NPL	0.17	MYS	0.42	MEX	0.30	ITA	1.06	ARG	2.54	PER	0.57	MEX	0.67	MAR	1.75	IRN	1.47
5	GHA	0.10	VEN	0.14	CHN	0.42	ARG	0.26	ZAF	0.93	MAR	1.75	THA	0.46	DEU	0.36	GBR	1.62	CHN	1.22
6	VEN	0.09	JPN	0.14	IND	0.37	GHA	0.25	ESP	0.60	ITA	1.63	BGD	0.43	ZAF	0.33	DEU	1.26	IND	0.70
7	ITA	0.09	USA	0.13	KOR	0.28	MAR	0.24	TUR	0.56	ESP	1.62	NPL	0.41	ITA	0.30	MEX	0.99	VNM	0.48
8	ARG	0.09	BGD	0.11	NPL	0.24	CAN	0.20	VEN	0.48	COL	0.93	DEU	0.39	CAN	0.27	DZA	0.97	EGY	0.31
9	EGY	0.08	ITA	0.10	IDN	0.20	THA	0.15	JPN	0.40	CAN	0.57	PHL	0.39	PHL	0.26	USA	0.86	SDN	0.19
10	GBR	0.08	IND	0.09	TUR	0.20	ETH	0.13	BRA	0.32	BGD	0.50	COL	0.36	THA	0.23	THA	0.77	ETH	0.07
11	IND	0.07	ESP	0.09	USA	0.16	NPL	0.13	FRA	0.31	NPL	0.41	KOR	0.36	MYS	0.22	KOR	0.75	BGD	0.07
12	COL	0.07	TUR	0.08	PAK	0.10	JPN	0.12	THA	0.25	IND	0.37	GHA	0.31	BGD	0.21	MYS	0.70	PAK	0.04
13	KOR	0.07	GBR	0.07	EGY	0.03	USA	0.11	EGY	0.24	IRN	0.36	IRN	0.25	NPL	0.18	COL	0.70		
14	JPN	0.07	GHA	0.07			KOR	0.10	KOR	0.17	TUR	0.33	MYS	0.24	DZA	0.16	TUR	0.54		
15	PHL	0.06	DEU	0.06			ITA	0.10	CHN	0.14	MEX	0.32	DZA	0.20	MAR	0.16	IND	0.33		

Source: World Bank, World Develop Indicators 2016

The data in Brazil was 8.02 in 2005 and 3.72 in 2015. In recent years, the Korea Rep. took the heaviest pressure of population aging with its ordinary economic growth. The elasticity in Korea Rep was 1.07 in 2010, 0.75 in 2015 and 2.83 in 2016.

The most countries has fluctuating elasticity. It is clear that before the 1990, the indicators of those counties were less than one. In 1990 to 2000, the number of countries which elasticity were one and over increased rapidly, then the number dropped again. Recently, from 2010 to 2016, it is significant that more countries has this elasticity point more than one. That means those countries bearing heavier pressure of population aging related their economic development now.

## Conclusion

With the development of the economy in the last 50 years, the lower birth rate, longer life expectation and better health care drives the process of the trends of population aging in the world. More and more countries undergo the “aging society” which share of population aged 65 and over exceeding 7%. The growth of economic followed by the shift of demographic structure in the history, typically in the populous countries. Moreover, the aging process is accelerating today and the developing countries has much fast change of its share of population aging.

We calculate the elasticity between pace of aging population and the GNI per capita, as the capability of economy body to bear the pressure of aging population in 49 populous countries. While the process of demographic change is more stable than the pace of economic development, the trends of population aging will be challenge in the future. The results of different period in last 50 years shows that the indicator of elasticity increased in the new century in worldwide.

The China, the most population country, is not the only developing country challenged by the population aging and faced the problem of “aged before its rich”. The Thailand has more serious situation than China now. 50 years ago, the ratio of aging population in China was higher than most developing countries, which has big size population. The beginning of process of Chinese population aging was earlier than the implementation of its demographic policy “one child policy”. This “one child policy” is not the key factor, which caused the aging population. The process of population aging is the consequence of economic and social development. That means it is not effective way to solve this problem only depends on demographic policy.

China has “new normal” of its shape of development currently. Due to the slowing down of growth of economy, the pressure of aging population will increase in the future. It is necessary to design and figure out the smart plan to mitigate the adverse effect of population aging in China.

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**Appendix: A Top 49 counties with population size over 28 millions and degree of population aging in 2016**

	Country Name	Population ages 65 and above (% of total) in 2016
1	Japan	26.56%
2	Italy	22.71%
3	Germany	21.27%
4	France	19.35%
5	Spain	19.17%
6	United Kingdom	18.35%
7	Canada	16.57%
8	Poland	16.19%
9	Ukraine	16.16%
10	United States	15.03%
11	Russian Federation	13.79%
12	Korea, Rep.	13.44%
13	Argentina	11.06%
14	Thailand	10.95%
15	China	10.12%
16	Brazil	8.25%
17	Turkey	7.96%
18	Colombia	7.33%
19	Peru	6.98%
20	Vietnam	6.92%
21	Mexico	6.66%
22	Morocco	6.56%
23	Venezuela, RB	6.43%
24	Malaysia	6.08%
25	Algeria	6.02%
26	India	5.81%
27	Nepal	5.64%
28	Myanmar	5.51%
29	Iran, Islamic Rep.	5.21%
30	South Africa	5.21%
31	Indonesia	5.20%
32	Egypt, Arab Rep.	5.11%
33	Bangladesh	5.08%
34	Philippines	4.69%
35	Pakistan	4.49%
36	Uzbekistan	4.33%
37	Ethiopia	3.51%

38	Sudan	3.50%
39	Ghana	3.39%
40	Saudi Arabia	3.16%
41	Mozambique	3.15%
42	Iraq	3.12%
43	Tanzania	3.11%
44	Congo, Dem. Rep.	3.02%
45	Nigeria	2.75%
46	Kenya	2.63%
47	Afghanistan	2.54%
48	Angola	2.35%
49	Uganda	2.17%

## INDUSTRIAL BROWNFIELDS AND IMPACTS OF ECONOMIC TRANSFORMATIONS

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### **Abstract**

Brownfields are a specific phenomenon; they have become a symbol of the sustainable development concept. Brownfields have become a significant topic in the public administration, business sector and within the professional circles of the most of the European countries as well. The following article deals with this topic from the historical point of view. The article focuses on brownfields and historical dimension of their creating. The aim of the article is show, which factors influenced the formation of brownfields using the example of specific. Problems of brownfields will be analysed using the example several Czech regions which characterised strong position of heavy industry. The main method using in the article will be content analysis and comparative method. The historical analysis will be based partly on unpublished Czech archival sources. Specifics of economic and political development in Czechoslovakia and Czech Republic created different condition for regeneration of brownfields in comparison with Western countries. Possibilities of regeneration of brownfields in Czech Republic are limited by stronger degrees of devastation, by peripheral location and by unclear in rights to properties.

### **Keywords**

Brownfields, industry, economic policy, economic transformation  
JEL N54, N64, N94, P23, P25

## **1 Introduction**

Brownfields have been the subject of both professional and public interest in Western Europe since 1970s. Later also in post-communist countries, brownfields have become the topic of public debates. This fact is a consequence of different political and economic development of Eastern European countries in the 20th century. The creation of industrial brownfields is closely linked to the direction of economic policy. Also in this point of view, there were fundamental differences in the development of Western and Eastern Europe. The former Eastern Bloc countries were forced from the early 1950s to take over the economic model of the Soviet Union and began a massive industrialization. At that time, on the other hand, decline in the importance of traditional industries and growing share of the tertiary sector began to characterize Western economies. Since the 1970s, gradual deindustrialisation has begun in the West. This trend has arrived to the Eastern bloc later as a result of the fall of communist regimes. An economic transformation initiated in the 1990s ended the existing unilateral support of the heavy industry. The process of deindustrialization in the post-communist countries took place much more quickly with more pronounced impacts. This has led to a greater development of prerequisites for the creation of brownfields.

The article focuses on the topic of brownfields from historical point of view. Its goal is show how historical factors have influenced brownfields formation and possibilities of its revitalization. This historical analysis uses the example of industrial development in Czechoslovakia and Czech Republic. The paper characterizes main features of the Czechoslovak economic policy in the past and its specific features related to the formation of brownfields. Special attention is paid to the changes of Czech borderlands. The last part of the paper compares positions of chosen industrial brownfields in the Czech Republic.

## 2 Theoretical background

Brownfields are mostly seen as abandoned and dilapidated industrial areas and buildings. However, these represent only one of the categories. Further types of brownfields could be:

- unused administrative buildings
- unused railway buildings
- unused army buildings
- unused agricultural buildings
- remains of former mines

Kadeřábková and Pleva (2009) remind differences of the perception of brownfields in the USA and in Europe. American classification emphasizes the criterion of economic return. European approach focuses more on the development potential. Comparison of the European policies in this area complicates non-existence of a common precise definition of brownfields across the European Union. First European attempt to define the term brownfield was created by European working group within the CLARINET network, (Brownfields and Redevelopment of Urban Areas, 2002). European experts network on brownfields (CABERNET), which was funded by the European Commission, has defined brownfields as the sites that:

- „have been affected by the former uses of the site and surrounding land
- are derelict or underused
- may have real or perceived contamination problems
- are mainly in developed urban areas
- require intervention to bring them back to beneficial use“

## 3 Methods and data

The article focuses on topic of brownfields from historical point of view. Conditions for creation of brownfields will be analysed using the specific example of the Czech borderland and traditional industrial regions. The main method using in the article will be content analysis and comparative method. It is based partly on secondary data from publicly available sources. More specifically as base for analysis were used data published by Investment and Business Development Agency – CzechInvest and by various regional agencies dealing with the revitalisation of brownfields. The historical analysis will be based partly on unpublished Czech archival sources. Example of particular cases and its comparison can show what factors influenced the creation of brownfields in the Czech Republic and possibilities of its regeneration.

## 4 Brownfields and industrial development in Czechoslovakia and Czech Republic

In the Czech Republic the public awareness of brownfields is not very high, as evidenced by various surveys conducted locally. A certain lack of clarity in the definition of brownfields is also reflected in the different components of public administration. According to the definition of Investment and Business Development Agency – CzechInvest) brownfield is „as a property – land, structure, complex – which is not sufficiently utilized, is neglected and possibly contaminated, cannot be effectively utilized without undergoing regeneration, and arose as the result of industrial, agricultural, residential, military or other activities” (CzechInvest, National strategy of regeneration of brownfields). Ministry of the Environment in the document „State environmental policy for years 2004-2010“ defined brownfields as „by the industry devastated and abandoned areas“ (State Environmental Policy for years 2004-2010). The Ministry considered them as significant threat. Agency for Regional Development characterises

brownfields as the devastated remains of industrial or agricultural activity (Brownfieldy v Moravskoslezském kraji). The formation of brownfields is a consequence of structural transformation of the economic, political and social system.

#### **4.1 Specifics of industrial development in Czechoslovakia and its consequences**

Since its establishment, Czechoslovakia has been able to build on the position of industrial bases of Austria-Hungary. In the interwar period, the traditional predominance of light and food industry, which was typical for the Austro-Hungarian monarchy, was alleviated. Share of the manufacturing industry grew and along with it grew the representation of heavy industry in the industrial structure of the 1920s. At the time of the great economic crises in the 1930s, industrial production dropped by 40%, while in Europe its volume decreased by 28% overall (Průcha, 2005). The effects of the crises also contributed to a certain industrial re-structuralization in Czechoslovakia, on basis of which heavy industries such as steel, mechanical engineering, chemistry or electronics were promoted in line with general trends. According to Kunc and Tonev (2015), the first developmental milestone decisive in the creation of industrial brownfields was the formation of industrial regions and stagnation of textile industry in the 1930s.

In 1945, large industrial factories were nationalized in Czechoslovakia. The post-war era was characterized by the rise of the Communist Party, the alliance with the Soviet Union, interventions against the private sector, and new administrative arrangements. In this respect, the era of the Third Republic (1945-1948) was the predictor of changes, which occurred after the onset of the communist regime. Typical feature of economic transformation after 1948 became further industrialization. Czechoslovakia belonged to the most industrial countries of the Eastern Bloc, but around 40 % of the population was still occupied in agriculture in 1950; for comparison – the share of economically active inhabitants in Romania was 75 % In Czechoslovakia this share decreased to 18 % by 1973. (Berend, 2016). Concentration of the industry led to the liquidation of smaller industrial companies. New tendencies of the economic policy had also different regional impacts. The unilateral preference of heavy industry and militarization of the economy has led to a further decline in investments and labor shortages in the border regions. As a result of these new economic policy trends, smaller industrial enterprises in the border regions have been cancelled since the early 1950s. Later chief of Settlement office supposed in spring 1945 gradual liquidation of many villages and towns after the decline several industrial sectors (Wiedemann, 2016). Settlement plan in 1945 declared the cancellation of 8 000 industrial companies as an impact of the decrease of population in borderland (National Archive in Prague). Since the end of the war to the early 1950s, the share of job opportunities in border regions decreased by 63,7% compared to the pre-war period (Topinka, 2005). The situation hasn't changed significantly in this area even after new settlement activities in the second half of the 1950s. On the other hand, large industrial regions, whose growth was based on the clear dominance of heavy industry, have further evolved. According to American historian E. Glassheim (2005), three factors have influenced the transformation and decline in border regions – the displacement of Germans, the communist social policy and late industrial modernity. Situation in the Czech borderlands after the World War was characterized by a structure of nationalities that was changing greatly there. Some parts of the borderland were inhabited by a few Czechs-colonists, as local news reported and revealed. They came there and replaced the German population that was expelled from there. There were also municipalities inhabited by the only Czech family or by the only Czech inhabitant – an administration commissioner who was sent by official circles there. (Provincial

Archive in Opava). The emphasis on building the industry has become the basis of a new identity in the border regions, which should have replaced the lost link between the native population and countryside. Large industrial centers in the north, unlike other border regions, have been resettled according to the original plans (Spurný, 2016). Unilateral support of heavy industry has become the basis of the new development of this area. That is why the consequences of later economic transformation and deindustrialisation have been more relevant here.

In the 1950s, new industrial agglomerations began to develop. Changes in the character of settlements can be demonstrated on the example of settlements within the so-called industrial areas of Ostrava. In connection with the development of heavy industry in the 1950s, the settlement structure of this region has changed significantly. The industrial centers, such as Třinec or Karviná, have gained new importance, and they have gained an urban status in the interwar period. Support of metallurgy, respectively mining industry in these cases has led to a massive increase in numbers of population. (Kłosowski et al., 2005). These changes followed the new urbanization tendencies that were being promoted during the Nazi occupation. Also in this case, the later stagnation was a consequence of previous unilateral emphasis on the development of heavy industry. A lot of industrial sectors failed and collapsed there, or they have changed fundamentally in recent years. The economic transformation strangled agriculture as well. Many more effects of the restructuring of economy have also led to the brownfield formation, e.g. changes in rights to properties, the environmental pollution of properties and a secondary devastation of buildings and areas which lost their original function (Novosák, 2006). Another specific feature in Czechoslovakia was a high share of production areas in cities, which was the result of massive land acquisitions at the time of the centrally planned economy (Nový et al., 2004).

#### 4.2 Industrial brownfields – Czech regions

The Research Study of Locating Brownfields created by CzechInvest in years 2005-2007 identified 2 355 brownfields with area 10 326 ha. This research study was concluded according to data from all Czech regions (without Prague) and recorded brownfields bigger than 1 ha – except „mining brownfields”. Results of research showed that the largest share of brownfields were originally used in agriculture and in industry (See in Table 1). Industrial brownfields occupy the largest area – its share reaches almost 43 % of total area (Vyhledávací studie brownfields, 2008). CzechInvest later in National Strategy of Brownfield Regeneration admitted that total number of brownfields is much bigger and reminded earlier estimations quoting 8 500-11 500 those locations with an area 27 000-38 000 ha.

**Tab. 1** Original using of brownfields in Czech Republic (2005-2007)

<b>Original using</b>		
Civic amenities	304	12,9 %
Agriculture	821	34,9 %
Industry	785	33,3 %
Military housing	151	6,4 %
Housing	95	4 %
Tourism, spa	22	0,9 %
Others	177	7,5 %

Source: CzechInvest, National strategy of regeneration brownfields

National Strategy Brownfields Regeneration in 2008 declared the creation of specialized web portal dealing complexly with issue of brownfields. The goal of this new web database should be raising awareness about available business properties. (Národní strategie regenerace brownfields, 2008). The topic of brownfields was explored by elementary planning documents, i.e. the Strategy for sustainable development in the Czech Republic, the Strategy for economic growth in the Czech Republic, the Strategy for regional development in the Czech Republic and the State policy of the environment of the Czech Republic. All these documents show the perspectives we can view the brownfields problem from. Revitalisation of brownfields in traditional industrial regions became the object of supportive programs of central administration. In 2016, Ministry of Industry and Trade declared the Program of Support and Regeneration and Business Use of Brownfields. The program is intended for municipalities in structurally affected Moravian-Silesian, Ústí and Karlovy Vary regions. Initiator of program were municipalities from mentioned regions (Ministry of Industry and Trade).

Situation in Moravian-Silesian and Ústí region can reveal specifics of industrial brownfields in the Czech Republic. Those regions characterise strong position of heavy industry, significant share of large industrial areas, peripheral location, new trends of urbanization and migration changes. New industrial region around Ostrava was formed later and a preference was given to it over the traditional Silesian region. Economy of the Eastern Silesia was enormously influenced in the second half of the 18th century, when black coal was found there. The first reserves were found in 1776. Less than 20 years later, a regular mining began. Mining and heavy industry changed the image and shape of municipalities around Těšín a lot. Construction of the railway between Košice and Bohumín was a significant impulse towards the industrial development. As a consequence of industrialization, brand new industrial centers opened and the population increased greatly. The period of nationalization and state ownership finished after the communist regime failed and the market economy was revitalised there. Since the 1980's, the Silesian and North-East Moravian heavy industry stagnated and black coal mining was not as interesting as it had been before. From the 1990's to 2001, 14 mines, the most of them in the region of Ostrava, stopped mining and lost their original function.

In 2016, in Moravian-Silesian Region was created new database of brownfields based on survey in 77 municipalities. Brownfields in mentioned regions were distinguish according to various criteria – ownership, area, rate of contamination, traffic availability and former using of abandoned objects. Last criterion in this case not confirms the preponderance of industrial brownfields (Table 2).

**Tab.2** Using of brownfields in Moravian-Silesian Region

<b>Original using</b>	
Civic amenities	37 %
Agriculture	30 %
Industry	22 %
Military housing	5 %
Storage	3 %
Transport	1 %

Source: Regional Development Agency Ostrava



Industrial brownfields have stronger position in several districts of Moravian-Silesian region, where the decline of coal mining, steelworks and heavy mechanical engineering led to formation of industrial brownfields, characterised by the large size, by the higher cost for regeneration and by complicated options for its new use. Typical examples of industrial brownfields in MS region we can find in Karviná. In the town was found 28 areas that can be designated as brownfields. Most of them are industrial (9) and mining (5) brownfields (Martinát et al., 2014). Possible revitalisation of industrial and mining brownfields in Karviná can be complicated by possible contamination and bad transport connection (Turečková et al., 2016).

Ostrava as a centre of region also deals with the consequences of its industrial past. Official web portal of city informs about the presence 79 „brownfield“ sites, which occupy 8,9 % of city's area. City created interactive map of brownfields with basic information about each object. Presented data come from 2010. The city emphasizes its coordinating and initiating roles, because it is not the only owner of brownfield sites. City web portal reminds two largest land qualifies as brownfield – Lower Vítkovice and New Karolína as *„the reminders of Ostrava's golden age of industrial strength“* (Statutární město Ostrava – oficiální portál). Both case can be considered as examples of successful and generally known regeneration of brownfields. The Lower Vítkovice complex was successfully converted by the Vítkovice Corporation for new cultural, educational and social use including congress centre with auditorium for 1 500 people, gallery and science and technology centre (Statutární město Ostrava – oficiální portál). Key factors for regeneration of this area were the interest of owner, support of city and from European funds and original way of reusing. Similar example of successful revitalisation of brownfield is area New Karolína, where the multifunctional shopping centre, residential houses, offices, sport and entertainment centres have replaced original industrial buildings. Majority of them were demolished except two halls which belonged to the electric plant. Those historical buildings were reconstructed and transformed for new use. Now both historically protected halls serve for cultural education and relaxation (Nová Karolína Project). For mentioned examples is typical location nearby the centre of city, which have influenced transformation for new using of former industrial objects. Successful regeneration (especially in case of Lower Vítkovice) has contributed to increase the attractiveness and reputation of city. This way of revitalisation shows possible perspective of industrial brownfields. Former industrial objects were partly reserved as a part of cultural heritage and partly were converted to zones for social and cultural use. Condition for this transformation were appropriately selected project, economic sustainability, support from public resources, cooperation between motivated owner and public administration, lower share of environmental pollution, transport accessibility, location in the centre of city.

Other specifics of industrial brownfields characterise the situation in Ústí Region. According to CzechInvest here are 758 brownfields, around 33 % of them have industrial origin (CzechInvest, 2008). In the statutory city Ústí n. Labem were in 2010 identified 83 „brownfield“ sites, which occupy 11,7 % of built-up area. 22 objects of this number is classified as „supposed brownfield“. In the city prevail residential brownfields (48,19 %), which are followed by brownfields with „manufacturing“ use (16,87 %). (Analýza brownfieldů v ORP Ústí n. Labem a ve Statutárním městě Ústí n. Labem, 2010). Regeneration of industrial brownfields here is complicated by low potential of commercial revitalisation, unclear property relations and environmental pollution. For regeneration of those brownfields is necessary condition the support of public administration. Research Study of CzechInvest agency shows high share of unknown ownership (18 %) in Ústí region. Fragmented or unclear property rights

are here considered as main obstacle in the support of regeneration of brownfields (CzechInvest, 2008).

Problematic property rights in this area are consequence of political, national and economic transformations. Further perspectives of industrial brownfields is also connected with searching of new identity for regions affected by industrial re-structuralisation and by political and social changes. Traditional regional identity weakened (it was a typical feature of the after-war development in many more communist countries). Post-war administrative reforms did not respect borders of the traditional regions, they weakened relations to local institutions and traditions and strengthened a position of the central power (Zimmer, 2014). After fall of communism traditional industrial regions gradually lost its former identity and importance in national economy. Dealing with brownfields became one of the important task in new orientation of the urban development.

## 5 Conclusion

Conditions for creation of industrial brownfields in the Czech Republic are very similar in comparison with another post-communistic countries. We can remind the number of factors that influenced creation of industrial brownfields in the Czech Republic:

- Growth of heavy industry in the first half of 20th century
- Displacement of German population and settlement of new inhabitants
- Establishment of central planned economy (including nationalisation, collectivisation of agriculture, focus on heavy industry)
- Transformation of economy and restructuring of industry after 1989

Consequences of mentioned transformations have influenced its social structure and mentality of the population especially in border regions. Opportunity to inspire from Western European experiences with the revitalisation of brownfields are limited. Possibilities of revitalisation of brownfields in Czech industrial region are limited by various degrees of devastation, by peripheral location and by unclear in rights to properties. Suppose for solving this problems should be the vision of further urban development that responds the heritage of the past and the challenges of the future.

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## THE EUROPEAN UNION AT THE CROSSROADS WITH FOCUS ON ITS EFFORTS TO RESPOND TO GLOBAL CHALLENGES

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### Abstract

The European Union used to be perceived as a strong, deep and complex integration block and a collection of comparatively strong economies. Such picture of the EU no longer exists. At present the European Union faces a number of internal and external challenges. Internal problems include huge disparities in socio-economic development of EU Member States, situation on the market of labor, rising public finance sector debt, insufficient innovativeness and competitiveness, euro zone problems, social exclusion, as well as possible disintegration of the EU. External challenges for the EU result from refugee & migration crisis caused by instability in Middle East region and North Africa, global terrorism danger, instability of Ukraine, foreign policy of Russia. In 2017 the European Commission outlined five scenarios for future development of the EU: 1 - Carrying on, 2 - Nothing but the single market, 3 - Those who want more do more, 4 - Doing less more efficiently and 5 - Doing much more together. The main aim of the paper is to examine the current situation in the EU and to diagnose prospects for future development of the EU with focus on methods and ways in which it responds to global challenges.

### Keywords

European Union, regional integration, challenges, EC five scenarios for EU development.  
JEL Classification codes: F15, F02.

## 1 Introduction

Regional economic integration is perceived as one of processes characteristic for a contemporary world economy (together with internationalization and globalization). Regional integration block can take a form of free trade area, customs union, common market, monetary union, economic and monetary union or economic, monetary and political union. The deeper the integration the more difficult and complicated it becomes. Therefore, the majority of regional integration groupings are organized as free trade areas only. The European Union, however, is an example of a completely different attitude to regional economic integration. The EU integration evolved over time significantly: both geographically and in terms of the elements and areas of integration. As a result, the initial block of 6 economies which created the European Coal and Steel Community, the EURATOM and the European Economic Community in the 1950s was gradually enlarged to reach 28 countries in 2013 (with its Eastern enlargements in 2004 and 2007 being extremely difficult). What's more, the successive deepening of integration has resulted in the creation of Single European Market in 1993 and the euro zone in 1999, as well as the introduction of a long list of common policies (including – among others – Common Trade Policy, Common Agricultural Policy, Common Regional Policy / EU Policy of Economic Social and Territorial Cohesion, EU Competition Policy). The European Union used to be treated and seen as a strong, deep and complex integration block and a collection of comparatively strong economies. Even though, the European Union is a spectacular success story of the integration of European states that used to fight between each other in the past and is considered the most advanced international organization in the world, such an optimistic picture of the EU does not exist any longer (Androsch, 2016; Szczepaniuk, 2014). The EU is no longer perceived as a rich club. Since 2007 it has been experiencing numerous challenges, each and every year seemed to bring new and more severe problems. At

present the European Union faces a number of internal and external challenges. Internal problems include huge disparities in socio-economic development of EU Member States, situation on the market of labor, rising public finance sector debt, insufficient innovativeness and competitiveness, euro zone problems, social exclusion, as well as possible disintegration of the EU (resulting from Brexit and possibility of other “exits”). External challenges for the EU result from refugee & migration crisis caused by instability in Middle East region and North Africa, global terrorism danger, instability of Ukraine, foreign policy of Russia, unpredictability of the US policy under D. Trump’s presidency. What’s more, the EU must face technological (digital) revolution and climate change. Undoubtedly, the last decade has brought the most severe crises for the EU (McInerney, 2016).

It is, therefore, of vital importance to observe, analyze and interpret the conditions of the EU integration, the standing of the EU in the global economy and the evolution of regional integration processes in Europe at the time of global instability and multiple threats and challenges. The way the EU responds to both internal and external threats and challenges will determine its position in the globalized world for the next decades.

The purpose of the paper is to examine the current situation of the EU with focus on selected internal challenges and external threats. The parallel objective is to discuss and diagnose prospects for future development of the EU with focus on methods and ways in which it responds to global challenges. Five scenarios for future development of the EU outlined by the European Commission in 2017 were presented, critically analyzed and discussed. An attempt has been made to answer the question regarding likeliness of the adoption of the EU development according to: scenario 1 - Carrying on, scenario 2 - Nothing but the single market, scenario 3 - Those who want more do more, scenario 4 - Doing less more efficiently and scenario 5 - Doing much more together. Additionally, the possible effects (advantages and disadvantages) of practical implementation of each and every scenario were listed.

## **2 Methods and data**

To achieve the stated objectives, the following research methods were used in the article: literature studies, critical analysis, descriptive analysis, as well as induction and deduction.

The relevant literature, documents and legal acts of the European Commission and the European Parliament, statistical data of EUROPOL and EUROSTAT served as sources of data for the article.

## **3 Literature review**

D. Mahncke believes the current crisis of the EU is the most serious one since the creation of the European Communities in the 1950s. For the first time a realistic risk of implosion of the EU, i.e. a collapse from inside exists. It could take a form of significant and serious decline of cooperation, cohesiveness and common action, a loss of ambition, and could finally end up with no more than just a free trade area. D. Mahncke points out two challenges, namely:

- the need to reform the EU and put it back on the path to success; the need for a renewed comprehension of deep and lasting interdependence of the countries creating the EU;
- the need to confront the basic questioning of a democratic way of changing the EU, which includes accepting diversity, searching for compromise and decision by majority (Mahncke, 2016).

According to E. Bassot and W. Hiller major policy challenges that the EU has to face in 2017 and beyond include:

- Security in an unstable and dynamically changing environment (several frozen conflicts in the European neighborhood: Moldova-Transnistria, Georgia-Abkhazia, South Osetia, Azerbaijan – Armenia/Nagorno-Karabakh; as well as open conflicts: Eastern Ukraine, Syria, Lybia);
- Migration and cohesion (providing shelter and information for immigrants is the first step only; it should be followed by education projects, validation of prior education and accompanied by market integration measures including employment as one of the key factors of successful integration);
- Competitiveness and jobs (the ramifications of the financial and economic crisis since 2007-2008 are still visible; the overall economic recovery remains modest and is unevenly distributed across the EU Member States too, which results in threatening the promise of economic convergence);
- Citizens' participation and democratic accountability (there's urgent need for European electoral reform; further democratization through parliamentarization could be achieved by the involvement of the European Parliament not only as co-legislator in the legislative process itself, but also prior to the legislative initiatives being determined, during the process of agenda-setting);
- The role of the EU budget in underpinning the resultant tasks (exceptionally difficult circumstances of the implementation of Multiannual Financial Framework 2014-2020 which results in the need for the revision if the EU is to effectively confront a number of challenges while fulfilling its political objectives) (Bassot, Hiller, 2016).

K. Archick perceives the European Union as a cornerstone of European stability and prosperity. At the same time, however, K. Archick lists the most important challenges and threats which the EU faces:

- slow economic growth;
- persistently high unemployment in many EU countries;
- the rise of populist political parties in EU Member States (some of them Eurosceptical);
- the UK's decision to leave the EU;
- the Greek debt crisis;
- euro zone problems;
- migrant and refugee flows;
- a resurgent Russia;
- a heightened terrorism threat (Archick, 2017).

The participants of *BÖLL LUNCH DEBATE Reconnecting Europe I* organized by Heinrich Böll Stiftung European Union in February 2017 (Sven Biscop, Reinhard Bütikofer and Kirsty Hughes among them) chose the following main priorities / challenges for the EU in 2017:

- populism – stronger and stronger populist and Eurosceptic voices in EU Member States;
- Brexit – the EU has to manage both Brexit negotiations and the fall-out from Brexit, the EU has to protect the EU-27 interests, the missing financial contributions of the UK will constitute a serious problem for the EU;
- Lack of solidarity – there is urgent need to restore it, for reasonable degree of political consensus and political energy is required in order to develop strong leadership and strategic direction;
- prevention of further disintegration (HEINRICH BÖLL STIFTUNG EUROPEAN UNION, 2017).

C. Bildt discussed six major challenges for the EU in 2017 during *World Economic Forum Annual Meeting* in 2017. According to C. Bildt the list of most serious problems for the EU includes:

- Brexit and its implications;
- refugee and migration crisis;
- economic situation in the EU (risks and possible crisis areas, some of them connected with the problems with CETA, TTIP, others related to Brexit consequences and doubts about the sustainability of the Eurozone);
- technological revolution and preparing the EU society for digital future, in that dealing with a number of complex and sensitive issues (like adoption of the General Data Protection Regulation);
- strengthening EU foreign and security policy – there is urgent need to set out a coherent framework for the EU's relations with the outside world and to increase the EU's role in the creation of global security (the EU remains a marginal player on wider security issues);
- volatility of the political scene in some EU Member States (Bildt, 2017).

According to S. Djankov from London School of Economics and Political Science, in addition to the problems related to Eurozone crisis and its implications, three new challenges for the EU appeared in 2016, namely: aftermath of the Brexit vote, migration crisis and discontent among some of the remaining EU member states (Djankov, 2016). Brexit and political uncertainties in EU Member States were listed among top 10 risks of the world economy in 2017 by N. Behravesch (Behravesch, 2017).

Migration crisis constitutes one of the most serious challenges facing the European Union in the second decade of the 21<sup>st</sup> century. The most severe situation regarding the migration/refugee crisis was observed in 2015. According to the estimates of the International Organization for Migration more than one million of illegal migrants and refugees entered the territory of the EU in 2015, while in 2014 it was just 280 thousand (these figures do not include those who were not detected). As far as the inflow of immigrants in 2015 is concerned the origins of migrants were as follows: 360 thousand from Syria, 180 thousand from Afghanistan and about 120 thousand from Iraq. A vast majority of immigrants arrived by sea, only around 35 thousand came by land. 476 thousand applied for asylum in Germany in 2015, but a total number of those who came to Germany in 2015 was close to one million (BBC, 2016b). In 2016 the situation got a bit better, partly thanks to the EU-Turkey agreement (the number of migrant arrivals by sea was reduced to 317 thousand). The year 2017, however, brought another rise of migration crisis; after just a short pause the EU had to confront another influx of migrants and refugees (Bershidsky, 2017; Daponte-Smith, 2017; Akerstedt, 2017). Increasing influx of refugees and economic migrants over the past several years is seen not only as a threat for the EU but also as a possible factor of the breakup or the collapse of the European Union (Matuszczyk, 2017; Dougherty, 2017). There have been considerable controversies among EU Member States regarding the way of solving the migration crisis. In September 2015 the European Commission came out with an idea of a refugee quota plan, according to which 160 thousand refugees were supposed to be relocated from Italy and Greece to other EU Member States on an obligatory basis and according to the relocation quotas. The practical implementation of the relocation instrument was quite limited (till December 2016 only 5% of the relocation target was achieved). Moreover, some EU Member States (Poland and Hungary among them) have not agreed to accept such an instrument. An even more controversial idea of the European Commission was its call on countries that refused to take in asylum seekers to pay a EUR 250 thousand "solidarity contribution" for every person (European Commission, 2017c; Rankin, 2016). In 2016 the EU launched a common European Border and Coast Guard agency. More



than 1500 border guards are to be available for rapid deployment to the so called “pressure points”. European Boarder and Coast Guard was initially deployed on borders of Bulgaria (BBC, 2016a). Another issue was (and still is) the problem of the integration and accommodation of refugees who already entered the territory of the EU (among others Greece and Italy): the EU launched a new humanitarian program designed for the above mentioned purposes (European Commission, 2017a; European Commission 2017b). The effective integration of both those who recently arrived and long-standing immigrants is a complex and multidimensional process, which entails educational, labor-market and social facets. Successful integration is of vital significance for it is a pre-condition for democratic stability and social cohesion, not just an economic necessity (Bassot and Hiller, 2016).

Rising terrorist threats and attacks constitute the next challenge for the EU (RT NEWS, 2017; Smith, 2017; Bruton, 2015). The years 2015, 2016 and 2017 brought many terrorist attacks in European cities (Paris, Nice, Brussels, Berlin, London, Manchester, Barcelona and Turku among them). In 2015 the total number of attacks on the territory of the EU amounted to 211. In 2016 142 terrorist attacks occurred in eight EU Member States (76 of them in the UK). Terrorists adopt a wide variety of types of attacks – from both networked groups and lone actors; both carefully prepared and carried out spontaneously, including complex attacks on multiply targets (Muggah, 2017; EUROPOL, 2017). One should also take into consideration the danger of CBRN terrorism (chemical, biological, radiological and nuclear terrorism) and cyber-terrorism. The European Union member States responded with the adoption of the hardline security measures (EURACTIV, 2015) and strengthening of military operations against Daesh in Iraq and Syria. But such a response is not enough. The EU ought to adopt a comprehensive security approach. It has to take into account the influence of conflicts in the Middle East and North Africa on the situation in Europe. What's more, it has to consider the problems resulting from the failure of the integration of young European Muslims. The EU foreign policy (especially the one regarding the Middle East region and North Africa) should be re-examined. A wide range of actions should be used: not only military, but also diplomatic, political and financial. Stabilization of the Middle East region which seems so difficult at present, could be one of important keys for reducing the danger of terrorist attacks in Europe. (Charfi, 2016). The EU institutions called for strengthening the EU common approach to CBRN issues by creating a mechanism for compulsory assistance in case of a CBRN disaster. J. C. Juncker called for creating Security Union as the EU's counter terrorism response (European Commission. European Political Strategy Centre, 2016). Both the European Commission and the European Parliament agreed that Member States ought to do more than just sharing best practices, and pool their technologies and infrastructures to avoid wasting resources (European Parliament, 2015).

Another serious problem for the EU is Brexit and its implications. The result of 23<sup>rd</sup> June, 2016 referendum regarding the future of the UK in the EU was a true shock for both the EU and the world. The UK formally presented its will to leave the EU on 29<sup>th</sup> March, 2017 and a month later the European Council at EU27 adopted a set of political guidelines, which defined the framework for the negotiations and set out the EU's overall positions and principles. The first negotiation round took place on 19<sup>th</sup> June, 2017. The UK is to leave the EU not later than on 29<sup>th</sup> March, 2019 (European Commission, 2017d). The UK has never been an typical member state of the EU (the UK does not belong to Schengen area, the UK is not a member of euro zone, it did not sign Fiscal Pact). As far as the EU is concerned the challenges connected with Brexit embrace dealing with “divorce” negotiations and the creation of new conditions for post-Brexit EU-UK cooperation on the one hand and the need to prevent other “exits” on the other. The possible models of future relations between the EU and the UK include: Norway model, Swiss model, Turkey model, Canadian model, free trade area only as well as model

based on World Trade Organization membership; the implications of the adoption of each of them have been widely discussed in the literature. Many authors believe that a completely new model of relations will have to be negotiated and created (Borońska-Hryniewiecka, Kaca, Płóciennik, and Toporowski, 2016; Emerson, 2016). Having in mind Brexit, the EU will have to reconsider both the EU budget and the way it finances common policies (in that the most expensive ones, i.e. Common Agricultural Policy and EU Policy of Economic, Social, and Territorial Cohesion), due to the fact that Brexit will mean the loss of one of the EU's crucial net contributors. Moreover, Brexit served as a stimulus for Eurosceptical groups in other EU Member States (Pawlas, 2016).

Moreover, the list of external threats for the EU in 2017 embraces the problems connected to the foreign policy of both the United States and Russian Federation. V. Putin's imperial policy have already caused trouble (annexation of Crimea in 2014 and intervention in Eastern Ukraine) and it is likely to cause more problems in Central and Eastern Europe. The election of D. Trump made the whole picture of a global political scene even more complicated. D. Trump stressed not once that the future welfare and prosperity of Europe would not be a priority of his presidency; therefore the EU should await a sharp decline in US-EU relations. Many observers and commentators believe that D. Trump has no mental map of the world and no strategy. What's even more problematic and dangerous, D. Trump seems to act with irresistible and changeable impulses (Cox, 2017; Niblett, 2017).

To successfully deal with external challenges and threats, the EU should be united. Unfortunately significant EU's disunity constitutes both its internal problem and a barrier for successful fight with numerous problems (Dempsey, 2017).

#### **4 Results and discussion**

The European Union is experiencing the most serious crisis since its creation. I do believe, the European Union is at the crossroads. Therefore, in my opinion the EU does need to reach agreement with regard to pragmatic understanding on all the above mentioned problems, threats and challenges. According to me, the EU must create a long-term scenario of its future development. It needs to create a plan serving the interests of a very diverse group of countries in a fair and speedy way (Bruton, 2015). The questions are: How to achieve this goal? What should be done? What has been done so far? What has been proposed? What would result from the adoption of each and every proposal of the European Commission?

It seems obvious that the EU must move ahead in order to find solutions to old and new European challenges. This objective can be achieved sustainably on the condition that "Brussels" and the EU Member States conduct much better. Far more transparent evaluation of economic, political and social consequences, scenarios and fallback options is required here (Shout, 2017a; Shout, 2017b).

Scientists and politicians seem to agree on the necessity of introducing changes to the EU functioning. The authors underline the rising intensity of problems and threats the EU must meet. Usually, the list of recommendations regarding the actions and reforms which should be adopted by the EU is quite long. Selected views on necessary reforms of the EU have been presented below.

According to O. Pesce nobody has the right to put the European Union at risk of dissolution or implosion, or to block its progress or threaten unjustified exits. At the same time, however, he points out the fact that it is not possible to run the EU in an overly restrictive fashion, hobbled by too many constraints and impediments, if the risk of dangerous political and social storms ahead is to be avoided. The need for action to counter the forces of disintegration of the EU and to counter tensions in both the EU neighborhood and the global environment becomes greater

and greater. There's the urgent need for the EU to gather all its forces and efforts and to invest in a more secure and prosperous future. Therefore, O. Pesce's proposal for the EU is to adopt the concrete measures in order to satisfy the widespread desire for a reinvigoration of the EU's anemic economy and to re-emerge from the most persistent crisis (Pesce, 2016). The proposal of O. Pesce includes the adoption of the EU's own investment program. O. Pesce believes the EU should become an active investor able to purchase on its own account goods and services needed to implement and sustain such investment. The investments should be sizeable and sufficiently large in aggregate in order to contribute to European investment needs to a great extent. The objectives of the EU investment should fall in line with the growth targets set out in the Europe 2020 Strategy as well as with the broad objectives of the EU. The proposed EU own-account investments should be directed to projects that EU Member States, regions and local entities are unable to undertake on their own, due to constraints imposed by their large budget deficits and profound indebtedness. When it comes to legitimacy of the proposal, O. Pesce believes that politically the proposal is justified by its necessity (Pesce, 2016).

J.A. Emmanouilidis and F. Zuleeg considered the danger of a more regressive and illiberal Europe the number one threat for the future of the EU integration – in such EU key values, orientations, norms, and principles are undermined; as a result the EU will become increasingly introverted, protectionist, nationalistic, discriminatory, xenophobic, intolerant, and authoritarian; such EU will be backward-looking and more inclined to oppose globalization, trade and exchange, migration, heterogeneity, cultural diversity, self-determination and the principles of an open society. Therefore J.A. Emmanouilidis and F. Zuleeg suggested undertaking the following measures in order to counter the danger of a more regressive and illiberal EU:

- Actions aiming at countering the increasing polarization of societies of EU Member States;
- Actions aiming at reducing the socio-economic, societal, cultural, generational, and technological insecurities in EU Member States;
- Concentrating on projects and initiatives where the EU is capable of delivering results that are visible and tangible;
- Making the EU more effective, more realistic and more credible instead of reducing the depth of integration;
- Creating an open but protective EU;
- Creating the EU of unity and avoid exceptionalism (in order to achieve this goal it is necessary to clearly demonstrate the benefits and obligations deriving from membership of the "EU club");
- Countering disintegration at home (it is necessary to become more proactive; it's not enough to just react to the actions taken by populist forces).

They claimed that what we fight for is not actually the reform of the EU itself but "about something much more significant: it is about our way of life; it is about being open, cooperative, inclusive, free, and internationalist societies" (Emmanouilidis and Zuleeg, 2016).

N. Véron focused on economic and financial challenges for the European Union in 2017 and proposed some steps and initiatives that could be adopted by the EU-27. According to N. Véron the year 2017 marked an end to a decade-long period of economic and financial crises when short-term emergencies had to be dealt with. The current need for the EU is to consider fresh initiatives aiming at reaching a more consistent framework for banking, capital markets, fiscal and structural economic policies. Therefore, N. Véron proposal includes:

- Introducing a stronger, "steel framed" banking union (1 - The framework for bail-in should be made more consistent across member states through harmonization of bank insolvency law; 2 - Regulation should ensure that banks cannot be used by governments

as instruments to get easy funding; 3 - Need for explicit risk-sharing to rule out the possibility that local banking problems, especially in smaller countries, may trigger sovereign default);

- A reframed capital markets union, the so called Capital Markets Union 2.0 (1 - A reform and reinforcement of the European Securities and Markets Authority created in 2011 in order to make it the hub of policy-setting in that area; 2 - Allowing for the creation of third-country regimes that would allow European authorities, including ESMA and the ECB, to oversee market infrastructures located outside of the EU-27, e.g. in London, if they play a critical role for the EU-27 financial system);
- A common and reliable base for fiscal policy (a proper accounting and auditing framework for European governments, with a robust enough central function to ensure relevance, comparability, reliability, and understandability);
- EU-level structural reform resulting in the introduction of the single market in regulated services (1 - Renewed thinking on how to achieve a true single market in regulated services sectors; 2 - Building EU supervisory architecture through the creation of sector-specific EU-level authorities with a mandate for binding decision-making, not just loose coordination) (Véron, 2017).

R. Cox suggested taking the following steps by the European Union:

- Re-evaluation of defence infrastructure;
- Pursuing the Banking Union to fight EU's banking sector institutions weaknesses;
- Accelerating renewal of inadequate infrastructure with the application of the Juncker Plan, national efforts and investment in information technology;
- Stepping up practical measures necessary for the implementation of Energy Union;
- Setting up Erasmus II in order to foster artisan exchanges;
- Stepping up actions against tax fraud and evasion and later crating fiscal union;
- Stepping up a program enacting greater "subsidiarity" in the activity of the EU;
- Spelling out the realities of unity in diversity in the EU;
- Planning the existence of some number of dual-mandated national and European parliamentarians in the next European Parliament;
- Pursuing immigration policy with firm selectivity, the EU back up and better spending to integrate immigrants into the European society;
- Renewing the EU efforts for development of neighbor countries economically and security-wise (the Balkans, North Africa and the Middle East) (Cox, 2017).

According to G. Merritt democracy is key to the EU's future. G. Merritt points to democratic deficit of the EU. Some sort of democratic reform of the EU is envisaged. The barriers for the reform are connected to conflicting national and regional interests as well as different political cultures of almost thirty EU Member States. The suggested ideas of such reform of institutional framework of the EU directed towards democratization of the whole EU include both the re-introduction of double mandates (giving some members of national parliaments a seat in the European Parliament) and the creation of an EU Senate (Merritt, 2016).

F. Timmermans has listed migration crisis as one of crucial problems for the EU. F. Timmermans indicates that one of crucial reforms that ought to be introduced by the EU is the practical implementation of common refugee policy. Actually F. Timmermans perceives it as a litmus test for the EU. F. Timmermans believes that making progress in this area will result in an increase of public support for working together on the EU level. Such a collective protection of the EU's external borders is of vital importance, the EU borders ought to be controlled jointly. At the same time F. Timmermans underlines the significance of giving more attention to wise integration of refugees in host countries. To sum up, the EU Member States together should ensure that refugees who are entitled to asylum actually get it and those with no right to

asylum are humanely treated but are returned to their countries of origin; the EU must ensure that the burden is not placed on a few of the EU Member States; it should be shared equally. Another issue stressed by F. Timmermans is the urgent need for much greater European efforts to end the conflicts that generate the refugees. F. Timmermans admitted that it had been terribly neglected over the last couple of years (Timmermans, 2016).

D. Hübner and other members of CEPS Task Force on EU Reform suggested introducing reforms in three fields, namely: I – Border Management, II – Socio-Economic and Monetary integration and III – A Citizens' Union (Hübner, Blockmans and Russack, 2017). As far as field I is concerned, they believe the reform should include the following elements:

- Creating a truly common European Border and Asylum System;
- Establishing shared legal responsibility between the European Border and Coast Guard Agency and member states' authorities;
- Applying the “corrective solidarity mechanism” to all asylum seekers;
- Developing a wider range of legal pathways for refugees and economic migrants;
- Amending the Schengen Borders Code to facilitate more solidarity between member states;
- Strengthening institutions' vigilance to evaluate and enforce compliance with the implementation of the SBC (Hübner, Blockmans and Russack, 2017).

Reforms in the field II – Socio-Economic and Monetary Integration need to include:

- Enhancing compliance: enabling complementing enforcement;
- Completing the Banking Union with an EU-wide deposit insurance scheme;
- Creating the post of a euro area “finance minister” and euro area fiscal capacity;
- Multiplying and channeling investment through the extension of the “Juncker Plan”;
- Supporting the Commission's “European Pillar of Social Rights” in order to promote better compliance and an EU social acquis;
- Recalibrating EU trade policy by creating more democratic involvement (Hübner, Blockmans and Russack, 2017).

When it comes to field III – A Citizens' Union, the CEPS Task Force on EU Reform proposed the following elements:

- Institutionalizing the “green card” procedure, rejecting the “red card” procedure;
- Improving and streamlining national parliaments' scrutiny measures;
- Harmonizing European Parliament elections and introducing a transnational list;
- Introducing the right of legislative initiative for the European Parliament;
- Exploiting the European Commission's mandate as the guardian of the treaties;
- Making triggering of Article 7 TEU easier by lowering the threshold and transferring authority to the European Commission and the European Parliament (Hübner, Blockmans and Russack, 2017).

Some economists and politicians believe that in future the integration process of the EU will require the adoption of a phenomenon of “variable geometry”, “multi-speed EU” or “flexible” integration. What's more, some authors believe that the current EU is already a “multi-speed EU” (19 out of 28 current EU Member States have adopted euro as a common currency, 22 of them operate within Schengen area). Perhaps the reform of the EU will result in further and greater varying of degrees of participation of member countries in common integration projects (Dabrowski, 2017; Martinico, 2015).

M. Leigh described three scenarios for the EU in the year 2025, namely:

- Considerable disintegration resulting from Brexit and further “exits”; only a small group of countries clustered around Germany continues EU cooperation in certain areas;
- Prevailing survival instincts of the EU result in a new lease of life of strong EU;
- A less ambitious reorganization of the EU.

Unfortunately, the most likely scenario according to M. Leigh is the third one (Leigh, 2017).

In 2016 J.C. Juncker called for building an ambitious and modest Europe and outlined the following core elements of the necessary actions directed towards building a stronger EU:

- Stimulating growth and investment (with the application of the European Fund for Strategic Investments);
- European values - Europe as a community of values (The European Union is based on law. The EU Member States must not stand out for their non-compliance with European standards);
- The EU of concrete achievements (modernization of the economy of the EU, building EU Energy Union, improving the European defense structure, strengthening social dimension of the internal market);
- Strengthening global and European dimension of EU's external relations;
- Brexit negotiations and adjustment to post-Brexit situation (Juncker, 2016).

According to D. Gros the EU can and should improve its performance in many respects, but it cannot change its fundamental nature. He underlines the dangers resulting from a wide trend towards populism across the EU Member States. D. Gros believes that the lumbering embodiment of a multi-level democracy and open economy will become more attractive when the populists fail to deliver the working solutions (Gros, 2017).

In March 2017, sixty years after the Rome Treaty was signed by six European states and at the time of the most severe crisis experienced by the European Union, the European Commission outlined 5 scenarios for the EU in the perspective of the year 2025. The European Commission headed by J.C. Juncker did so being aware of all the threats and challenges and of its responsibility for the protection of the EU's interests. The following five scenarios were described by the European Commission:

- Scenario 1: *Carrying on*;
- Scenario 2: *Nothing but the Single Market*;
- Scenario 3: *Those who want more do more*;
- Scenario 4: *Doing less more efficiently*;
- Scenario 5: *Doing much more together* (European Commission, 2017e).

Scenario 1: *Carrying on* assumes focusing by the EU on the implementation and upgrading of current reforms. The adoption of *Carrying on* scenario should bring the following effects by the year 2025:

- Strengthening Single European Market (in that: energy sector and digital sector);
- Concluding progressive trade agreements by the EU;
- Focusing on jobs, growth and investment;
- Improving the euro area functioning;
- Strengthening financial supervision in order to ensure sustainability of public sectors' finance and to develop capital markets backing up the real economy of the EU;
- Closer and deeper defense cooperation;
- Improving cooperation on security matters;
- Achieving progress towards a common asylum system;
- Individual EU Member States are responsible for managing external borders, their activity, however, is operationally supported by the European Border and Coast Guard;
- Decision-making is still complex (European Commission, 2017e, pp. 16-17.).

Undoubtedly scenario 2: *Nothing but the Single Market* should be perceived as the least optimistic and the least ambitious one. For sure it is not prioritized by the European Commission. The European Commission added the number 2 scenario having in mind the current situation in some EU Member States and evolving criticism over too deep integration which reduces sovereignty of EU Member States. The starting point for this scenario is the

assumption that the EU will not be capable of reaching agreement regarding doing more in many policy areas. Therefore, it will finally focus on selected key aspects of single market. Hence the implementation of *Nothing but the Single Market* scenario will result in:

- Reducing regulation on the EU level;
- Strengthening single market of goods and capital;
- Limitations for free movement of workers (more systematic internal border controls due to insufficient cooperation on security and migration matters);
- Limitations for free movement of services;
- Limited cooperation in euro area causing risks for integrity of the single currency; euro not being capable of responding to a new financial crisis;
- Migration and some foreign policy issues being increasingly left to bilateral cooperation;
- The EU as a whole no longer being represented in a number of international fora due to its inability to agree on a common position;
- No single migration policy;
- No single asylum policy;
- No changes introduced in defense cooperation;
- Limited capacity to act collectively (European Commission, 2017e, pp. 18-19).

Scenario 3: *Those who want more do more* assumes that the integration process goes deeper and further but such intensification of common actions and common policies is introduced by coalitions of willing EU Member States and not by all 27 EU Member States. Hence, the adoption of this scenario should make it possible to preserve the unity of the EU 27 and at the same time it should allow for further cooperation of those selected EU Member States who opt for such deeper integration. In fact the implementation of scenario no. 3 means the “multi-speed” EU. The results could be as follows:

- Strengthening Single European Market;
- Concluding progressive trade agreements by the EU;
- A group of EU Member States decides to deepen cooperation in the field of taxation – other EU Member States act as in scenario no. 1;
- A group of EU Member States decides to deepen cooperation in the field of security policy and security measures – other EU Member States act as in scenario no. 1;
- A group of EU Member States decides to deepen cooperation in the field of defense policy (military coordination and joint equipment) – other EU Member States act as in scenario no. 1;
- Budgeting gets much more complicated due to the fact that additional budgets are available for the areas where selected EU Member States decided to do more together – other EU Member States act as in scenario no. 1;
- Decision making gets much more complicated;
- Some groups achieve more together in selected areas (European Commission, 2017e, pp. 20-21).

Scenario 4: *Doing less more efficiently* starts with the assumption that there is the need to act together as EU-27 but due to limited resources it is a better idea to focus attention and activity on a reduced number of fields. The practical adoption of scenario no. 4 should bring:

- Reducing common standards to a minimum;
- Strengthened enforcement of standards in areas regulated at EU level;
- Concluding trade agreements being the sole responsibility of the EU;
- Consolidating euro area and ensuring its stability;
- Reducing the engagement of the EU in the area of employment policy and social policy;

- Systemic cooperation on EU level in the field of border management, asylum policies and counter terrorism activity;
- Creation of a European Defense Union;
- Significant changes in the structure of the EU budget; one budget agreed at the EU-27 level;
- Quicker and more decisive activity of the EU in the fields where its role is greater (European Commission, 2017e , pp. 22-23).

Scenario 5: *Doing much more together* is both the most ambitious and the most optimistic one. It assumes that the level and depth of the EU integration gets increased and strengthened. As a result cooperation between the EU Member States goes further and deeper in all fields and areas. The implementation of *Doing much more together* scenario results in:

- Strengthening Single European Market through standards' harmonization (in that single market in the field of energy, services and single digital market);
- Full responsibility of the EU for trade deals;
- Achieving economic, financial and fiscal union;
- Creating a European Defense Union;
- Cooperation in security matters on EU level becomes a routine;
- Systematic cooperation on border management, asylum policies and counter-terrorism matters;
- Increased and modernized EU budget, backed up by own resources;
- Faster decision making;
- Stronger European Parliament (European Commission, 2017e, pp. 24-25).

The above described five scenarios for the EU outlined by the European Commission have been widely commented and discussed by both the economists and politicians (Bartholomeusz, 2017; Borg, 2017; Eder, Heath, Barigazzi and Aries, 2017; Foster, 2017; Gotev, 2017; Hammond, 2017; Schembri Orland, 2017).

The discussion and negotiations regarding the future of the EU will be neither easy, nor short. They will be both multidimensional and multi-level. They will consume a lot of both time and energy. The results and effects will largely depend on the evolution of political and socio-economic situation in the EU Member States, in the European neighborhood of the EU and in the global environment. What we know for now is that the EU we know is over. A deep reform is required if the EU is to survive in dynamic international environment. But still the EU remains an important element of not only European but also a wider international scene. Especially for its new Member States the EU is a precondition of socio-economic development and overall stability. It is hard to predict the actual evolution of the EU and to specify the way the EU officials and politicians representing 27 EU Member States decide to choose, adopt, introduce and implement in 2017 and beyond. Hopefully they will remember all positive aspects of the EU integration and being aware of all the threats and challenges they will find the recipe for successful EU for the decades to come. At present the attitudes towards future EU model range from a significantly deeper integration (Germany, France prefer scenario no. 5) to limited one (Poland, Hungary opt for scenario no. 2).

In my opinion both EU Member States, Europe and the World do need stronger and more dynamic European Union. I do believe that the current complicated situation in the world economy makes the EU even more needed. It happened not once in the so far history of the EU that reforms and adjustments had been neglected for a long time and initiatives had been introduced far too late. The list of challenges and threats for the European Union in the second decade of the 21<sup>st</sup> century becomes longer and longer. The European Union simply has no time to lose. Wise and responsible decisions should be taken immediately. Moreover, the European Union desperately needs true visioners, responsible leaders, not just politicians. The societies



of the EU member States must be provided with a clear vision of the European Union of tomorrow. Otherwise, euro-sceptics will take a lead.... This could eventually result in a collapse of the EU.

According to me, scenario 3: *Those who want more do more* is the most probable one. Scenario 5: *Doing much more together* could be a good idea, but it is not likely for adoption due to the current political situation in some EU Member States, especially in Poland and Hungary. I do believe that both France and Germany will do their best to move the EU integration further. Obviously, the treaties can be changed only on the condition that all EU Member States agree – unanimous decision taking is required here. On the other hand, however, I do believe that if there is strong willingness of the adoption of some specific actions / initiatives / programmes / projects by a group of EU Member States, they will find a way to introduce such specific actions / initiatives / programmes / projects (even if one-two EU Member States decide for opt-out clauses)<sup>25</sup>.

Another issue that has to be pointed out to is the fact that EU membership seems to be a must for all its current Member States (i.e. EU-27) even more now in 2017 than it was in 2004, 2007. Having in mind a volatile, turbulent global and European environment, the European Union is undoubtedly a necessary factor and precondition of its stabilization. But, to play such a role, the EU itself must be stronger and more united.

Some specific areas of integration should be prioritized. I do believe that strengthening external borders of the EU, introducing new elements of common migration and asylum policies, as well as stronger anti-terrorist measures are of vital importance. The future EU multiannual financial framework should be built in accordance with the above mentioned objectives. More active and dynamic co-operation in those areas should result in a better perception of the EU by the EU citizens. Such better perception could create a more favorable environment for further development of integration processes.

In addition to that, the EU has to do its best to prevent further exits. Brexit has become a reality and resulted in the necessity to negotiate the agreement regulating future co-operation of the EU and its Member States with the UK (Negotiation process has already begun. It is very difficult, multilayered and time-consuming. It is hard to predict all its results and effects). Undoubtedly, the current task for the EU is to prevent the evolution of dis-integration tendencies other EU member States).

## 5 Conclusion

The current situation of the European Union is really difficult. The EU faces multiple internal and external challenges. The EU is at the crossroads. The main threats for the EU (as of mid 2017) include Brexit, migration/refugee crisis, terrorist danger, rising populism and EU criticism in some EU Member States, disintegration, foreign policy of Russian Federation, unpredictability of President D. Trump's policy, instability in the global economy. The way the EU meets the above listed and discussed challenges is of crucial importance. It will determine the position of the EU in Europe and in the global economy. The so far model of the EU integration does not fit the present European and global conditions. At the same time the importance of the existence of the EU on both the European and the global scene is unquestionable. That's why it is of vital significance to find the right solutions and to persuade their implementation.

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<sup>25</sup> The so far history of the EU integration showed a number of cases when the UK opposed to the introduction of some elements of integration and it ended up with opt-out clause while other Member States dealt with new areas of common actions.

The starting point for the reform of the EU should be the reminding of the origins of the European integration: it is of vital importance to remember that dramatic experiences of World War I and World War II inspired the original creation of the European Communities / European Union.

The Reflection Group on the Future of the EU 2030 pointed out the need for a deep reform of the EU in 2010 already, even though the situation of the EU (both internal and in its European neighborhood and in wider global environment was not so complicated as it is in 2017). The importance of acting together and implementing medium- and long-term reforms was underlined in Project Europe 2030. I do agree with the authors of the report who believe that the EU could be an agent of change in the world, even a trend-setter, its role did not have to be reduced to a passive witness. I do agree, that the EU Member States must work together in order to achieve this objective. According to the authors of the report the challenges ahead are too large for any European country to address on one's own (Council of the European Union, 2010).

The European Commission is responsible for the protection of the interests of the European Union. Taking into consideration multiple challenges and threats facing the EU in 2017, the European Commission outlined five scenarios for future development of the EU in the perspective of the year 2025. They range from a very ambitious scenario (scenario no. 5) which assumes that all 27 EU Member States will decide to significantly deepen the integration process and do much more together, giving much more competencies to the EU itself at the expense of reducing their sovereignty to a withdrawal scenario (scenario no. 2) which assumes considerable reduction of the depth and complexity of integration to just the single market. Having in mind huge differences of attitudes towards the EU integration among the EU Member States, the European Commission decided to add the scenario assuming stronger and deeper integration adopted by selected EU Member States only (scenario no. 3 - Those who want more do more). Implementing such a scenario would result in strengthening internal differences in the EU: some countries would integrate more intensely, would receive more integration profits and benefits and would give up more of their sovereignty, while others would decide not to deepen the integration, not to limit their sovereignty but at the same time would have to agree to less integration advantages.

Unfortunately, the latest crises and the problems the EU faced have resulted in the situation where many Europeans (also some European politicians) have forgotten that the history of the EU should be viewed as a success story – a story of seven-decade period of democracy, peace and prosperity in Europe. It does not mean, however, that the process of regional economic integration in Europe was an easy unproblematic one. It began in 1950s, when Europe was destroyed and divided, and full of economic and political problems. Moreover, I would like to stress the fact that the history of the European Union is – in fact – history of negotiation processes. They have all been difficult and problematic. If not for the willingness to find the right solution, the one that could be accepted by the interested parties, and readiness to overcome many difficulties, the EU would not be considered as one of the most important subjects of the globalized world economy in 2017. Unfortunately, nowadays one can observe an increasing tendency among European governments to take unilateral action. In my opinion, new problems and operating in a new environment does not mean the EU is no longer needed. In fact – I believe – we need more EU, not less EU, but also a reformed EU: the mechanisms, instruments and institutions of the EU must be reformed. The EU must build capacity to overcome its internal turmoil and to meet external threats and global challenges. It should also create the abilities to makes the benefits of globalization available to all EU citizens. The so far achievements of the European Union, including four freedoms, Schengen area and common currency, should be protected. Moreover, they should be promoted, advertised, so as to increase

the integration consciousness among the EU citizens. Such higher consciousness of the advantages of European Union integration could result in a better climate for the necessary reforms of the EU.

In my opinion, the EU should do its best not to allow for the reduction of the depth of integration processes. Limiting the EU integration to single market only could be harmful.

What position should Poland take in the EU and in regard to future development of the EU? I am pretty sure that the accession to the European Union should be viewed as one of the best events in post-war history of Poland. I do believe that the list of advantages resulting from EU membership is much longer than the list of disadvantages stemming from EU entry. Due to its geographical and geopolitical location, Poland simply needs EU membership. Both politically, financially and in regard to socioeconomic development Poland has become much stronger thanks to EU integration. But the EU needs Poland as one of its members, as well. Having that in mind, Poland should participate actively in the creation of future European Union. We must accept the fact that the changes are unavoidable and inevitable. All pros and cons must be considered. Poland should sit at a negotiation EU table and take an active part in finding the right solutions for the EU, its Member States, Europe and globalized world economy. Taking a peripheral position in the EU does not seem to be the right choice.

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## THE (IN)COMPLIANCE OF THE DIRECTIVE ON ELECTRONIC COMMERCE AND ITS PURPOSE WITH THE EUROPE 2020 APPROACH TO INTELLECTUAL PROPERTY

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### Abstract

The protection of intellectual property is an integral part of the economic policy of the EU and the strategy Europe 2020 targets it with its smart growth priority translated in the Digital Single Market flagship initiative. Better access for consumers and businesses to online goods is the first pillar of this initiative and the key harmonizing legislative instrument for that is the Directive on electronic commerce. Over 15 years of experience with the transposition of this Directive offers an opportunity to critically and comparatively assess whether the purpose of the Directive is both stated and applied in compliance with the Europe 2020 strategy and, in particular, whether with an effective and efficient balance vis-à-vis intellectual property protection and protection against unfair competition. The general overview is completed with an in-depth Meta-Analysis of selected issues while using both primary and secondary data, including a critical exploration of the Commission communications. Since, pursuant to the underlying hypothesis, the setting, interpretation and application of the purpose, particularly the balance of the intellectual property and competition, of the Directive on electronic commerce is just partially in compliance with Europe 2020, improvement is needed.

### Keywords

Electronic Commerce Directive, Europe 2020, Intellectual property  
D18, E16, K24, O34.

## 1 Introduction

Our post-modern global society is dependent on the utilization of information technologies and is marked by virtualization, aggressive competition and economic and other crises with an omnipresent impact (Pelikánová, 2013). The last three decades were challenging for the modern European integration and a set of policies with different levels of effectiveness and efficiency has been prepared and performed. The common denominators were (i) integration, (ii) internal single market and (iii) intellectual property (“IP”) concerns. The success of modern European integration and the feasibility of the smart, sustainable and inclusive growth requires a symbiotic relationship between the EU, especially its institutions, policies and law, and e-commerce.

A challenge emerged during the 1980s, when the European Economic Community began to lag behind the US and other developed countries. The rebel and now leaving EU member state, UK, realized the importance of the issue and wanted to address it. The famous no-no-no prime minister, Margaret Thatcher sent Arthur Cockfield to Jacques Delors and his Commission to relaunch the, at the time fading, common market. Sir Cockfield prepared a White Paper proposing hundreds of measures to complete a single market and this became the foundation for the Single European Act in 1986, which set a deadline of 1992 for the completion of a single market. The integration was to be both positive (approximation of national laws) and negative (prohibiting discrimination) and in either case to be not overmuch, rather minimum than exhaustive. By 1992, the large majority of the issues had been resolved and the Maastricht treaty created the EU as the Economic and Monetary Union. The Maastricht treaty was revised in 1997 by the Treaty of Amsterdam, which abolished physical barriers inside of the internal market by incorporating the Schengen Agreement and Schengen Area, further revised by the Treaty of Nice and then ultimately reformed by the Lisbon treaty leading to establishing the current EU constitutional trio – the Treaty on EU (“TEU”), Treaty on the Functioning of the



EU (“TFEU”) and Charter of fundamental rights. However, perhaps the most important aspect of the single internal market, the digital aspect entailing IP, virtualization, e-business (including e-commerce) and innovation, was not resolved and so became an important task of the previous as well as current Commission.

In 2000, the European Council set out a one decade long strategy, the Lisbon Agenda 2000-2010 (“Lisbon Strategy”), while the Commission prepared the Directive 2000/31/EC on electronic commerce (“ECD”), they both dealt with the still incomplete Digital single market, to be built based on innovations and IP in order to improve e-commerce and make the EU the most competitive in the entire world. Well, this did not really happen and so the Commission issued a strategy for the next decade (2010-2020), i.e. COM(2010) 2020 Communication from the Commission Europe 2020 – A Strategy for smart, sustainable and inclusive growth (“Europe 2020”). Both, the ECD from 2000 and Europe 2020 from 2010, are still very valid legal and policy instruments dealing with the protection of IP and the support of innovation within the single internal market. Indeed, the 1<sup>st</sup> priority of Europe 2020, smart growth, is translated in the Digital Single Market flagship initiative, which is directly related to the information society and its services, including e-commerce, i.e. to the ECD. A relevant topic emerges, which can be reduced to the burning research question whether the ECD and its purpose is in compliance with the Europe 2020 approach to IP.

The aim of this paper is to perform a deep, multi-disciplinary and holistic research of primary and secondary sources on this topic and to analyse and scrutinize the yield data and information from over the last 15 years period in order to answer the research question. The study is to entail both the stated, as well as the application, information generated on the EU level as well as Czech national level. This type of research complemented by the comparative and critical Meta-Analysis is more argumentative than axiomatic, more qualitative than quantitative. The underlying hypothesis about a just partial compliance needs to reflect the inherent strong institutional and legal features of this topic and its suggested confirmation or rejection is rather indicative and open for further study than final. Further, the results should lead to recommendations regarding the Digital single market and improvements of both effectiveness and efficiency of the balance vis-à-vis intellectual property protection and protection against unfair competition.

The structure of the paper is shaped by the nature of the research question and underlying hypothesis, i.e. the literature review and methods and data exposition are followed by the chronological exploration of the ECD, its setting and application, of Europe 2020, its setting and application, and the resulting critical assessment of their compliance vis-à-vis IP. It culminates with its conclusion suggesting the answer to the research question and the confirmation of the set hypothesis, but as well providing a set of recommendations about various aspects of the Digital single market, and perhaps even the entire modern European integration.

## **2 Literature review**

The technological potential of an economy has been the main determinant of growth and welfare of societies ever since the first industrial revolution. The deindustrialization process experienced by developed economies showed that adapting their technological potential to the new global, much more elastic, economy is the condition for keeping their high level of welfare (Balcerzak, 2016). In recent decades, technology as the science of craft is entering in the stage of high technology marked by the information value and virtualization. A big challenge worldwide isn't a lack of information, but rather it's quantity, disorganization, reduced relevancy (Pelikánová, 2013) and legitimacy (Pelikánová and MacGregor, 2015) along with inherent difficulties linked to the understanding of intangible assets

(Pelikánová, 2014b), namely IP (Pelikánová et al., 2017), and of universal tendency to particular deformation of less and less perfect markets (Ząbkowicz, 2017). The leading phenomenon, the Internet, does not operate in a legal vacuum (Jones and Tahri, 2010), and this is true especially vis-à-vis the intangible and omnipresent IP (Pelikánová, 2012). The information society and virtualization are closely linked to the globalization and to the many Internet functions having dramatic impacts on private, professional and business life (Pelikánová, 2012). Indeed e-business, or at least e-commerce, is the method par excellence for the current competition on the global market. The future is digital and the digital economy is a major source of growth and innovation in the EU (Polanski, 2015). The development of e-commerce, in particular, is considered to be a key factor to stimulate economic growth and investment in innovation by EU businesses, and to enhance the competitiveness of the EU economy (Jones and Tahri, 2011a).

Simultaneously, the idea of a national society with strictly its own politics and economy has declined somewhat, and the idea of a single global society has grown in the context of the exponential spread of information systems and information technologies (“IS/IT”) and the importance of IP. Sociologists and other schools quarrel over the study of these trends, particularly on the meaning of society and the delimitation of mutual expectations in this context (Shawn, 1994). In Europe, modern European integration, linked to the common, and later on, the single internal market, has faced these trends and consequently the Digital single market has become highly relevant. The Maastricht EU amended by the Treaty of Amsterdam and the Treaty of Nice brought the Lisbon strategy along with the ECD, while the EU, after its reform by the Lisbon Treaty, brought forth the strategy Europe 2020 oriented on the Digital single market (Pelikánová, 2014a). Since the 1990’s, the situation has been getting more and more complex vis-à-vis the exponential and dramatically fast evolving use of the modern IS/IT, in particular regarding their involvement in communications, see uses, abuses and misuses related to the content and structure of the Internet, hacking, spams, etc. (Matejka, 2016). Even more importantly, the EU’s competitiveness was behind expectations. Heads of the EU member states reacted to it in 2000 by launching the one decade long strategy, the Lisbon Strategy, which aimed to create “*the most competitive and dynamic knowledge-based economy in the world capable ... by 2010.*” Almost simultaneously appeared the ECD, which regulates various aspects of commerce as conducted online, and in particular the provision of “*information society services*” (Jones and Tahri, 2010) and which is not totally clear about its main purpose (see 4. Results and discussion). However, it is important to remember that ECD emerged as one of the sextet of key “Internet” Directives from the turn of the millennium, i.e. along with the Data Protection Directive from 1995, the Distance Selling Directive from 1997, eSignature Directive from 1999, ePrivacy Directive from 2002 in combination with the ePrivacy Amendment Directive from 2009, and the amendment of the Company Disclosure Directive from 2003 (Jones and Tahri, 2010). ECD was and remains pivotal, its broad definitions and even broader interpretation of the “country of origin” principle in the ECD (Jones and Tahri, 2011a) as well as other ECD principles have massive implications and consequences (Karasiewicz, 2008) and virtually all commercial websites offerings fall under the ECD (Jones and Tahri, 2011a). Interestingly, there are exceptions to the “country of origin” principle, i.e. to the rule that the national law applicable to an information service provider is the law of its establishment, and they include IP rights, the issuance of e-money, unsolicited commercial emails and real estate contracts (Jones and Tahri, 2011a). Naturally, the teleological and purposive methods dictate that this interpretation must be done pursuant to the purpose of the ECD along with sister Directives. In addition, these Directives are merely EU “limited harmonization” instruments, allowing variations in implementing national laws (Jones and Tahri, 2011b) and

they merely set down some general principles for which exceptions and derogations are possible.

During the ten years of the Lisbon Strategy, 2000-2010, the EU “legislation” linked to IP, such as the ECD, was expanded and sometimes contradicted by national legislation of the EU member states, the creation and operation of a Digital internal single market or at least something similar to it has been challenged. The Commission seemed to be determined to go ahead with initiatives and spoke a lot about a “digital single market”, but did not move to revise the existing law to make e-commerce more widespread, secure and transparent (Jones and Tahri, 2011a). In this sense, the ECD fits perfectly within its era’s strategy, the Lisbon Strategy, they both failed. Indeed, the very ambitious Lisbon Strategy looked like a failure already in its midterm, in 2004 (Çolak and Ege, 2013), and as expected in 2010 did not resolve IP, IS/IT, competitiveness and many other issues, instead it became ineffectual. Indeed, the Lisbon Strategy has definitely not increased Europe’s competitiveness in the world economy (Erixon, 2010), instead it culminated in a set of crises and the gap between the EU’s performance and that of the US has widened every year (Walburn, 2010). In sum, the Lisbon strategy did not lead to the completion of a Digital single market (Polanski, 2015), which was supposed to exist already two decades earlier, in 1993!!!

In 2010, the Commission, instead of the heads of the EU member states, launched a new ten year strategy for a competitive and modern EU, namely Europe 2020 with its three priorities – smart, sustainable and inclusive growth, five targets and seven flagship initiatives (Pelikánová, 2017). Although a lot has been done to support digital EU and even more has been said about the Digital single market, especially e-commerce and IP, there is a legitimate question whether the main purpose of the Europe 2020 is really to reach, protect and develop in a feasible manner the Digital single market (see 4. Results and discussion).

Regarding Europe 2020, some studies use a composite index inspired by the Human Development Index (“HDI”) and confirm the primacy of Nordic states and persistent problems in several new, but as well as old, EU member states, and the PIGS (Portugal, Italy, Greece, Spain) acronym generated by the Eurocrisis (MacGregor, 2013) comes into play again (Çolak and Ege, 2013). Another academic stream is even more critical and argues that Europe 2020 will not meet its goals, especially in the field pertaining to ECD, i.e. its first priority “smart growth” linked to the Digital single market and innovations cannot really be achieved. There are at least three strong arguments for this failure – (i) Europe 2020 focuses too much on areas outside its legal competence, (ii) it lacks recourse for non-compliance and (iii) it does not really do too much for increasing the competitiveness (Erixon, 2010). The ultimate accounting, the ‘day of reckoning’ and statement will be done in 2020, however already now it resonates strongly the opinion that the Commission entered in fields and areas for which it lacks the legal, i.e. the juridical, competence and that it is questionable whether the EU has an effective and efficient institutional setting and monitoring system to truly enforce Europe 2020 (Pasimeni and Pasimeni, 2016), and this in particular regarding the Digital single market, innovations, and other spheres linked to the IS/IT and the IP in general. The formal and informal institutions are pivotal, i.e. institutional variables such as good governance and social capital are very (if not the most) significant for Europe 2020 and its purpose (Pasimeni and Pasimeni, 2016). In addition, the empirical research confirms that the IS/IT and IP are multivariate phenomena and the improvement of technological and innovation potential of economies is influenced by both effective policy and institutional factors (Balcerzak, 2016).

Although the data and studies from 2015, where the EU has reached the halfway point of the implementation of Europe 2020, indicate a persistent and significant diversity between EU member states vis-à-vis the three priorities, especially the 1<sup>st</sup> priority – smart growth (Balcerzak, 2015), the Commission does not show awareness about inherent competence, institutional and

policy deficiencies and an appropriate commitment in this respect. Despite the Commission rhetoric, it appears that the EU and most important European economies do not have a strong drive to build a smart, sustainable and inclusive EU (Balcerzak, 2015) and to facilitate functioning of SMEs in the all-encompassing and overregulated EU legal system (Jindrichovska, 2013).

Since the Commission prepared both the ECD and Europe 2020 and shaped their purposes while (allegedly) fully considering the mandate and needs of IS/IT and IP and ultimately aimed ambitiously and unrealistically to the complete creation of the Digital single market in 2015 (Polanski, 2015), its responsibility for compliance and a symbiotic relationship in this arena is beyond any doubt and its responsibility for the failure regarding the complete creation of the Digital single market is at least partially established. Similarly, it appears beyond any doubt that the most important objective from Europe 2020 in this respect, the ratio of the GDP to R&D stagnates around 2% (Bourgeais and Gebhard, 2015) and the target of 3% in 2020 might be, in the best case, likely reached by the Nordic states and, regarding the European integration, the “cold” states, and definitely not by the PIGS and even not the “good and hot” states, such as Germany and France. These deficiencies and issues could hardly be generated by mere small application challenges. Instead, it seems that the fundamentals are not effectively and efficiently set, i.e. the selected purposes of employed legislative and policy instruments are perhaps neither symbiotic nor perfectly matching the needs of modern European integration and of the (Digital) internal single market.

### 3 Methods and data

A scientific and academic study and assessment of the ECD with its purpose and Europe 2020 with its Digital single market vis-à-vis IP requires an open-minded selection and search of multidisciplinary primary and secondary sources, covering legislative documents, political statements and cases. This involves a myriad of instruments and processes going from a field search, case studies and observations over the literate description and teleological method for the interpretation (Pelikánová et al., 2017) of legislative and political acts and commentaries to academic materials. The multi- and cross-disciplinary nature suggests that the data, about both the setting and application, yielded by the indicated search, is to be processed by Meta-Analysis (Silverman, 2013) and the Socratic method of questioning and critical thinking (Paul and Elder, 2006), while using a critical comparison of EU legislative and political documents, generally initiated by the Commission, and economic and other data. This has to be supported by the holistic perception of the legislative evolution in this arena in the last two decades, along with glossed studies and events. The refining of the focus on the (in)compliance of the purpose of the ECD and Europe 2020 is translated in a *sui generis* hypothesis.

The primary and secondary sources, both scientific and academic, as well as unconventional and journalistic, are explored and the yielded knowledge and data are confronted with the real *status quo*. Due to the fact that this paper entails both legal and economic aspects, the focus goes more to the qualitative data and methods than quantitative, and includes deductive and inductive aspects of legal thinking (Matejka, 2013) as a legal theoretic orientation reflects legal science which is argumentative, not axiomatic (Knapp, 1995). The prevailing qualitative research and data, mainly from legislative sources, is complemented by the quantitative research and data, mainly from economic sources, and their discussion is refreshed by Socratic questioning (Areeda, 1996) and glossing. The employed methods and used composite index DESI mirror the presented perspectives and determine the structure of this article.

The single internal market with all four freedoms has been absolutely pivotal for the EU and this is fully reflected by the ECD and Europe 2020 and these legislative and quasi-legislative

instruments need to be interpreted while observing the EU preferred interpretation method – teleological (Lenaerts and Gutiérrez-Fons, 2013). The legislative setting history of the ECD with a set of political and economic aspects and its purpose indicated its body along with other “inside” information needs to be carefully analyzed and assessed. Similarly, Europe 2020, has its political and legislative background and interesting application reality, not only in the field of economics; it has a trio of priorities and its purpose as set and as applied needs to be scrutinized. In sum, it is highly illustrative to critically assess the ECD and Europe while focusing on the (non)compliance of their purposes in the context of the Digital single market and the IP, and to present suggestions and recommendations for the improvement of the effectiveness and efficiency in this arena of the modern European integration.

## 4 Results and discussion

Three decades ago, in 1986, the establishment of a single market by 1992 was set as an objective and, just three years later, both the ten year Lisbon Strategy as a policy framework and a EDC as its important element oriented towards IS/IT and IP was enacted. The Lisbon Strategy ended, the ECD stayed and became a part of the “next” decade’s policy framework, Europe 2020. The year 2020 is rapidly approaching, but Europe 2020, and especially its smart growth priority reflected by the flagship initiatives Digital agenda for Europe and Innovation Union appears to be more difficult to be met and satisfied than expected. What did they really want and expect? What is the true purpose of the EDC and of Europe 2020? Are these purposes in compliance and do they symbiotically support each other, or not? What is the current reality of the Digital internal single market?

### 4.1 The ECD and its purpose – the proper functioning of the Internal Market in e-commerce by removing obstacles and increasing legal certainty---really?

In 1997, the Commission adopted a Communication COM(97) 157 A European Initiative on Electronic Commerce, which identified four key areas for action until 2000 – (i) a widespread and affordable access to the infrastructure, products and services needed for e-commerce, (ii) a coherent regulatory structure, within the EU, based on Single Market principles, (iii) a promotion of skills and awareness for a favorable business environment, and (iv) a compatible and coherent regulatory framework at the global level (EC, 1997).

In 2000, the harmonization of the development of e-commerce within the information society was launched by the ECD. The preamble of the ECD addresses divergences in legislation along with the legal uncertainty hampering the development of the information society and indicates the creation of an appropriate legal framework as its objective. The preamble of the ECD states as follows:“(5) *The development of information society services within the Community is hampered by a number of legal obstacles to the proper functioning of the internal market which make less attractive the exercise of the freedom of establishment and the freedom to provide services; these obstacles arise from divergences in legislation and from the legal uncertainty as to which national rules apply to such services; ...; legal uncertainty exists with regard to the extent to which Member States may control services originating from another Member State....*”(8) *The objective of this Directive is to create a legal framework to ensure the free movement of information society services between Member States ....*” In its Art.1, the ECD states that it “*seeks to contribute to the proper functioning of the internal market by ensuring the free movement of information society services between the Member States*” and this should be done by an approximating “*national provisions on information society services relating to the internal market, the establishment of service providers, commercial communications, electronic contracts, the liability of intermediaries, codes of conduct, out-of-*

*court dispute settlements, court actions and cooperation between Member States.”* The transposition period for the ECD expired in January 2002 (Art.22 ECD).

At the moment of the enactment of the ECD, the EU had 15 EU member states aka old EU members and three of them, France, the Netherlands and Portugal, failed to implement the ECD before January 2002. The Commission kept its positive tenor, and in its Press Release IP/03/1580 from 2003 proudly concluded that *“the Internal Market objectives of the Directive have been met”* and that the ECD *“has provided a sound legal framework for information society services in the Internal Market....It aims to ensure that Information Society services benefit from the Internal Market principles of freedom to provide services and freedom of establishment and so can be provided throughout the EU if they comply with the law in their home Member State.”* (EC, 2003a). As future actions, the following were indicated: continuous monitoring, international co-operation and administrative co-operation between EU member states, raising awareness, and information collection (EC, 2003a). In the more developed manner, the Commission stated in its COM(2003) 702 final - First Report on the application of the ECD (“First Report”) that *“....This set a clear objective of creating a coherent European legal framework for e-commerce by the year 2000. Its importance was underlined by the 2000 Lisbon European Council, which set a new strategic goal for the European Union for the next decade: to become the most competitive and dynamic knowledge-based economy in the world. ...The Directive, which was adopted soon after the Lisbon Council, is fully in line with this objective. It removes obstacles to cross-border online services in the Internal Market and provides legal certainty to business and citizens alike. In so doing it enhances the competitiveness of European service providers, and stimulates innovation and job creation... The Directive provides a light and flexible legal framework for e-commerce and addresses only those elements which are strictly necessary in order to ensure the proper functioning of the Internal Market in e-commerce. It is drafted in a technologically neutral way to avoid the need to adapt the legal framework constantly to new developments.”* (EC, 2003b).

In 2007, at the demand of the Commission, the Final Study on the economic impact of the ECD (“Final Study”) was prepared and published (Kastberg Nielsen et al., 2007). Pursuant to the Final Study *“The main objective of the Directive is to bring forward a proper functioning of the internal market for information society services by facilitating the establishment of such services and their free movement between Member States..... the Directive provides for the application of the country-of origin principle in certain fields. The country of origin principle states that a business needs only comply with its domestic laws when selling abroad. The Directive establishes harmonised rules on issues such as the transparency and information requirements for online service providers, commercial communications, and electronic contracts and sets down limited liability conditions for intermediary service providers...the Directive covers both business to business and business to consumer information society services irrespective of whether or not the services are provided free-of charge to the recipient (for example funded by advertising or sponsorship revenue) or not...The Directive is composed of a range of elements and principles to allow for this. The two key elements are the country of origin principle that applies within the coordinated field and the harmonised provisions.”* However, even the Final Study admits regarding domestic barriers that *“some barriers have increased while others have decreased following transposition”* of the ECD and that firms not benefiting by the ECD are firms facing other more important barriers than legal certainty, e.g. firms lacking IS/IT skills and infrastructure or language skills (Kastberg Nielsen et al., 2007). They are often SMEs, which are allegedly the privileged type of business form in the EU and which are the most important employment and competitiveness generators! It is instructive to review the (alleged) both general and specific purposes of the ECD, according to the ECD as

well as to internal voices, especially the Commission. It shows that we can hardly speak about the unity and perhaps not even about a symbiosis or compliance.

**Tab. 1 ECD and its purpose**

Year / Document	General purpose(s)	Specific purposes
1997 Communi- cation	Internal single market	Affordable access to the IS/IT and good structure for e-commerce
2000  ECD	Functioning of internal single market  Creation of a legal framework for information society	Development of information society  Removing law divergences  Increasing legal certainty
2003  First Report	Creation of a coherent European legal framework for e-commerce by the year 2000  Proper functioning of the Internal Market in e-commerce.	Removing obstacles to cross-border online services in the Internal Market Increasing legal certainty Enhancing the competitiveness of European service providers Stimulation of innovation and job creation Contribution to the free flow of information and freedom of expression Providing a light and flexible legal framework for e-commerce
2007  Final Study	A proper functioning of the internal market for information society services.	The application of the country-of origin principle in certain fields.  Harmonised rules on certain issues.

Source: Prepared by authors

Shortly after the Report, the Lisbon Strategy came to its rather bitter end and in its stead emerged Europe 2020 with its smart, sustainable and inclusive growth and focus on digitalization and SMEs. Hence, since 2010, we have been witnessing the co-habitation of the ECD and of Europe 2020. Is this cohabitation prosperous according to insiders, especially the Commission?

#### **4.2 Europe 2020 approach to e-commerce, IP and Digital single market as such figures – the same purpose as had the ECD?**

After an inglorious end of the Lisbon Strategy, the Commission correctly realized that the internal single market with the famous freedoms is at the heart of the modern European integration and that the success of its digital version, including e-commerce and IP, is pivotal for the competitiveness of the EU and EU businesses (Pelikánová, 2017). Consequently, the Commission launched the strategy for 2010-2020 built upon three mutually reinforcing priorities projected in five interrelated targets and carried on by seven flagship initiatives, see Europe 2020 and its structure in Tab. 2.

**Tab. 2** Europe 2020 and its structure

Priorities	Target	Flagship initiatives
Smart growth	R&D – 3% of GDP	Digital agenda for Europe Innovation Union Youth on the Move
Sustainable growth	Climate & Energy – 20/20/20 Employment 75% of 25-64 Yr	Resource efficient Europe Industrial policy for the globe.
Inclusive growth	Fighting poverty and social exclusion	Agenda for new skills and jobs European platform against poverty

Source: Prepared by authors based on [http://ec.europa.eu/europe2020/index\\_en.htm](http://ec.europa.eu/europe2020/index_en.htm)

Europe 2020 directly links its 1<sup>st</sup> priority, smart growth, to an economy based on knowledge and information and promptly moves on to the pertinent trio of flagship initiatives, while paying a lot of attention especially to the flagship initiative “A Digital Agenda for Europe.” Since the structure of Europe 2020, as well as its wording about the smart growth priority, points strongly to the flagship initiative “Digital agenda for Europe” and understands it as a venue to the effective and efficient Digital single market, it is highly relevant to identify the general and specific purposes of key policies in this arena. This identification can be extracted directly from Europe 2020 as well as from the Commission’s official presentation on its Internet Website.

Regarding Europe 2020 itself, the explicit description of the purpose and aim of the “Digital Agenda for Europe” is rather surprising and definitely different from both the EDC’s purpose stated directly by the ECD (“*to create a legal framework to ensure the free movement of information society services*” and “*to contribute to the proper functioning of the internal market by ensuring the free movement of information society services between the Member States.*”, see at 4.1) and by later ECD’s interpretation and implementation by the Commission (“*to ensure that Information Society services benefit from the Internal Market principles of freedom to provide services and freedom of establishment*” and “*creating a coherent European legal framework for e-commerce by the year 2000*” and “*provides a light and flexible legal framework for e-commerce*”). Namely, Europe 2020 in its part “A digital Agenda for Europe” focuses neither on the freedom nor lightness of the legal framework for e-commerce. Instead, it states that “*The aim is to deliver sustainable economic and social benefits from a Digital Single Market based on fast and ultra fast internet and interoperable applications, with broadband access for all by 2013*”. Well, at least by following the literate approach, it can be argued that the ECD pragmatism is substituted by Europe 2020’s over-eager drive for sustainability and inclusiveness, the ECD regulatory “lightness and flexibility” by social engineering vis-à-vis e-commerce and the entire information society. Does the Commission really want that? To answer this burning question, and to be able to employ the teleological approach, official recent statements of the Commission need to be explored.

First off, in 2011, the Commission prepared a communication COM(2011) 206 final, Single Market Act - Twelve levers to boost growth and strengthen confidence; Working together to create new growth, pursuant to which „*the European Union has adopted a strategy – Europe 2020 – setting itself ambitious goals for smart, sustainable and inclusive growth. But these*



*objectives can be achieved only if the Union and the Member States carry out urgent structural reforms.”* These twelve levers are: 1. Access to finance for SMEs, 2. Mobility of citizens, 3. IP Rights, 4. Consumer empowerment, 5. Services, 6. Networks, 7. Digital single market, 8. Social entrepreneurship, 9. Taxation, 10. Social cohesion, 11. Business environment, and 12. Public procurement. In particular about 7. Digital single market provides *“The development of the digital single market is hindered by lack of consumer confidence, the prime causes of which are payment security and the enforcement of consumer rights in cross border transactions, particularly with regard to product safety and counterfeiting. This lack of consumer confidence and the problems encountered in shopping on line in other Member States explain why e-commerce represents less than 5% of retail sales and why only 9% of Europeans have shopped on line in another Member State. The challenge lies in providing a genuine single market for all citizens, including the most vulnerable ....The relevant Communication will assess the implementation of the e-Commerce Directive and analyse the challenges that need to be met: micro-payments, security of on-line payments, personal-data protection, the fight against counterfeiting, order delivery, liability of service providers on the internet and consistency of EU law affecting electronic commerce...Discrimination based on geographical location (particularly in the field of e-commerce) must be abolished.....”* (EC, 2011)

Secondly, in 2012, the Commission prepared a communication COM(2011) 942 final, on A coherent framework for building trust in the Digital Single Market for e-commerce and online services, in which it stated that the ECD *“removed a series of obstacles to crossborder online services. It is crucial to legal certainty and confidence for both consumers and businesses. a revision of the Directive is not required at this stage. It is, however, necessary to improve the implementation of the Directive ..., a number of obstacles are still impeding the development of online services and access to them for as many people as possible: Businesses are reluctant to commit to these innovative activities in view of the costs and risks arising from fragmentation caused by the coexistence of 27 national legal systems, particularly as regards consumer law...”* (EC, 2012). This represents a contradiction in itself, on one hand the ECD with its light and flexible approach is complimented and on another hand, a call for full harmonization, or even regulation, is expressed. The differences between EU member states in their perception and legislation on unfair competition, unfair commercial practices and various consumer protection aspects (Pelikánová, 2017) seemed again underestimated.

Thirdly, in 2013, the Commission issued SWD(2013) 153 final, E-Commerce Action plan 2012-2015, according to which *“In January 2012, the Commission adopted, in the context of the Single Market Act, and the Digital Agenda for Europe2, a Communication on e-commerce and onlineservices3. This Communication sets out 16 targeted initiatives aimed at identifying the main obstacles to the Digital Single Market and at doubling the share of e-commerce in retail sales (3.4 % in 2010) and that of the Internet sector in European GDP (less than 3 % in 2010) by 2015. The Communication was based on a broad public consultation on issues central to on-line services and e-commerce, which was held in the second half of 2010...Main action 1: The Commission will ensure that the Electronic Commerce Directive and the Directives protecting online consumers are correctly applied by inter alia, improved administrative cooperation with the Member States, in particular through the extension of the Internal Market Information System (IMI), the Consumer Protection Cooperation network (CPC) and an in-depth evaluation study of the transposition and implementation of the Directive”* (EC, 2013).

Fourthly, in 2015, the Commission issued COM(2015) 100 final – Results of the public consultation on the Europe 2020 strategy for smart, sustainable and inclusive growth, in which it confirmed the reality, i.e. *“Halfway to the 2020 deadline, the delivery of the jobs and growth objectives is mixed, notably due to the impact of the crisis... The crisis has also affected progress towards the Europe 2020 headline targets...”* (EC, 2015). This is a good self-

reflection, but it continues *“The Europe 2020 targets are political commitments. The political nature of the targets is inherent in the strategy and reflects the primary role that national governments should play in the strategy, in line with the principle of subsidiarity. However, ... national targets are not sufficiently ambitious to cumulatively reach the EU-level ambition... if all the Member States reached their individual national targets, the aggregated investment in research and development at EU level would amount to 2.6% of GDP by 2020, which is below the 3% target set by the EU. These varying degrees of commitment are also reflected in the variable degree of policy response and ambition across the EU.”*(EC, 2015). This political and from above down approach, combined with the EU social engineering, could hardly match up with the pragmatic ideas regarding e-commerce and its free development. The Commission admitted that the biggest threats for Europe 2020 are the risks of crises and the *“political nature of the targets and lack of ambition of Member States.”* (EC, 2015). Since the Commission is at, if not beyond, its legal competence and sees a diversification and resistance by the EU member states and their national legal systems, might it not be time to reconsider the number, broadness and political nature of purposes aimed to be pragmatic and light?

Fifthly, in 2017, the Commission issued COM(2017) 228 final – Communication on the Mid-Term Review on the implementation of the Digital Single Market Strategy – A Connected Digital Market for All, in which a positive tenor prevails. Nevertheless, it would be remiss not to mention *“However, despite a large number of reforms across the EU, the Commission is concerned and sees a clear need for more action and progress on skills at national level. Whereas our economy and society are changing fast, changes in how we teach and train our people have only been incremental. At the current pace, the gap is widening between the skills our people have and the skills they need. Member States need to act and the Commission is ready to help, by providing them with policy support, research, and practical tools to modernise their education and training systems”* (EC, 2017). So, after all, gaps are becoming bigger and the Commission regulates even more than previously in fields outside of its competency, in the name of “political” priorities.

Finally, the Commission has been posting its statements and visions regarding the Digital Agenda for Europe on its official and updated Internet Website, and the identification of general and specific purpose regarding the “Digital Agenda for Europe” extracted from this Website is summarized in Tab.2. Indeed, unlike the US multi-stakeholder, decentralized and bottom-up approach (Pelikánová & MacGregor, 2015), the Commission attempts to go more and more with central planning and imposing of a puzzling number of measures – all (allegedly) for the Digital single market, and more generally for the smart, sustainable and inclusive growth,

**Tab. 3** Digital Agenda for Europe (from Europe 2020) and its general and specific purposes

<b>Flagship initiative</b>	<b>General Purpose</b>
Digital Agenda for Europe	The Digital Single Market strategy aims to open up digital opportunities for people and businesses and enhance Europe's position as a world leader in the digital economy
<b>Sub-areas of the flagship initiative Digital Agenda</b>	<b>Specific purposes</b>
Shaping Digital single market	To open up digital opportunities for people and businesses and enhance Europe's position as a world leader in the digital economy

	(!!! 3 pillars – access, environment, economy & society with 16 specific initiatives adopted by the Commission in 2015 to be delivered by 2017 !!!)
Digital industry	To ensure that businesses, SMEs and non-tech industries can benefit from digital innovations to create a higher value chain
Building European data economy	To use the potential of digital data to benefit the economy and society.  To address barriers which impede the free flow of data to achieve a European single market.
Improving connectivity and access	To end roaming charges.  To ensure open internet and telecoms regulations.  To boost productivity for businesses by strengthening broadband and wireless connectivity across Europe.
Investing in network and technologies	To enable new technologies like 5G and Internet of Things (IoT) to benefit European citizens with a fast and accessible Internet for the future.
Advancing in digital science and infrastructures	To endorse open science and access to scientific results.  To provide European science, industry and public authorities with excellent digital infrastructure - supercomputing and data storage.
Supporting media and digital culture	To promote a coherent approach on media policies, covering legislation on audio-visual media services and preserving cultural heritage.
Creating a digital society	To create an inclusive digital society by building smarter cities, improving access to e-government, e-health services and digital skills.
Strengthening trust and security	To improve security while surfing the web and enhance trust and inclusion.  To boost the overall level of cybersecurity and foster digital privacy in Europe

Source: Prepared by authors based on <https://ec.europa.eu/digital-single-market/en>

The presented complexity, dichotomy and contradictions in setting purposes and aims regarding the Digital single market, and e-commerce in particular, are implied not just by the inside texts and statements. Even academia has observed the inconsistency and disparity and so the Commission statements about the completed perfect Digital single market with a perfect environment for e-commerce are confronted by various data, mere real world observations and

development arguments. It seems that the EU is composed of 28, resp. 27, individual digital markets divided largely due to non-harmonized, partially approximated and diversely developed systems (Polanski, 2015). Commission statements about lean, effective and efficient “legislation” and a decreasing number of regulations and directives are contradicted by recent studies which have identified almost forty regulations and directives about IS/IT (Polanski, 2015) and there are many more about IP. This rampant “EU legislation” contributes to the fragmentation of the Digital single market, and the confusion is further (at least for the near future) fed by the move from directives to regulations. This issue might be even further magnified if the purpose of these instruments is not unified and symbiotic. It is highly relevant to scrutinize Europe 2020 and its ultimate purpose vis-à-vis e-commerce, IP and even the Digital internal single market.

### 4.3 The (non)compliance consequences – Digital internal single market reality in 2017

The basic measurable indicator to monitor and assess the digital status, especially the digital economic status, is the Digital Economy and Society Index (“DESI”) which is a composite index summarizing the relevant indicators of the digital performance of a country and its competitiveness. Since 2014, DESI is used to compare EU member states while focusing on five dimensions – connectivity, human capital, use of internet, integration of IS/IT, and digital public services and the used scale is 0-100. Nordic countries with the Netherlands and UK stay on the top, Slovakia and Slovenia have managed the biggest growth – by 4 points as opposed to the EU average – by 2-3 points and even less by e.g. Germany. Against common expectations, DESI makes Austria beat Germany, while both are still above the EU average. However this is not true for France, which stays 1-3 points behind the EU average! Well, the very good pulling EU tandem of Germany-France is heavily puffing far behind after much lightly running integration cold Scandinavia, integration criticising Netherlands and against integration rebelling UK.

**Tab. 4** DESI 2015-2017 – selected EU member states (5 dimension, scale 1-100)

EU member state	DK	FI	SE	NL	UK	EU	CZ	IT	GE	BG	RO
DESI index 2015	65	63	63	61	54	47	43	35	33	32	28
DESI index 2016	67	65	64	64	57	49	46	38	35	34	31
DESI index 2017	71	68	68	67	60	52	50	42	38	37	33

Source: EC, Digital Agenda Data, 2017 - <https://digital-agenda-data.eu/charts/>

Interestingly, the rank of countries regarding their R&D investment as opposed to GDP, with the hardly achievable 3%, shows basically the same trend and winners v. losers, i.e. Scandinavia with the Netherlands and UK are on the top, while the PIGS with Bulgaria and Romania are at the bottom of the heap (Bourgeois and Gebhard, 2015). The above inconsistency of purposes, coupled with the EU rampant and inconsistent legislation tempted to go for not feasible ideas and goals, abort the EU’s well intended idea of the Digital single market. In other words, the smart, sustainable and inclusive growth of Europe 2020 along with the perfect information society of the ECD, are very far from being in compliance with each other and, even more importantly, with the reality.

## 5 Conclusion

It would be unfair, superficial and contra-productive to quickly jump to categorical statements and to reject the EU and Commission eagerness to set a large number of political purposes in the field of e-commerce and general digitalization in the EU, while just moderately listening to concerned stakeholders. Undoubtedly, the idea of the Single internal market is not inherently bad, the focus on IP, innovation and e-business is correct as well as the concern regarding consumers and vulnerable Europeans and EU businesses. A properly operating Digital single market of the EU is a correct objective and the Commission deserves appreciation for working on it. However, the method of how the Commission is working on it is questionable and leads to the suggestion about why the Commission and the entire EU has not followed the original suggestions brought from the UK, i.e. to be modest (not to dictate), light (not to overregulate) and neutral (no too political). Perhaps numbers 3-5-7 from Europe 2020 (see at 4.2) and 12-16 from Commission statements and plans from 2011 and 2013 (see at 4.2) and other sets of priorities, aims and purposes of policies pushed by the Commission vis-à-vis the e-commerce are perfect examples of the famous “death by a thousand initiatives” and a Russian proverbial “chase of two rabbits without catching any”(Githens, 2011).

Nevertheless, the aim of this paper is neither to play with “what if” speculations nor humiliate the Commission for its mistakes. Instead, this paper performed an exam and diagnosed that the fundamental general purpose and specific purposes of one of the first and still valid legal instruments regarding digitalization, the EDC, and of the much more recent and general Europe 2020, directly focussing on the Digital internal single market, are not in a full compliance and symbiotic relationship. Manifestly, improvement is needed and the way to it should start with an inventory of the currently still valid and applicable “jungle” of dozens and dozens of regulations, directives and even policies, especially under the umbrella strategy Europe 2020. One of the first questions, if not the very first question, should be “what is the true purpose”, i.e. what do we really want to achieve. Naturally, this purpose should be clearly stated and should go like a red string through all these instruments. In addition, the number of these instruments should be radically reduced. Especially in the field of IS/IT, with intangible assets belonging to the very valuable IP produced by the innovativeness, any confusion about the purpose or hampering of these activities by abundant and inconsistent legislations can have a fatal impact on the desperately needed EU competitiveness, and, in general, the smart, sustainable and inclusive EU integration. Finally, the Internet and digitalization should reflect the multi-stakeholder bottom up model and the Commission should engage in much deeper discussions, carefully consider raised arguments and resist the temptation to quickly jump to various “fits all” solutions and impose them vis-à-vis the entire EU, EU member states and EU citizens and businesses.

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## IMPACTS OF AN AGEING POPULATION ON SOCIAL SYSTEMS – SELECTED ISSUES

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### Abstract

Population ageing impacts on all social systems. The aim of this paper is to characterise the impacts of an ageing population on the social services and healthcare systems in the Czech Republic. These are the systems that will be most affected by the growing number of people of post-productive age. For social services, an estimate of the evolution of the number of beneficiaries of care allowance up to 2030 was drawn up on the basis of an analysis of the evolution in the number of beneficiaries of this social benefit by sex, age and degree of dependency in the years 2007 to 2016; for healthcare, an estimate of health insurance companies' expected expenditure on healthcare was drawn up on the basis of an analysis of the evolution of spending on healthcare by health insurance companies, broken down by clients' sex and age. The calculations clearly show that both these systems are unprepared for tackling the consequences of population ageing, so the search should begin now for new solutions that would help ensure that both social services and healthcare continue to be provided to clients to the existing standard in the coming period.

### Keywords

social services, healthcare, population ageing, care allowance, health insurance  
JEL classification: I13, I38, J11

## 1 Introduction

The Population Forecast of the Czech Republic up to 2100 was published in 2013 (Czech Statistical Office, 2013). That presented an opportunity to quantify and update the impacts the expected population developments will have on all social systems. While the impacts in the field of pension insurance have been long discussed within the Expert Commission on Pension Reform and quantifying these impacts is mainly a question of standard actuarial calculations, the impact of population ageing on social services or healthcare is a marginal topic: practically no attention has been paid to ways to influence demographic change through pro-natalist measures or active migration policy. The aim of this paper is therefore to quantify the impacts of demographic change on the Czech Republic's social services and healthcare systems and, in the light of the results, to outline suitable measures that would help ensure that both these systems are able to provide these services to at least the existing standard in the coming years.

## 2 References overview

Very little attention has been paid in the specialist literature to the impact of population ageing on the Czech systems of social services and healthcare (Průša, 2015; Průša, 2017). From the perspective of social services, however, forecasts are based on out-of-date data from 2007–2009, so the data thus acquired do not fully reflect the current state of affairs, as the following years brought a change in the conditions for assessing the degree of dependency and an increase in the care allowance at its various levels, which will certainly also be reflected in changes in the structure of the population receiving this social benefit. Having up-to-date data on the care allowance drawdown structure by sex, age and degree of dependency in the years 2010 to 2016 therefore makes it possible to re-quantify the expected developments in the number of care allowance beneficiaries up to 2030 and, on this basis, to outline the need for social care services in this period.

### **3 Methodology and data**

The starting point for quantifying the expected impacts of population ageing on the need for social care services consists in data from the Ministry of Labour and Social Affairs (MoLSA) information system on the structure of care allowance beneficiaries by sex, age and degree of dependency for December of every calendar year from 2007 to 2016 with the exception of 2013, when problems linked to a change in the administrator of all the MoLSA information systems meant that the data for that year have not been consolidated yet; consequently, data for the closest available period – February 2014 – are used in place of the December 2013 data.

The starting point for quantifying health insurance companies' expected expenditure consists in data from statistical health accounts on the magnitude of health insurance companies' expenditure on healthcare by age and sex in the period from 2000 to 2013; data for the following years were not taken into account in view of the change in the methodology for monitoring healthcare expenditure, as certain other expenditure, mainly on prevention and long-term social care, was included in spending on healthcare, unlike in the previous period.

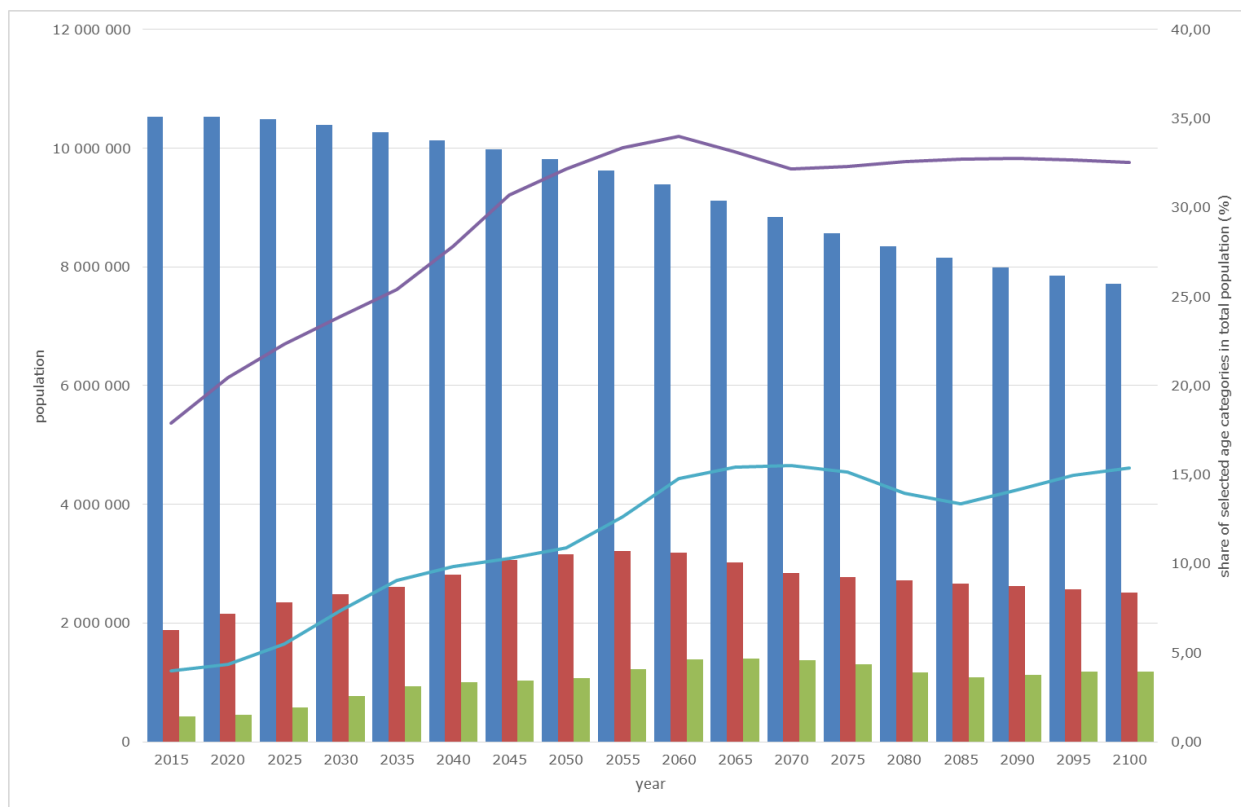
### **4 Results and discussion**

#### **4.1 Characteristics of the key results of the Population Forecast of the CR up to 2100**

The population forecast contained low, intermediate and high scenarios. The intermediate forecast, which is viewed and presented as the most probable, was used for the subsequent calculations. The aim of the forecast is to outline the main aspects of the expected future population growth in the Czech Republic and to flag up changes in the population's age composition.

In the intermediate forecast, the total population size is set to fall constantly from as soon as 2019, dropping to 7,712,000 people in 2100, whereby:

- the number of live-born children will not increase in the following years: e.g. in 2033 there should be 78,249 children born and, after a slight increase in the 2070s, the number should fall to approx. 60,500 at the end of the century;
- the number of people over 65 years of age is set to rise constantly to reach 3,219,000 in 2057 and should then fall until the end of the period under scrutiny; their share of the total population should increase from 16.81% in 2015 to as much as 34.00% in 2059, ending up at 32.53% in 2100;
- the number of people over 80 is set to increase until 2063, when it will reach 1,409,000; their share of the population should increase from 3.86% in 2015 to 15.54% in 2069, before falling again to 15.37% in 2100 (see Chart 1).



**Chart 1:** Evolution of the population size and selected categories of seniors up to 2100 (Source: Czech Statistical Office, 2013)

#### 4.2 Expected impacts of population ageing on the need for social care services

Quantification of the expected impacts of population ageing on the need for social care services can be based on data on the structure of care allowance beneficiaries by sex, age and degree of dependency, as found in the MoLSA information system. The first forecast of the need for social care services was drawn up in 2014 (Průša, 2015), using data on the structure of care allowance beneficiaries from the years 2007 to 2009. As the criteria for assessing degrees of dependency were changed in 2011, it is necessary to update the previously presented findings. Throughout the period from 2011 the number of care allowance beneficiaries rose: there were 303,900 persons receiving this benefit in December 2011 and 348,800 in December 2016. There were significant changes in the structure of beneficiaries, with the share of persons collecting care allowance in the 1<sup>st</sup> degree of dependency falling in that period from 35.8% to 30.7% and the share of beneficiaries in the 3<sup>rd</sup> degree of dependency rising from 19.9% to 23.1% in the same period.

From the perspective of forecasting the need for social care services for persons over the age of 60, some of the most representative data are information on changes in the proportion of the total population of the given age category accounted for by care allowance beneficiaries in the various degrees of dependency, structured according to sex in five-year age intervals. Unlike in the previous forecast, data on the relative frequency of care allowance beneficiaries in the 0–17 and 18–59 age groups were processed for the first time, but the broad age interval makes it necessary to evaluate these data with considerable caution (see Table 1).

**Table 1:** Evolution of care allowance beneficiaries' share in the population of a given age group

sex	degree of dependency	age group	2007	2011	2016	sex	degree of dependency	age group	2007	2011	2016
men	1 <sup>st</sup> degree of dependency	0 - 17	0.15	0.55	0.72	ženy	1 <sup>st</sup> degree of dependency	0 - 17	0.11	0.41	0.53
		18 - 59	0.30	0.25	0.29			18 - 59	0.27	0.23	0.26
		60 - 64	1.00	0.82	0.87			60 - 64	0.96	0.77	0.74
		65 - 69	1.42	1.10	1.14			65 - 69	1.68	1.25	1.18
		70 - 74	2.16	1.59	1.49			70 - 74	3.62	2.48	2.13
		75 - 79	3.86	2.73	2.30			75 - 79	7.85	5.76	4.51
		80 - 84	8.91	5.53	4.56			80 - 84	16.93	11.98	10.15
		85 - 89	16.11	11.28	8.06			85 - 89	24.80	18.52	14.88
		90+	22.35	15.27	11.94			90+	25.52	17.53	14.31
	2 <sup>nd</sup> degree of dependency	0 - 17	0.10	0.32	0.50		2 <sup>nd</sup> degree of dependency	0 - 17	0.06	0.18	0.28
		18 - 59	0.39	0.33	0.38			18 - 59	0.30	0.27	0.30
		60 - 64	0.92	0.86	1.02			60 - 64	0.68	0.66	0.78
		65 - 69	1.28	1.23	1.37			65 - 69	1.07	0.98	1.13
		70 - 74	1.96	1.72	1.88			70 - 74	2.03	1.83	1.82
		75 - 79	3.18	2.92	2.85			75 - 79	4.51	4.00	3.84
		80 - 84	6.31	5.47	5.36			80 - 84	10.01	9.00	8.94
		85 - 89	11.45	9.98	9.72			85 - 89	17.25	15.51	16.00
		90+	21.25	16.47	16.23			90+	27.86	21.74	21.53
	3 <sup>rd</sup> degree of dependency	0 - 17	0.78	0.27	0.34		3 <sup>rd</sup> degree of dependency	0 - 17	0.58	0.19	0.19
		18 - 59	0.13	0.24	0.30			18 - 59	0.10	0.19	0.23
		60 - 64	0.27	0.48	0.65			60 - 64	0.21	0.34	0.45
		65 - 69	0.45	0.70	0.89			65 - 69	0.38	0.51	0.66
		70 - 74	0.74	1.00	1.36			70 - 74	0.64	0.93	1.08
		75 - 79	1.29	1.76	2.13			75 - 79	1.44	2.11	2.24
		80 - 84	2.34	3.26	4.04			80 - 84	3.03	4.69	5.50
		85 - 89	3.94	5.98	7.28			85 - 89	6.02	9.62	10.90
		90+	7.79	12.00	13.10			90+	11.92	16.91	19.45
	4 <sup>th</sup> degree of dependency	0 - 17	0.22	0.33	0.28		4 <sup>th</sup> degree of dependency	0 - 17	0.16	0.21	0.18

	18 - 59	0.08	0.15	0.19		18 - 59	0.07	0.12	0.15
	60 - 64	0.13	0.20	0.26		60 - 64	0.10	0.18	0.21
	65 - 69	0.23	0.31	0.40		65 - 69	0.16	0.25	0.28
	70 - 74	0.40	0.55	0.61		70 - 74	0.36	0.50	0.51
	75 - 79	0.71	0.94	1.05		75 - 79	0.78	1.12	1.21
	80 - 84	1.22	1.61	1.94		80 - 84	1.92	2.70	2.94
	85 - 89	2.23	2.86	3.37		85 - 89	3.74	5.84	6.39
	90+	4.88	5.30	6.20		90+	8.96	13.21	13.64

Source: own calculations

Both the nature of social policy and the need for social services are influenced by four basic factors:

- demographic developments;
- socio-economic factors;
- socio-political determinants;
- international aspects (Průša, 1996).

From this point of view it is necessary to keep in mind the following facts when forecasting the need for social care services:

- population ageing and the consequences of this trend (from the social services' perspective, the period of life in which people are dependent on help from others gets longer);
- the transfer of the quality of life during productive age into the period when people become increasingly dependent on help from others and the resultant growing cost of the provided care;
- the transformation and humanisation of residential social services;
- the concept of social services as services in the public interest;
- the quest for the optimum provision for social needs in humane, technical, technological and thus also economic terms;
- the increasing intertwining and coordination of social and healthcare services at regional level.

However, the effects of other factors, some of which are very hard to quantify and were therefore not taken into account, should not be overlooked. These include:

- changes in the standard of health of the population;
- evolution of the epidemiological situation;
- possible changes in the way care for old and disabled citizens is organised and structured (e.g. the transformation of old people's homes into nursing homes and their possible incorporation into the healthcare department).

The forecast of the need for social care services is grounded in existing law, but it is a reasonable expectation that, in the interests of making the entire system of social care provision and funding more effective, there will be significant changes in the system for assessing seniors'

and disabled persons' degree of dependency in the coming period (e.g. greater differentiation of care needs) and in the social services funding system (most notably, abolition of the ceiling for clients' payments for provided social services, thus eliminating social care services providers' dependency on subsidies provided out of the state budget). This may help create the necessary room for the expansion of all forms of provided home and community, outpatient and inpatient social care services.

One integral part of the social services development process as a whole in the coming period in consequence of demographic trends is the need for care providers to have the necessary trained personnel, especially when providing direct care.

Two alternative scenarios were opted for when estimating the expected impacts of population ageing on the need for social services in the period up to 2030:

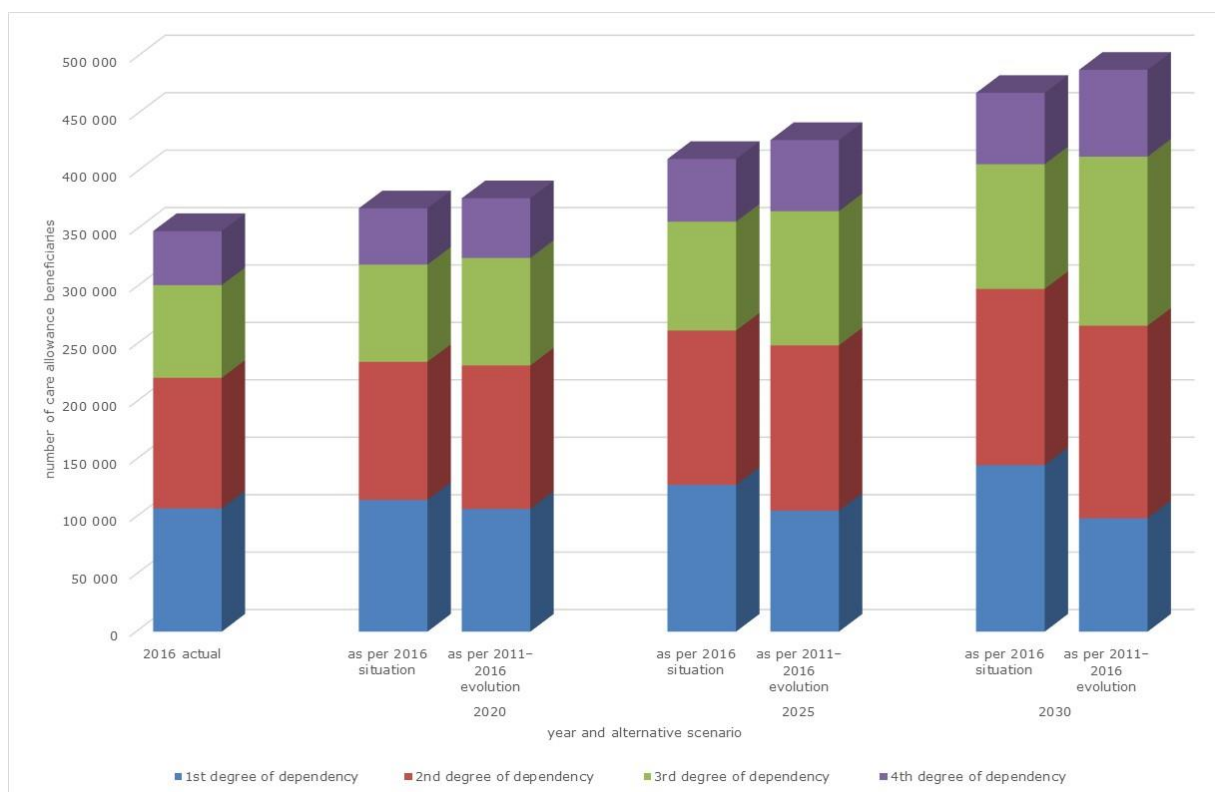
- the first scenario is based on the total number of persons of a given sex and age group accounted for by care allowance beneficiaries of that sex, age and degree of dependency and maintains this proportion for the entire period up to 2030;
- the second scenario is based on changes in the evolution of the share of care allowance beneficiaries by sex, age and degree of dependency in the total population of the given sex and age group between December 2016 and December 2011 and transposes this trend to the entire period up to 2030.

Whereas the first alternative is static, the second tries to factor in changes in the proportion of care allowance beneficiaries in the various groups in the years 2011–2016 so that the estimate of the expected impacts of population ageing on the need for social care services reacts to development trends in the period under scrutiny when the legal conditions and criteria for assessing the degree of dependency were stable. The number of care allowance beneficiaries is expected to rise from the present figure of just under 350,000 to 469,000–489,000 by 2030 (see Table 2). Whereas the forecast for the number of care allowance beneficiaries in all degrees of dependency grows in the first scenario as a consequence of the increasing number of people of post-productive age, in the second scenario the expectation is that the number of first degree of dependency care allowance beneficiaries will fall by approx. 8,500 while the numbers of beneficiaries in the higher degrees of dependency will continue to rise, with the biggest increase expected in the 3<sup>rd</sup> degree of dependency: the total number of beneficiaries of that social benefit is expected to rise from 80,700 persons in December 2016 to 147,200 in 2030, i.e. by more than 80% (see Chart 2).

**Table 2:** Expected evolution of the number of care allowance beneficiaries by beneficiaries' age in the years 2016–2030

	actual 2016	expected number of care allowance beneficiaries based on the share of beneficiaries, broken down by sex, age and degree of dependency, in the total number of persons in the given age group in 2016			expected number of care allowance beneficiaries based on the share of beneficiaries, broken down by sex, age and degree of dependency, in the total number of persons in the given age group from 2011 to 2016		
		2020	2025	2030	2020	2025	2030
0–17 years of age	29,490	29,221	28,498	25,714	32,946	36,673	37,191
18–59	62,880	61,232	59,593	58,864	67,344	72,979	79,429
60–64	17,664	16,118	15,512	15,914	17,515	18,546	20,760
65–69	24,099	23,833	21,513	20,882	25,438	24,784	25,839
70–74	29,903	33,104	33,933	30,936	33,489	34,877	32,368
75–79	36,076	42,576	54,612	56,823	40,656	49,150	48,114
80–84	52,704	54,315	74,642	98,422	53,515	72,221	93,532
85–89	58,603	60,854	64,010	92,380	59,449	60,644	84,731
90+	37,342	47,356	59,271	69,181	46,981	58,187	67,178
total	348,761	368,609	411,585	469,115	377,334	428,061	489,142

Source: own calculations



**Chart 2:** Estimated evolution of the number of care allowance beneficiaries up to 2030 (Source: own calculations)

Although it is reasonable to expect “objectivisation” of the structure of users of the various – mainly residential – social services facilities in the coming years, the presented calculations show that the existing capacities of the various types of facilities will not be sufficient in 2030. In this sense it is evident that the expansion of all forms of home and community, outpatient and inpatient facilities should become an integral part of all development plans at both municipal and regional level. One essential prerequisite making it possible to respond in time to the altered demographic situation is increasing the emphasis on analysing changes in the demographic situation in each region.

As a guideline, the following can be stated:

- the number of care allowance beneficiaries in the 1<sup>st</sup> degree of dependency signals how many people will probably require assistance to cope with one or more of the care service actions in their own household, both through registered social services providers and through kith and kin or combined care;
- the number of care allowance beneficiaries in the 2<sup>nd</sup> degree of dependency signals how many people will probably require more intensive assistance to cope with multiple care service actions in their own homes, in protected housing or in day services centres or day care centres, or possibly through kith and kin or combined care;
- the number of care allowance beneficiaries in the 3<sup>rd</sup> degree of dependency signals how many people will probably require intensive, as a rule daily comprehensive care in old people's homes, in homes with a special regime, in homes for persons with a disability or in week care centres, and in extreme cases in protected housing or in their own homes, whereby a number of individuals will in these cases require personal assistance services and a sufficient extent of alleviation services should be available.



- the number of care allowance beneficiaries in the 4<sup>th</sup> degree of dependency signals how many people will probably require intensive, comprehensive, all-day assistance in social services facilities (old people's homes, homes for persons with a disability, homes with a special regime), in healthcare facilities (sanatoria for the chronically ill, or possibly in social beds in inpatient healthcare facilities); only to a minimal degree can it be expected that such persons will receive care in other types of facilities or in their homes, but in these cases the majority will require personal assistance services and home healthcare, and a sufficient extent of alleviation services will also be required.

It is very difficult to specify precisely the exact extent of the provision of the various social services, because that is influenced by a whole series of factors determining their evolution in each region. It is therefore essential in this regard when drawing up medium-term social services development plans in cities and regions to perform a very detailed analysis of all the factors influencing the behaviour of clients and potential clients of the various types and forms of social services (Průša, 2015).

#### **4.3 Expected impacts of population ageing on the evolution of health insurance companies' expenditure on healthcare provision**

The most comprehensive tool making it possible to track the evolution of healthcare costs is the health accounts system. The Czech Statistical Office first drew up health accounts for the year 2000, working mainly on the basis of administrative sources of data kept by health insurance companies, commercial insurance companies and the Ministry of Finance of the Czech Republic (MoF). According to this system, total spending on healthcare amounted to CZK 353.7 billion in 2015; spending increased by approx. 3.8% from 2010, with the biggest volume of spending falling to health insurance companies (66.4% of all healthcare expenditure in 2015).

It is very difficult to assess the evolution of healthcare spending over the longer term, as the methodology for monitoring healthcare spending changed in the past: in 2014 there was a switch from the initial health accounts methodology to a higher development level, in which healthcare spending encompasses certain other data, most notably data from the field of prevention and long-term social care, with spending on certain social benefits (e.g. the care allowance) being included among healthcare costs.

**Table 3:** Evolution of healthcare spending from 2010 to 2014 (CZK million)

system	2010	2011	2012	2013	2014	2015	2015/2010 increase (%)
1. government systems and compulsory contributory systems of healthcare (public funds)	288,768	291,272	294,861	297,412	296,641	299,362	103.67
1.1. government systems (public budgets)	56,879	56,935	56,934	59,058	62,039	64,656	113.67
1.1.1. state budget	48,835	47,692	47,079	49,360	52,546	54,889	112.40
1.1.2. local budgets	8,044	9,243	9,855	9,698	9,493	9,766	121.41
1.2. health insurance companies	231,889	234,337	237,927	238,354	234,602	234,706	101.21
2. system of voluntary payments for healthcare (private funds without direct payments by households)	9,217	9,205	9,110	9,202	10,668	9,322	101.14
2.1. private insurance	427	477	520	475	537	478	111.94
2.2. non-profit organisations	7,888	7,820	7,719	7,726	7,757	7,929	100.52
2.3. enterprises	901	908	871	1,001	2,374	915	101.55
3. households	42,705	44,028	44,239	43,465	46,490	45,043	105.47
total	340,690	344,506	348,210	350,079	353,799	353,727	103.83

Source: Czech Statistical Office, 2017.

The key data from the point of view of the consequences of population ageing on the evolution of healthcare costs are data on the evolution of the average expenditure of health insurance companies on healthcare per insuree by age and sex. In general it is fair to say that healthcare spending increases with age and that spending levels differ between age groups, as the same disease has a different effect, different treatment duration and in some cases various complications at different ages.

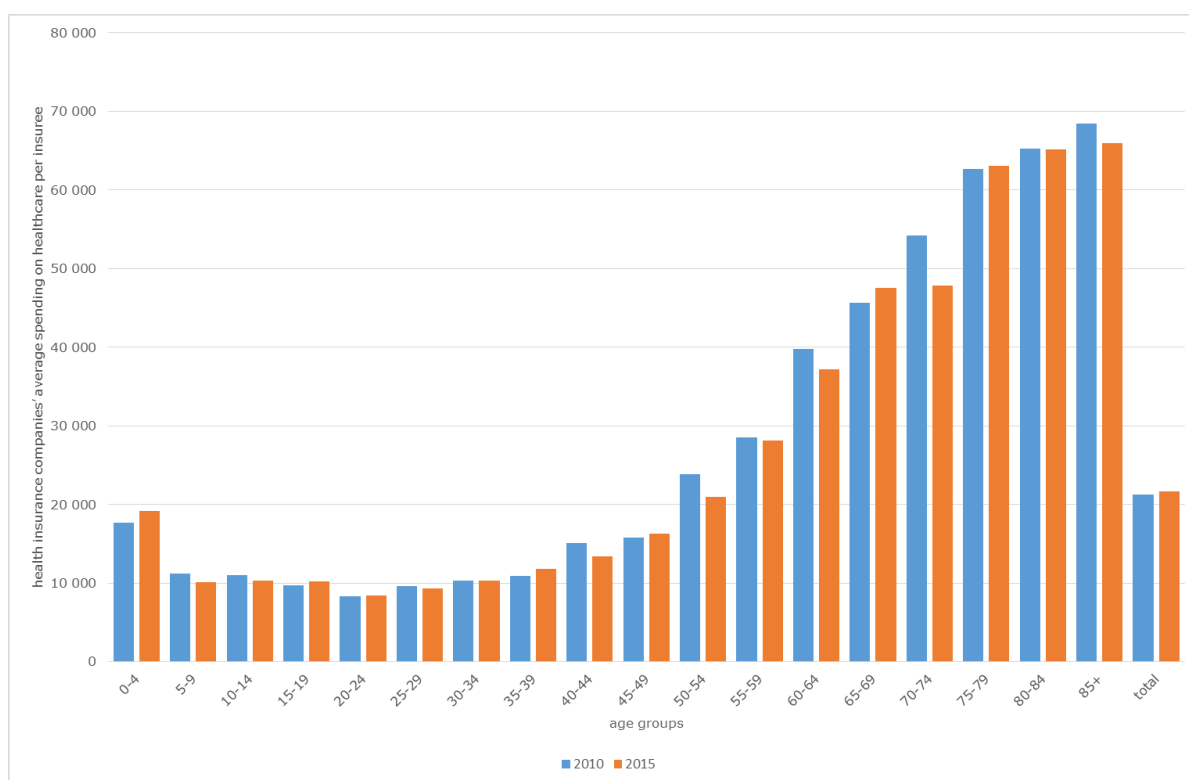
The biggest increases in healthcare spending between 2010 and 2015 were in men aged 65–69 (up 4.2%) and women aged 0–4 (up 16.1%). The highest healthcare costs in both men and women are in the 85+ age group: for men the costs were CZK 65,975 in 2015, while for women they were approx. CZK 3,000 lower at CZK 63,088. Chart 3 shows the evolution of health insurance companies' spending on healthcare per male insuree by age.

The following facts need to be taken into account when estimating the evolution of health insurance companies' healthcare spending in the coming years:

- population ageing and the consequences of this trend;
- changes in the population's standard of health;
- the import of and advances in modern medical apparatus and development of new fields of medicine;
- evolution of the epidemiological situation;

- the quest for the optimum provision for social needs in humane, technical, technological and thus also economic terms;
- increased intertwining and coordination of social and healthcare services at regional level and possible changes in the way care for the old and the disabled is organised and structured (Průša, 2017).

There are various interactions between these factors and it is not possible to define precisely the intensity of the effect of each one. It is estimated that healthcare's impact on the population's health is at most 15–20%, with the decisive share – around 80% – comprising the impact of “non-healthcare” factors (the environment, lifestyle, working environment and genetic predisposition) (Krebs, 2015).



**Chart 3:** Evolution of health insurance companies' spending on healthcare per male insurree by age between 2010 and 2015 (CZK)

The estimate of the future evolution of health insurance companies' spending on healthcare was based on known data from the years 2000–2014. The values in the period under scrutiny matched the linear regression model closely, so it is reasonable to expect that the future growth (up to 2030) could also correspond to linear regression.

**Table 4:** Estimated evolution of health insurance companies' spending on healthcare per insuree by sex and age up to 2030 (CZK)

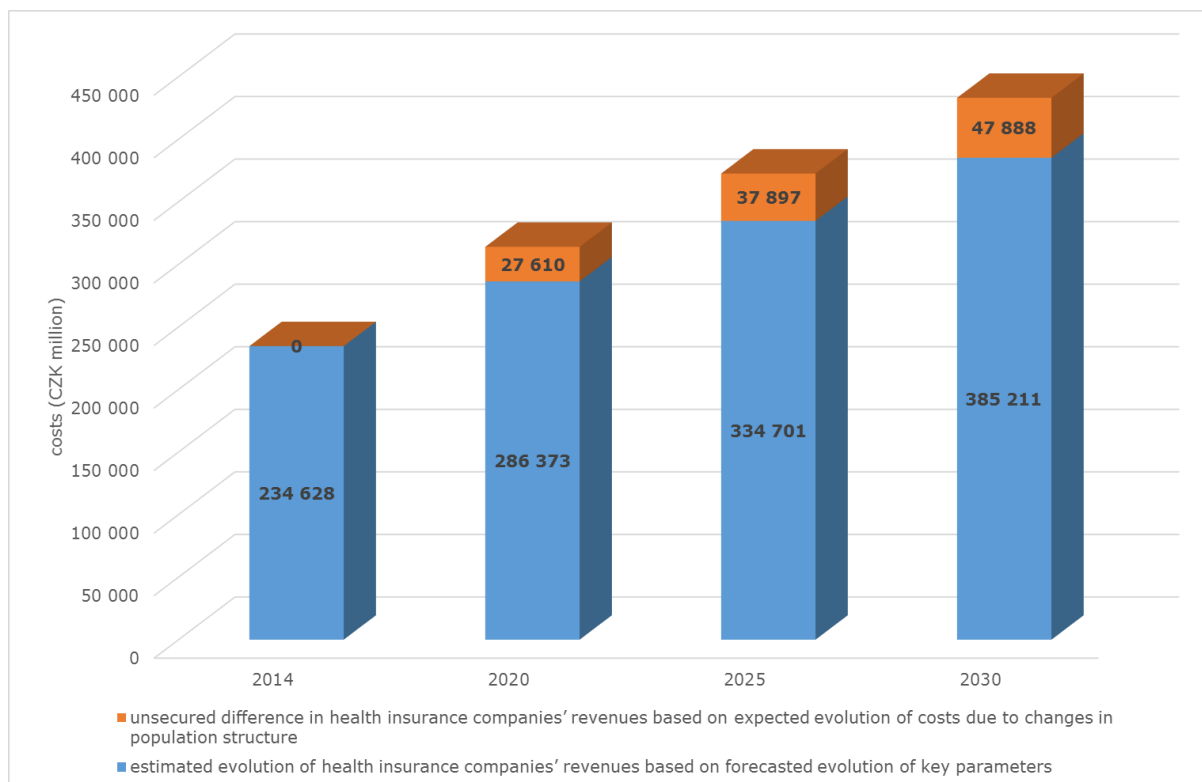
age	2020	2025	2030	2020	2025	2030
group	men			women		
0–4	22,184	25,015	27,845	19,346	21,813	24,279
5–9	13,187	15,000	16,813	10,981	12,373	13,764
10–14	13,185	15,086	16,986	13,922	16,084	18,246
15–19	12,237	14,037	15,837	15,333	17,662	19,991
20–24	10,054	11,429	12,803	13,748	15,481	17,214
25–29	11,627	13,327	15,027	18,535	21,030	23,525
30–34	12,816	14,707	16,598	21,503	24,844	28,185
35–39	13,952	15,942	17,931	19,482	22,302	25,121
40–44	16,773	19,121	21,468	20,218	22,932	25,646
45–49	17,699	19,561	21,423	22,881	25,608	28,335
50–54	25,668	28,590	31,513	28,044	31,349	34,654
55–59	34,810	38,912	43,013	31,340	35,039	38,737
60–64	48,319	55,166	62,013	36,792	41,214	45,637
65–69	61,089	72,540	82,135	47,229	53,437	59,645
70–74	72,642	83,236	93,831	57,484	65,293	73,102
75–79	81,481	93,668	105,854	65,765	75,082	84,398
80–84	84,922	97,979	111,037	71,135	81,316	91,497
85 +	93,470	110,639	127,808	82,598	95,825	109,053

Source: Průša, 2016

When transposing the presented estimates for the evolution of health insurance companies' healthcare expenditure into the Czech Statistical Office's demographic population forecast (intermediate scenario), it is reasonable to expect that there will be a sharp increase in these costs in the following years: health insurance companies' healthcare spending would reach CZK 314.0 billion in 2020, CZK 372.6 billion in 2025 and CZK 433.1 billion in 2030 (Průša, 2017). Compared to 2015, it is evident that the increase in health insurance companies' expenditure on healthcare will be pronounced, with an 84.5% increase to be expected by 2030.

When estimating whether this spending increase can be financed out of health insurance premiums at the existing health insurance tariffs in the light of the expected changes in the population structure, it was necessary to try to quantify the expected evolution of the average and minimum wages, the expected evolution of the assessment base for the self-employed, the

expected evolution of the structure of insurees (employees, self-employed, “state insurees”) and the expected evolution of insurance premium rates for “state insurees”. The estimate drawn up for the expected evolution of these parameters shows that, if the existing trends persist, the health insurance system can be expected to have run up a deficit of approx. CZK 27.6 billion as early as 2020; this deficit will then increase further, reaching CZK 47.9 billion in 2030 (see Chart 4) (Průša, 2017).



**Chart 4:** Estimated evolution of health insurance companies' spending on healthcare up to 2030

The chart shows that changes in the population's age structure mean that, if the existing legal state persists, the volume of healthcare insurance premiums collected can be expected to be lower than the expected volume of health insurance companies' expenditure on healthcare in the coming years, with this shortfall increasing every year. That makes it clear that new measures will have to be adopted in terms of both increasing health insurance companies' revenues and restricting their expenditure if health insurance companies are to break even. These measures might include the following:

- increasing health insurance premiums;
- a more pronounced increase in health insurance premium payments for “state insurees”;
- increasing patients' participation in funding provided healthcare;
- looking for additional funding sources for healthcare;
- combinations of the above solutions.

These are altogether highly sensitive measures, which is evidence of the fact that our society is not yet prepared to tackle the consequences of population ageing. The simplest solution in technical terms, and one that would not require major legislative changes and would ensure that health insurance companies' expected spending on healthcare is financed out of the public health insurance system, would be a more pronounced increase in health insurance payments

for “state insurees” than can be expected in the light of the evolution of these rates in the past. In 2020, for example, the expected level of this rate would have to rise from the originally estimated CZK 1,057 per month by CZK 368 to CZK 1,425; in 2025 the original rate of CZK 1,350 would have to increase monthly by CZK 504 to CZK 1,854; and in 2030 from CZK 1,723 to CZK 2,358 (up CZK 635).

Increasing the rates of health insurance premiums is another possible tool that could be used to help tackle the expected deficit in health insurance companies’ funding of healthcare. For example, increasing health insurance premiums by 1% (from the current 13.5% to 14.5%) would lead to an increase in health insurance companies’ revenues from the health insurance system in 2020 from the estimated CZK 286,373 million by CZK 14,858 million to CZK 301,231 million. Despite this increase in health insurance companies’ revenues, their expected expenditure on healthcare would still be CZK 12,572 million higher and there would have to be, for example, a further increase in the premiums for “state insurees” so that the health insurance companies’ budgets as a whole are balanced (in this case the health insurance premium for “state insurees” would have to rise from the expected CZK 1,057 per month by CZK 170 to CZK 1,227). It should be kept in mind, however, that increasing health insurance premiums would increase the price of labour, which is already relatively high in the Czech Republic.

Increasing patients’ participation in financing healthcare costs can be done using similar principles as were incorporated into the Czech health insurance system from 1 January 2008 in the form of “regulatory fees”. Some of these fees were scrapped in the following years: currently, patients are only obliged to pay a regulatory fee of CZK 90 for the use of medical emergency services.

When looking for other sources of healthcare funding, inspiration can be taken from the Swiss pension insurance system, for example, where the state also participates in funding the first pillar (known as AHV insurance) – since 1 January 1999 the state has contributed part of value added tax to this system (Průša – Horecký, 2012). It is reasonable to believe that an equivalent solution could be applied to healthcare financing in the Czech Republic. Implementing this solution would evidently necessitate a general overhaul of the tax system and social and health insurance system, however (Průša, 2017).

## 5 Conclusion

The demographic forecast drawn up by the Czech Statistical Office in 2013 makes it possible to quantify the impacts of demographic change on all social systems. In the social services, this is all the more relevant because the expected changes in the population structure will have a pronounced impact on the need for care for the oldest population age group, as the proportion of over-65s in the population will increase sharply in the near future.

It is evident that the existing structure of social care services is not prepared for these changes. The calculations done identify an increased need for care in all age groups over 70: it is expected that the care allowance will be received by approx. 469,000–489,000 people in 2030, i.e. approx. 40% more than in 2016, with the biggest increase to be expected in the 4<sup>th</sup> degree of dependency (it is expected that the care allowance in this degree of dependency will be received by as many as 75,500 people in 2030, i.e. approx. 60% more than in 2016). This makes it necessary to pay greater attention to increasing the effectiveness of the financing and provision of social services: it is necessary to fundamentally reassess the existing financing rules, with attention having to be paid to the staffing of the necessary care.

The coming years will bring a marked increase in health insurance companies’ spending on healthcare: this spending can be expected to reach CZK 433.1 billion in 2030, an increase of

84.5% over the level in 2015. Based on the estimated evolution of the key parameters influencing the level of health insurance companies' revenues, expected revenues from the public health insurance system were then identified: it became clear that these revenues will be significantly lower than health insurance companies' expected spending on healthcare, with a revenues shortfall of approx. CZK 27 billion to be expected as early as in 2020. In the coming years it will therefore be necessary to look for additional sources of financing for healthcare so that its standard can be maintained at the current level. These measures can take the form of a more pronounced increase in health insurance premium payments for "state insurees"; higher health insurance premiums; increased patient participation in financing the provided healthcare; looking for additional sources of healthcare funding; or a combination of these solutions.

Forecasting the need for social care services and the evolution of healthcare spending cannot be a one-off activity: it should become a regularly repeated project undertaken at all levels of public administration, for it is at the level of cities and municipalities that the currently changing conditions and needs of the population have to be responded to. Regrettably, however, minimal attention is being paid to matters of demographic development analysis in social services planning, for example.

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## RISK OF LOSING STATUS OF SELF-EMPLOYED

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### **Abstract**

The paper is aimed at determining the loss of status of self-employed. The risk is measured by the amount of the amount that the self-employed person is coming to or, on the other hand, gaining the transition between self-employed status, employed and unemployed changing the status of the surveyed entity. A prerequisite for determining the risk of losing the self-employed status is the premise that the risk arises when the alternative use of the factor of the self-investigated object is lower than that of the entrepreneurial activity. The aim of the paper is therefore to determine the level of the self-income of the self-employed, from which income level is the loss of the self-employed status a risk.

### **Keywords**

Self-employed, self-income, unemployed, employed.

### **JEL Classification**

E24, J3.

## **1 Introduction**

The risk, or more precisely minimization of risk in the form of losses, is a topic addressed not only in the sphere of business but also in a day-to-day decision-making. The concept of risk is in older publications defined as courage or danger, or possibly that taking risks means daring to do something (Pazourek, 1925). Only a few years later, definition of the term risk expands to also cover possible loss (Dvořáček, 1932). However, in this paper, the term risk is perceived in a contemporary sense, i.e., as a risk of damage, harm, loss or destruction, or possibly a failure in conducting business (Smejkal and Rais, 2013). In particular, risk in this paper is understood as the risk of losing the status of a self-employed person (OSVČ).

Compared to other EU Member States the Czech Republic is characterized, among others, by a high share of self-employed persons in active population. While the share of self-employed persons in the economically active population of the EU-15 has oscillated between 12.3% and 12.4% in the past six years, this share ranges between 18% and 19% (author's own calculations) in the Czech Republic. We are talking approximately about one million self-employed persons (ČSSZ - Czech Statistical Office, 2017) who have a specific position not only in the society, but also in relation to the social system, etc. and, similarly as other labour market actors, are exposed to many risks.

The approach to defining or more precisely measuring the risk of losing the status of a self-employed person constitutes an important point. The risk of losing the status of a self-employed person could be taught by combining the data on termination or suspension of the self-employed activity, or on the contrary, on starting an activity with analysis of political, legislative or social changes, and, in case of agriculture, also with natural influences. This definition would require an extensive database and, moreover, the specified risk would be valid only for a given period in the past. Deriving risk from past situations would not be relevant due to the constant change of a large number of variables.



In this paper, the risk of losing the status of a self-employed person is measured by the amount that the self-employed person loses or, on the contrary, gains through the transition between the groups of self-employed, employed and unemployed persons, i.e., by changing the status of the surveyed entity.

The reason for choosing the above mentioned type of measurement is a certain correlation between the status of self-employed person, employee and the unemployed. The self-employed persons are not necessarily just ambitious individuals who desire to run their own business and have the necessary skills to do so, but also individuals who are forced to do business given their current situation. The reason for being forced to do business may stem from the dismissal due to restructuring of a company, etc.; these people then find it very difficult to find a new job (Veber et al., 2016). This fact is further exacerbated by the current employment policy, namely Section 113 of the Employment Act, which allowed the Labour Offices of the Czech Republic to financially subsidize socially beneficial jobs created for the purposes of conducting self-employment activity. This can be defined as a job created by a job seeker for the purposes of self-employment activity. For example, in 2016, the maximum subsidy was up to CZK 151,074 for the first year of doing business. It is, however, questionable whether it is possible for the unemployed to successfully transform themselves into self-employed roles, especially when they start to do business in a new area, in which they have undergone requalification training and, thus, lack experience otherwise gained in practice.

What constitutes a prerequisite for determining the risk of losing the status of a self-employed person is the belief that the risk arises when the alternative use of the labour factor, i.e. the examined self-employed person, is lower than income from entrepreneurial activity. If an alternative use of the work of an examined entity generated higher income, it would not concern the risk but the decision of an examined individual not to maximize his income.

The aim of this paper is, therefore, to determine the financial inflow of a self-employed person, from which the loss of status of a self-employed person constitutes risk for the object.

This paper is divided into three following parts. The first part defines the concept of a self-employed person and also contains information about the current situation of self-employed persons in the Czech Republic. The second part is focused on describing the model situation for determining the risk of losing the status of a self-employed person. The third part then includes determination of the risk of losing the status of a self-employed person.

## **2 Literature review**

The issue of conducting business is a problem that is addressed not only across the European Union but also across the world. The literature very often discusses the issue of impact of tax rates on activity or the number of entrepreneurs. Conclusions that tax policies generally do not have a quantitatively significant impact on business activity are not at all an exception (Bruce and Deskins, 2012). From the results of the above-mentioned authors, it ensues that the composition of state tax portfolios does not constitute a significant factor in state business. The authors based their claims on analysis of tax rates in different US states between 1989 and 2002. They also published further analysis (Gurley-Calvez and Bruce, 2013) reacting to arguments concerning their work, in which they already took into account the impact of taxation and business decision-making on main or other (secondary) revenue-generating activity with respect to different income levels. Other authors also deal with the decision-making between the status of an entrepreneur and employee (Stabile, 2004). Still, we are lacking analysis of decision-making among other statuses, such as the unemployed status.

Given economic development and the Great Recession, the pressure to understand the impact of rising unemployment on groping the self-employed status and gaining employee status was

increasing. The relationship between the rising unemployment and the probability of leaving the self-employed status was demonstrated by the results of analysis in Poland (Rokicka, 2016).

Germany is another member state of the European Union, which discusses the relationship between unemployment and entrepreneurial activities. The authors, however, rather analyse differences in decisions to employ other employees with entrepreneurs who started to conduct business because of an unemployed status (Nieferet, 2010).

From the literature research and from the above-mentioned results of relevant work, it ensues that the issue of motivation, barriers and decision-making about entrepreneurial activity is influenced by a number of factors. The conducted research thus enhances the theme of the submitted contribution (paper).

### **3 Situation and definition of a self-employed person in the Czech Republic**

The precise definition of an entity designation as self-employed can be found in the Act No. 155/1995 Coll., on Pension Insurance, as amended. This law considers a self-employed person a person who:

- Carries out a self-employed activity, or
- Cooperates in carrying out self-employed activity if, in accordance with the Act No. 586/1992 Coll., on Income Tax, as amended, it is possible to divide incomes from the performance of this activity and expenses incurred in achieving, securing and maintaining thereof,
- Has completed compulsory schooling and is at least 15 years old.

Furthermore, the current legal system of the Czech Republic enables the self-employed person to conduct business as a main or secondary activity, or as a main and, at the same time, secondary activity. Independent business activities are thus split because of the assessment base, which would otherwise be inadequately high for a self-employed person whose independent business activities constitute only an addition to the main income. Some levies would be duplicated. The following self-categorization is important for this paper:

#### **- Persons for whom conducting business is the main self-employment activity**

During the main business it is expected that the entrepreneur focuses mainly on his business and his responsibilities include participation in health and social insurance. Participation in sickness insurance is voluntary.

#### **- Persons for whom conducting business is ancillary self-employment activity**

Conducting business in the form of ancillary activity is seen as a form of side income in addition to employment. The profit of these persons is significantly favoured from the viewpoint of levies. The benefit is also derived from the logic of the matter, for example, social insurance is already covered from the employment relationship,

thus, the social insurance from the secondary activity does not have to be covered up to a certain amount of the assessment base.

Self-employed persons are often referred to as persons with trade license, self-employed persons, entrepreneurs, etc. In this paper, these economic entities will be referred to mainly as self-employed persons, i.e., in connection with legal definition of this term. The same denomination is also used by the Czech Social Security Administration, the Ministry of Labour and Social Affairs of the Czech Republic or the Czech Statistical Office. The Financial Administration, which uses the term “entrepreneur”, or possibly “natural person – entrepreneur” is an exception.

#### **4 Model situation and designation of risk of losing the status of a self-employed person**

In order to determine the risk of losing the status of a self-employed person, it is necessary to identify a particular model situation. In this paper, an individual who does not have any dependent children or a husband, wife or registered partner, lives alone in a sublease apartment in the city of 10,000 to 50,000 inhabitants represents a model situation to determine the risk of losing the status of self-employed person. The choice of a city with the given population was not made randomly; it is the most frequent city size in the Czech Republic.

The reason for choosing these criteria is the fact that in such a case the given individual takes into account his needs, not the needs of a partner or dependent children, i.e., other people who could distort the determination of risk and their impact is difficult to measure.

Such a detailed description of an individual is key for a correct determination of the situation of an individual in the status of self-employed, employed, and especially when the status of an unemployed person is considered, i.e., for an exact calculation of the amount of social benefits.

#### **Self-employed status**

The primary issue to solve was how to define a successful self-employed person in terms of income or more precisely profit. Self-employed persons conducting business in the territory of the Czech Republic are affected by a single income tax; thus, in terms of tax costs it is not possible to distinguish them.

It is true that a self-employed person may be a VAT payer. Value added tax is payable by a given entity in a situation where his turnover in the 12 previous consecutive calendar months exceeds the amount of CZK 1,000,000.<sup>26</sup>

Foreign authors are more focus on statistical expression to define a successful self-employed person (Andersson and Wadensjö, 2007).

The chosen threshold for determining success self-employed person was determined by expert estimation. An expert estimate could be verified, for example, by a quantitative survey between the self-employed, but perception of success is a very individual matter that cannot be averaged. This is the reason why is relevant threshold defined with help of alternative income as is describe below.

The relevant threshold for determining success and subsequently determining the risk of losing the status of a self-employed person is when comparing business income with average income in the economy. In the Czech Republic, in 2016, the average gross income was CZK 27,000 (ČZSO, 2016); the net average monthly wage in the model situation of an individual

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<sup>26</sup> Act No. 235/2004 Coll., Value Added Tax Act.

without dependent children is CZK 20,670. However, a self-employed person should receive income from his entrepreneurial activity larger than the average earnings of employees. This is not only due to extra costs associated with conducting business that the employee does not pay, but also due to the increased psychological burden or damage to the prestige in case conducting business turns unsuccessful (Veber, Srpová et al., 2012). Additional costs include, for example, additional bureaucratic burden on entrepreneurs highlighted by the Ministry of Industry and Trade of the Czech Republic (MV ČR, 2009). An action programme to reduce the administrative burden on entrepreneurs was announced already in 2007; it was followed by the plan for reducing administrative burden on entrepreneurs by 2010, etc. However, despite all efforts, the outputs of the Business Entrepreneurial Activity Analysis within an international project Global Entrepreneurship Monitor (GEM) in 2013 reflecting opinions of entrepreneurs in 70 countries of the world state that since 2011 the Czech Republic has seen an increase in the perception of bureaucracy as a major problem in business (MPO, 2014). For the above reasons, such an individual may be called a successful self-employed person whose income from conducting business is at least twice the average income in the given economy.

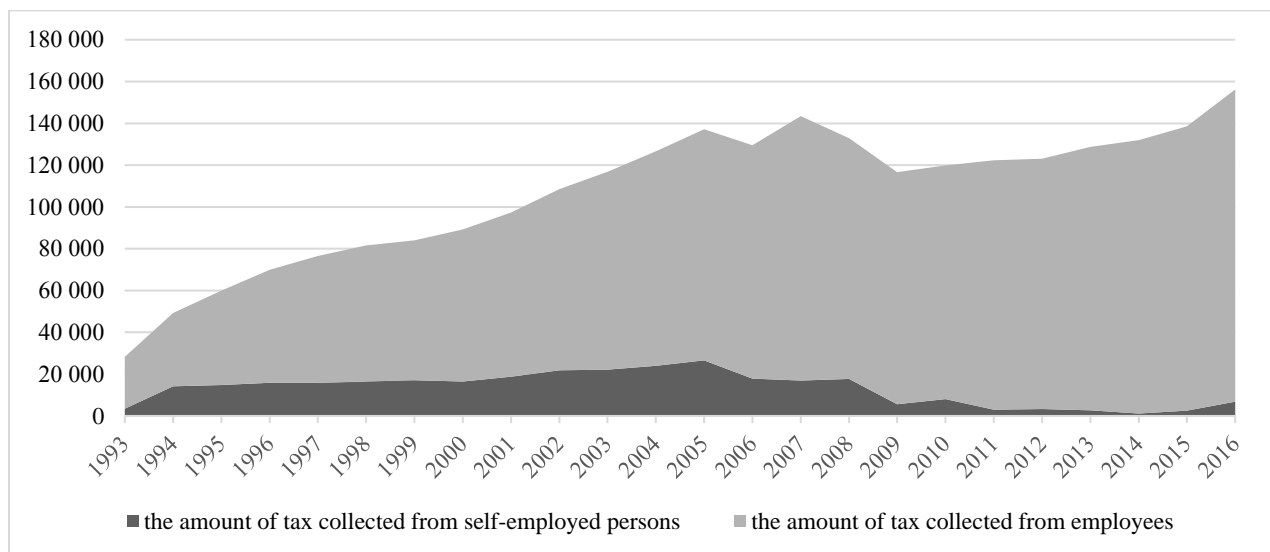
### **Employed person status**

In addition to conducting business, dependent activity, i.e. employment, is the second option for an individual to utilize his human capital. The relationship and distinction between conducting business and employment are strongly discussed in economic theory. From a theoretical economy, for example, we cannot forget the theory of exploitation due to private ownership of means of production, or the situation where the class of owners forces the class of non-owners to work for it, thereby exploiting it (Marx, 1954). However, in this paper, the choice between the status of a self-employed person and status of employee is key here.

In case of a choice between employment and conducting business, it is important for a given individual to consider the taxation of his work. The difference in collected income tax by self-employed person and employees is clearly evident from Figure 1 below.

From the evolution of the collected income tax of self-employed persons (in a graph marked as DPFO - entrepreneurs) a decrease is evident from 2005 until 2015, where we can see a slight increase. This increase could be caused by the expected validity of the Act No. 112/2016 Coll., on Electronic Registration of Sales, the Act No. 113/2016 Coll. and the Act No. 269/2016 Coll., i.e. introduction of an electronic sales record that arose as a result of the systematic reduction of tax liability in certain business areas (ETRŽBY, 2017). Some self-employed persons have probably withdrawn from tax cuts in fear of sudden growth in newly recognized earnings. However, this is a very short period of growth and it is, therefore, necessary to wait for it to be fully interpreted in future years.

**Figure No. 1 Evolution of the collected income tax of self-employed persons and employees between 1993 and 2016, in CZK millions**



*Source: Financial administration, 2017, author's own graph*

When calculating the income tax, a self-employed person can choose between the option of 15% taxation and the so-called deductible flat rate, which may be up to 80%. The employee's income tax is calculated from the rounded super gross wage that serves as the basis of tax, then 15% of this tax base is determined and a tax advance is deducted from the deduction of tax credit.

On the other hand, it should not be forgotten that an employee in comparison with a self-employed person does not have to spend the aforementioned additional expenses, but at the same time he does hold guarantee with his entire property.

## Unemployed status

If an economically active individual is not a self-employed person or an employee, then he bears the unemployed status.

The total number of unemployed in 2016 decreased between years by 44,4 thousand and reached 192.5 thousand. (ČZSO, 2017). The reduction in the number of the unemployed is also reflected in state revenues in the form of the increased volume of collected income tax in 2016; see Figure 1.

In order to prevent that the output of model calculations of the amount of social benefits is misleading, we consider an unemployed person who no longer receives unemployment benefits, i.e., receives social benefits. The amount of social benefits that a given individual will receive, if he does not do business, constitutes an important threshold for determining the risk. If the income of a self-employed person was below the level of social benefits, then it is more rational for this individual to leave his business and to redeem the unemployed status. The question remains, however, what specific amount of income is involved; the answer to this question is provided by a model calculation given in chapter 4 entitled "Determining the risk of losing the status of a self-employed person".

For the purposes of model situation, the entitlement to housing allowance was calculated, as well as benefits in material need - subsistence allowance and benefits in material need - housing supplement. The housing allowance contributes to cover housing costs for families or low-income individuals (MPSV, 2017b). The subsistence allowance is the basic material need allowance that assists a person or family in case of insufficient income; the second material

need allowance tackles the lack of income to cover housing costs where income of a person or family, including a housing allowance from state social security is not sufficient (MPSV, 2017a).

### **Other options – combination of employment and conducting business and shadow economy**

In the current system, an individual may also acquire other statuses than just that of the self-employed, employed or unemployed person. An individual can not only choose between individual statuses but also combine them. The current legal system allows for a combination of employment and conducting business, i.e., a situation where conducting business is a secondary activity. Thus, in addition to his regular employment, an individual carries out business activities. In this case, we can talk about the substitution of free time by business activity. An increased income for the cost of free time, therefore, constitutes bonus. A certain modification of this status is the so-called “Schwartz-system”, or the situation when a self-employed person only works for one company and uses its tools to perform it. In this situation, illegal activity occurs due to the reduction of tax liability, etc. (Veber, Srpová et al, 2012).

Another option is movement of a self-employed person in the field of shadow economy, i.e. the creation of unreported or unregistered business activities for the purposes of tax evasion. This activity can be created in the course of conducting business itself, employment, but also when an individual is unemployed and receives unemployment or social benefits. However, this activity is beyond the law and is thus criminally punishable. For the above reasons, these status modifications are not included in the model situation.

## **5 Determination of the risk of losing the status of a self-employed person**

In order to determine the risk or more precisely the risk of losing the status of a self-employed person, analysis was made of income levels of the individual statuses, which a self-employed person can acquire in different than entrepreneurial activity.

In terms of incomes or more precisely profit, those persons whose income from conducting business is more than twice the average net wage are the most successful self-employed persons. For these self-employed persons, the risk of losing the status of self-employed person is the strongest; in Figure 2 below this area is graphically depicted in dark grey.

If income oscillates between twice the average net wage and average net wage for the year 2016 between the values of CZK 41,340 and 20,670 (depicted in light grey colour in figure 2), we can talk about a lower risk of losing the status of a self-employed person. The lower degree risk is due to the fact that a self-employed person would theoretically be able to find work as an employee while retaining income and at the same time freeing himself from demands in terms of time he has as an entrepreneur and that relate to business activity. Other costs or risks that a self-employed person should consider in this income group are financial impacts in case of failure in business; unlike employees a self-employed person holds guarantee with his entire property.

The income threshold when the value of risk as an alternative income is highly questionable is an average net wage limit and the highest achievable amount of social benefits, i.e. the limit of CZK 20,670 and CZK 11,014. If a self-employed person achieves a monthly income of an average net wage in the Czech Republic and less, it is not rational to continue on conducting business because the alternative income from employment may be the same or even higher, depending on the chosen sector where a self-employed person works. The rational reason why

to remain a self-employed person status is time flexibility and a certain independence stemming from the nature of business.

It is interesting to note that a model individual considered in this case is entitled to a housing allowance when the monthly income reaches CZK 16,200, i.e., in situation when his income reaches 60% of the average gross income in the Czech Republic. Given the fact that 70% of employees have incomes below the average income, it is obvious that a substantial part of the population of the Czech Republic is entitled to housing allowance.

A model individual is also entitled to material need benefits - subsistence allowance in case of income of CZK 6,480, i.e. when his income equals 24% of the average monthly income in the Czech Republic. A model individual is entitled to material need benefits - housing supplement also in case of income of CZK 8,100, i.e. his income equals 30% of average monthly income in the Czech Republic. The entitlements are illustrated in Table 1 below.

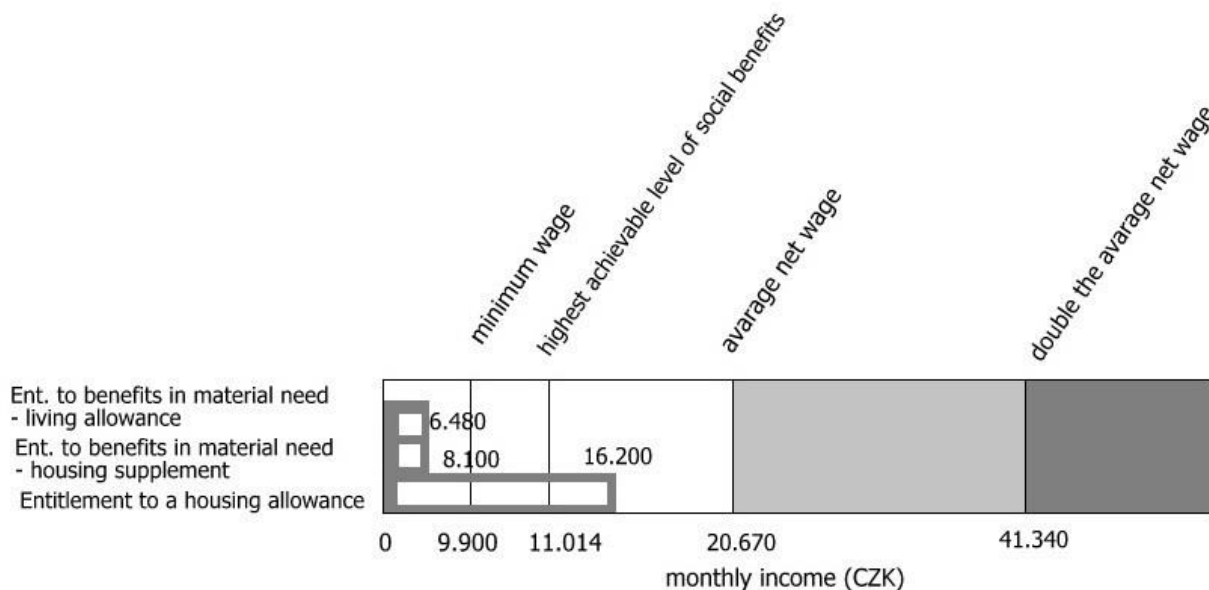
**Table No. 1 Alternative income in the status of unemployed person**

	Income	Entitlement to social benefits for the long-term unemployed			
		Entitlement to housing allowance	Entitlement to subsistence allowance	Entitlement to subsistence supplement	In total
24 % of average monthly income	0	3973	3410	3631	11014
	540	3973	3145	3355	10474
	1080	3973	2881	3080	9934
	1620	3973	2616	2805	9394
	2160	3973	2352	2529	8854
	...				
	6480	3052	235	1247	4534
	7020	2890	0	1104	3994
	7560	2728	0	726	3454
30 % of average monthly income	8100	2566	0	348	2914
	8640	2404	0	0	2404
	...				
60 % of average monthly income	16200	136	0	0	136
	16740	0	0	0	0
	...				
Double the average wage for 2016	54.000	0	0	0	0

*Source: Author's own calculation and graphic design*



Figure No. 2 **The risk of losing the status of a self-employed person by income level for 2016**



*Source: Author's own calculation and graphic design*

In case the monthly income of a self-employed is the same or lower than the amount of social benefits that this individual can achieve, we stop talking about the risk of losing the status of a self-employed person. Alternative income of a self-employed person is in these cases always higher than business income. If a self-employed person remained in the role of an entrepreneur, it would no longer be possible to talk about rational choice.

In order to determine the risk of losing the status of a self-employed person, the amount of social benefits available, in this case CZK 11,014, is, therefore, key.

Calculations of social benefits in case business is not conducted, i.e., in case of acquiring the unemployed status, further indicate that the available social benefits are higher than the minimum wage by the total of CZK 1,114. Thus, the amount of social benefits attainable is also strongly demotivating in case of conducting business and in case of employment with remuneration amounting to minimum wage.

The amount of minimum wage, as well as the attainable amount of social benefits is, therefore, an important milestone in deciding to start a business activity not only in the Czech Republic but also in other countries of the European Union. It is necessary to point out that not all European Union countries use statutory minimum wage. In addition, individual countries use different models of income taxation for both self-employed persons and employees. There is a significant diversity across individual systems that exist with respect to social benefits. The abovementioned diversity makes it impossible to determine the risk of losing of the status of a self-employed person by applying the model in other EU Member States or other countries in the world. However, the model of determining the risk of losing the status of a self-employed person in the Czech Republic has a potential for long-term monitoring of the change in the level of risk and the assessment of impacts of fiscal policy on the business environment.

## 6 Conclusion

This paper is focused on defining the loss of the status of a self-employed person. The aforementioned risk is measured by the amount that a self-employed person loses or, on the other hand, gains by transition between the status of a self-employed person, the employed and the unemployed and the unemployed working illegally, i.e., by changing the status of the examined entity.

A prerequisite for determining the risk of losing the self-employed status is the premise that the risk arises when the alternative use of the labour factor, i.e., the examined self-employed person, is lower than business income. If an alternative use of the work of the entity brought higher income, it would not concern risk but the decision of an examined individual not to maximize his income. The aim of the paper was, therefore, to determine the financial income of a self-employed person, from which the loss of the status of a self-employed person constitutes a risk.

In order to determine the risk of losing the status of a self-employed person, it is necessary to identify a particular model situation. In this paper, an individual who does not have any dependent children or a husband, wife or registered partner, lives alone in a sublease apartment in the city of 10,000 to 50,000 inhabitants represents a model situation to determine the risk of losing the status of self-employed person. The choice of a city with the given population was not made randomly; it is the most frequent city size in the Czech Republic.

The reason for choosing these criteria is the fact that in such a case the given individual takes into account his needs, not the needs of a partner or dependent children, i.e., other people who could distort the determination of risk and their impact is difficult to measure.

Such a detailed description of an individual is key for a correct determination of the situation of an individual in the status of self-employed, employed, and especially when the status of an unemployed person is considered, i.e., for an exact calculation of the amount of social benefits.

Outputs of model calculations show that the self-employed person who are at the highest risk of losing their status are those whose monthly net income is more than twice the average net wage. In case the business income oscillates between the values of double the average net wage and the average net wage for 2016 between the values CZK 41,340 and CZK 20,670 we can talk about the lower risk of losing the status of a self-employed person. The lower value of risk is due to the fact that a self-employed person could theoretically find work as an employee while retaining income while at the same time freeing himself from the time he has as a businessman and that relates business activity. In case where the monthly income of a self-employed person is the same or lower than the amount of social benefits that this individual can achieve, we stop talking about the risk of losing the status of a self-employed person. Alternative income of self-employed persons is in these cases always higher than business income. If a self-employed person remained an entrepreneur, it would no longer be possible to talk about rational choice.

In order to determine the risk of losing the status of a self-employed person, therefore, the amount of social benefits available, in this case CZK 11,014 is key.

It is clear from the above findings that business decisions and the associated determination of the risk of losing the status of self-employed person are influenced by a number of factors, but the impact of fiscal policy is particularly significant, not only in the form of income taxes but also in terms of alternative income of an individual, such as social security benefits.

The model used for determining the risk of losing the status of a self-employed person in the Czech Republic has the potential for long-term monitoring of the change in the level of risk and assessment of the impacts of fiscal policy on business environment.

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Zákon č. 113/2016 Sb., kterým se mění některé zákony v souvislosti s přijetím zákona o evidenci tržeb.

## EMPLOYMENT OF PERSONS AFTER 50 YEARS IN THE CZECH REPUBLIC

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### Abstract

People aged 50 and over make approximately one third of the unemployed in the Czech Republic. The unemployed people are often less educated and come from manufacturing industry, trade and services. Employers usually prefer younger workers (according to experience of recruitment agencies), so older workers have difficulties to find a new job, even though they have plenty of experience and are educated and adaptable. Greater flexibility and employability of older workers can be ensured by creating the appropriate conditions for entrepreneurship and self-employment. The authors find suitable conditions, among other things, boosting the confidence and willingness to take risks for people 50+. Empirical information is obtained through statistical surveys of the Czech Statistical Office and The Ministry of Labour and Social Affairs of the Czech Republic. The information shows a narrowing offer of employment for older workers and an increase in the share of business activities.

### Keywords

Age management, labour market, employment, Czech Republic  
JEL Classification codes: J14, E24.

## 1 Introduction

The reality of population aging raises the importance of age management and its application in organizations and society. The implementation of age management also depends on the attitudes of senior workers. The authors describe the objective conditions in the society of the given unemployment levels, vacancies and the tendency to employ older persons.

## 2 Literature review

Employers often think that older workers significantly reduce productivity, conservatively accept changes, reluctantly learn and are often absent due to illness (Ilmarinen, 2005). Older workers are valued for their considerable experience, responsible relationship to organisation or easy approach to solving problems (Cimbáľníková, Fukan, Lazarová et al., 2012). People are very often limited by limits in their heads. More important than chronological age is healthy nutrition, physical activity, but also individual genetic equipment (Fineman, 2011).

The term age management was officially used for the first time in the Finnish Institute of Occupational Health (FIOH), which has been extensively concerned with the issue of aging workers. The questions were: "How long can people work?" "What is the appropriate retirement age?" and "How do I measure work capacity during aging?" The most important result of the work was the identification of factors that affect the ability of a person to work and the creation of the concept of the working ability. They created the Work Ability Index.

The interest of each individual is to maintain and restore its own employability and, if necessary, to change its job position, employer or form of employment. The change of employment is exactly the problem of an aging working population, both because of the

weakened belief in one's own employability and because of stereotypes in the social environment of the organization.

Objectively, it is necessary to take into account a longer career path and thus to ensure working ability in older age. In the Czech Republic, there is a plan to shift the retirement age to 65 years. The plan is agreed and implemented.

The interest in age management at this level is driven by the need to maintain and develop human performance potential, increase workers' productivity, and constantly adapt it to business needs. The aim of age management is to gain a competitive advantage by employing people of all ages. Age diverse groups of workers have various knowledge, skills and abilities that add value to the workplace and play a key role in achieving success of the organization (Šafnánková and Šikýř, 2016).

This interest is permanent due to the aging of the population and hence of the employees. Employers generally respect the conditions of employment of senior workers to ensure adequate workload, health protection at work, and a healthy social environment at work. The employer adopts measures in the field of employee health care (medical examinations, physical activities for health promotion, rehabilitation possibilities, support of healthy eating habits, etc.), measures in relation to the working environment (improvement of working tools, noise reduction, machine risk reduction, ergonomics, etc.), adaptation of the work organization (flexibility of working time, reduction of time stress, shared jobs, etc.), but also recruitment with regard to the age of applicants, education or rapid incorporation of graduates, development of skills of older workers. For employees of different ages is also very important corporate culture supporting intergenerational cooperation. The key actors in the implementation of age management in organizations are human resource managers. (Štorová, 2015)

The employment rate in the EU has steadily decreased over the last 20 years. The old-age retirement program was a response to the need to increase the employment of young people. The level of employment among older workers depends on "push" and "pull" factors. The push factor is represented by the reduced opportunities of the elderly on the labour market. The pull factor is basically the motivation for joining the early retirement. The program was soon abandoned due to the high demands on pension funds (Walker, 2005). Research in Europe (Walker, 2005) has also shown a shift in employers' attitudes. Above all, employers are aware of the possibilities of intergenerational influence. Changes in attitudes are not reflected in a change in negotiation and the reality of intergenerational management is rather an exception. On the contrary, the tendency to displace older workers from organizations remains.

The use of older workers' knowledge is not self-evident and automatically promoted in age-diversified groups. Collaboration of people of different ages requires knowing the needs of these people and how they work (Formalczyk-Jagoda, Stompór-Swidorska and Słazyk-Sobol, 2015). In general, people prefer to be in a relationship with people of the same age. The age-differentiated group is potentially conflicting. Therefore, age management in organizations requires the ability to tune people to the common cause and overcome this natural trend.

The measure of age management at the national level was discussed in the authors' article (Němec and Surynek, 2013). The interest of society is formulated in the policy document National Action Plan for Positive Aging for the period 2013-2017 (MPSV, 2012).

The plan has a total of 16 strategic objectives, such as extending the working lives of older workers and older people, protecting against age discrimination, supporting senior education, promoting intergenerational cooperation, supporting employers in introducing age management elements and methods. The Action Plan includes, in addition to target groups, public, non-governmental, private and self-governing organizations. (MPSV, 2012)

Employers, unfortunately, put older workers into a less attractive and poorly prepared role than younger competitors. Flexible forms of work are rather on the edge of interest and are used

only to a small extent. Knowledge of age management measures and their deployment processes is inadequate. Also, the Czech Republic's workers, who were still in the workforce, were still not in the reality of a longer working life.

### 3 Methods and data

National statistics and individual census statistics are used in this paper. The basic method used was the comparison of the data of individual statistics and the interpretation of their content and trends. Job opportunities on the labour market are created by various employers and businesses. The type of economic activity and its comparison with age shows the opportunities of individual age cohorts for employment (CZSO, 2013).

The share of employees of individual age cohorts in employers' organizations is approximately the same in all age groups from 15 to 59 years of age. The 25-34 age group is an exception because the proportion of employees is about 4 percentage points higher. After 60 years, the proportion of employees in this category is decreasing. The share of persons acting as employers or self-employed persons is significantly higher in this category. The data show that older people are more self-employed than their own. The proportion of women in general is lower than that of men in all types of employment in both age groups (15-59 and 60+). Differences are greater for entrepreneurial activity (employers and self-employed). The "helper family" status is an exception. The proportion of women is significantly higher than the proportion of men in both age groups. (CZSO, 2013) Interesting results are given by the ratio of unemployed and employed persons in each age group (see tab. 1).

**Tab. 1** The ratio of unemployed and employed by age

Age	Unemployed / Employed (%)
15-19	47.8
20-24	24.6
25-29	12.0
30-34	9.8
35-39	8.6
40-44	8.6
45-49	9.0
50-54	10.6
55-59	11.8
60-64	5.6
65-69	0.0

Source: authors based on the data of CZSO (2013)

More than 50% of the unemployed aged 45 and over stated in the census form the last job in fields of generals and officers in the armed forces, legislators, supreme civil servants and senior executives, security and security workers, waste and other auxiliary workers, skilled workers in forestry, fisheries and hunting, manufacturing, information technology, education and related industries, cleaners and auxiliaries and auxiliaries in agriculture, forestry and fisheries (CZSO, 2013). Therefore, we consider these categories of employment for workers at the age of 50+ to be unpredictable at the moment.

Individual classes show different age divisions. The employment classes in which more than 50% of people aged 45 and over are employed from the economically active population of 15+

are: cleaners and auxiliaries (59%), farmers, fishermen, hunters and gatherers (58%), legislators (58%), waste and other auxiliary workers (54%), auxiliary workers in agriculture, forestry and fisheries (53%), auxiliary workers in food preparation (50%), and qualified workers in agriculture (50%). 49% of the older population (aged 45 and over) works in the field of education and training specialists. 45% work in the field of healthcare specialists and personal care in education, health and related areas. Drivers and mobile operators also face aging workers. 45% of them work 45 or more years.

The domain of the younger population (15-44 years) is the field of armed forces (except for generals, officers and non-commissioned officers), where 90% of younger people work. 81% of information and communication technology specialists are younger than age 44. The non-commissioned armed forces occupy 77% of the younger population. 74% of generals and officers in the armed forces are younger than 44. Fields where younger workers are also dominated include information service workers, countertops and related fields, where 74% of workers are younger than age 44. Business and public administration specialists are represented by 74% of people under the age of 44. (CZSO, 2013)

Courses focusing on older or younger workers show where it is advisable to direct efforts to promote intergenerational management, which is where we need to promote communication between workers of different generations. The retraining statistics show the number of retrained persons in different age categories (see tab. 2).

**Tab. 2** Statistics on retraining qualifications for Q1 2011

Age	Total in retraining	Finished total	Completed successfully
20-24	2 583	996	833
25-29	2 002	812	690
30-34	2 587	1 004	885
35-39	2 645	1 024	929
40-44	2 077	831	727
45-49	2 068	890	805
50-54	2 164	996	889
55-59	1 482	683	607
60-64	113	56	52
65+	1	0	0

Source: authors based on the date of MPSV (2017)

Retraining is the smallest number for people over 55 or over 60 years of age. Older people are less successful in retraining. Numbers of successfully completed courses by them correspond to those in other age groups relative to the total number of retrained persons in the group. Tab. 3 shows the number of vacancies in the Czech Republic in April 2017.



**Tab. 3** Number of vacancies in the Czech Republic at 25 April 2017

Code CZ- ISCO	Description	Current number of vacancies
<b>0</b>	<b><i>Employees in the armed forces</i><sup>1)</sup></b>	<b>439</b>
<b>1</b>	<b><i>Legislators and Managers</i></b>	<b>1 427</b>
11	Managing managers in corporate governance	636
12	Managers in manufacturing, information technology	626
13	Managers in the field of accommodation, catering services	122
<b>2</b>	<b><i>Specialists</i></b>	<b>11 137</b>
21	Specialists in science and technology	1 414
22	Healthcare professionals	2 450
23	Specialists in education and education	1 763
24	Specialists in business and public administration	1 682
25	Specialists in Information and Communication Techniques.	3 257
26	Specialists in legal, social, cultural area	531
<b>3</b>	<b><i>Technicians and professionals</i></b>	<b>11 186</b>
31	Technicians and experts in science and technology	3 648
32	Health professionals	2 197
33	Professionals in business and public administration	3 959
34	Experts in law, culture, sport	735
35	Information and Communication Technology Technicians	587
<b>4</b>	<b><i>Officials</i></b>	<b>5 317</b>
41	General administrative staff, secretaries	1 224
42	Information service staff at the counters	2 722
43	Numerical Data Processing and Logistics Officers	1 095
<b>5</b>	<b><i>Service and sales staff</i></b>	<b>21 447</b>
51	Personal service personnel	10 356
52	Sales staff	4 801
53	Personal care workers in the field of education, healthcare	1 614
54	<i>Protection and security personnel</i>	4 648
<b>6</b>	<b><i>Qualified workers in agriculture, forestry, fisheries</i></b>	<b>1 293</b>
<b>7</b>	<b><i>Craftsmen and repairers</i></b>	<b>31 712</b>
71	Craftsmen and skilled construction workers	7 438
72	Metalworkers, machinist and workers	14 836
73	Workers in artistic and traditional crafts	629
74	Workers in electronics and electrical engineering	2 416
75	Processors of food, wood, textiles	6 362
<b>8</b>	<b><i>Machine and equipment operator, assemblers</i></b>	<b>32 982</b>
81	Operation of stationary machinery and equipment	8 845
82	Installation workers of products and equipment	10 869
83	Drivers and operators of mobile devices	13 043
<b>9</b>	<b><i>Auxiliary and unskilled workers</i></b>	<b>33 034</b>
91	<i>Cleaners and helpers</i>	5 351
92	Support workers in agriculture, forestry and fisheries	3 834
93	Auxiliary workers in mining, construction, manufacturing	20 079
94	Help workers in preparing food	1 074
96	<i>Waste and other workers</i>	2 169
	<b>Total</b>	<b>149 974</b>
1) The curriculum identifies the branches with the largest departures from employment and the classification among the unemployed		

Source: authors based on the date of MPSV (2017)

The note is based on the table on the largest number of job vacancies in sales and service, machine operators and auxiliary works. These are vacancies that require a higher level of physical fitness and may be inappropriate for a number of older workers. With regard to the total number of the unemployed, it is possible to consider the likely preference of younger workers to employers.

#### **4 Results and discussion**

Specific figures on unemployment in the Czech Republic do not indicate a significant problem presented by Palíšková (2014). European countries in the south are in a totally different situation. Suggestions for solutions presented by the authors are interesting, the question is whether they are effective. Is the Czech Republic in better shape?

The share of employees of individual age cohorts in employers' organizations is approximately the same in all age groups from 15 to 59 years of age. The proportion of women in general is lower than that of men in all types of employment in both age groups (15-59 and 60+). This difference can be considered as natural in the traditional understanding of male and female roles in the family. This means that a lower rate of female employment is likely to offset their higher involvement in domestic work. This is confirmed by the statistical data on the family members' economic activity. This type of activity is more common among women than men.

According to the authors, the ratio of unemployed and employed persons in each age group better identifies the level of threats or opportunities that people of a certain age have.

The ratio of the unemployed and employed is the least favorable among young people. It can be assumed that the number of them is in the transition from one job to another. Furthermore, a large number of young people are educated. The ratio of the unemployed and employed is most favorable for people aged 40 years. Obviously we can talk about the highest employee stability. The ratio is gradually becoming less favorable for older people. We see this as an increasing risk of unemployment among older people. The breakthrough occurs after 60 years of age probably due to the possibility of solving the problem of unemployment by retirement. This trend does not correspond to the policy objectives of age management.

Note on retraining. People over the age of 55 are actually retraining less than other age groups. It can be assumed that a smaller number of retraining will be the expression of a real lower need for retraining, perhaps due to the prospect of leaving an economically active life. However, ages up to 55 years old are retraining approximately the same. This means older people too. Therefore, it cannot be said that older people usually reject retraining and that they are less flexible.

The above statistical data show the number of job vacancies is interesting compared to the groups of employment that are relatively the most dismissed persons in the employment relationship. These are officers, legislators and managers with a higher number of redundancies. It is likely that the problem is generated by a certain personnel policy that prefers younger employees.

In conclusion, making general conclusions and general measures is not a reliable solution. However, the personnel policy advocating an individual approach to people does not only concern older people but also younger people.

## 5 Conclusion

Age management must be based on real conditions in society and in organizations and on their knowledge. The working skills and qualities of older workers are among the conditions of age management. Therefore, age management includes part of maintaining, enhancing or creating new competencies for older workers. However, age management also includes part of older workers' work in organizations, although not so successful in the results. The advantage of age-related heterogeneous working groups is the exchange of experience and knowledge of intergenerational work practices.

From statistical data, it is not possible to deduce the reason for the exclusion of persons over the age of 60+ from the labour market. Whether it is the desire of the worker himself or it is the interest of the organization in particular for younger people. Both reasons are likely to apply even if the relationship between them is not obvious. Statistical data on the ratio of unemployed and employed by age can be justified by the greater influence of personal wishes. A break in values occurs after 60 years of age, up to 54 years is comparable to younger. Employee status data are more about the impact of external labour market conditions, as the proportion of self-employed workers in the group over 60 years increases. That is, the proportion of people who want to be economically active and start their own business is growing.

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## PROFESSIONAL DECISION-MAKING OF UNIVERSITY STUDENTS TO ACCESS THE EUROPEAN LABOUR MARKET

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### Abstract

The aim of the essay is to conceptualise the types of professional decision making and to make a comparison of the impact of the decision-making factors affecting university students towards the entry to the European labour market, according to the form of the study. The essay combines the theoretical bases from the research of Huppert and Soa with motivational aspects of the theory of self-determination. The methodology deals the specification of the qualitative empirical data obtained from case study in the focus groups. The results interprets of the conceptualisation of the professional decision-making types of the selected university students towards entry to the European labour market, at impacts on satisfying their needs as motivational variables during the course of life. The essay discusses the impact of the concepts of PERMA and the *climbing wall* professional career on the decision-making process of the respondents. The conclusion confirms the benefit of the influence of the motivational variables on the selected university students, according to the form of study and the differences in their professional decision making on entering the European labour market.

### Keywords

European labour market, Professional decision making.  
JEL Classification codes from the list: J58, J580.

## 1 Introduction

The intention of this contribution is conceptualization of types of professional decision-making by university students on the European labour market and comparison of effects of components of their *Ego* as factors of the professional decision-making. We regard professional decision-making by form of university study from two viewpoints. *Firstly*, whether and how satisfaction of needs can influence professional decision-making of selected university students and *secondly*, whether and how motivational variables can form their decision-making process to access the European labour market. This contribution is composed on the theoretical base of *a theory of self-determination* with impact on motivation of university students towards professional decision-making. A case study that is implemented by the method of focus groups is the basic type of the research submitted. *What are impacts of control and self-reliance as motivational variables on professional decision-making of selected university students? How is professional decision-making of selected university students influenced by satisfaction of needs according to the theory of self-determination? How is satisfaction of needs reflected in their professional decision-making? How do they find which one of the motivational variables influences more their professional decision-making? What is similarity and dissimilarity of the decision-making process of selected university students to access the European labour market by form of university study?* It can be assumed from the viewpoint of self-conception that students of combined form of study are more interested in professional decision-making to access the European labour market by practical reasons compared to students of full-time form of study. The assumption given comes from better harmony at functioning of components of their *Ego* as decision-making factors. According to the theory of self-determination by Deci and Ryan (2002) *various impacts of satisfaction of needs on the decision-making process of selected university students to access the European labour market* can be expected. With

learning of influence and impacts of motivational variables on satisfaction of needs they can influence the process of their professional decision-making more effectively. This way they will be able to better understand why they need high level of inner motivation for satisfactory professional decision-making to access the European labour market in the future.

## 2 Literature research

Professional decision-making influences overall flourishing of individuals in their work life, which was verified on a selection file of 40 000 respondents from 23 national labour markets in Europe by Huppert and So's (2013). The highest percentage representation of the optimally flourishing individuals was discovered on the labour markets in Denmark (33%), Switzerland (27%), Finland and Norway (25%). This was followed by labour markets in Ireland, Austria, Cyprus, Sweden, Great Britain and Spanish within the range of 15-25% of the optimally flourishing individuals. Labour markets in Belgium, Netherlands, Slovenia, Poland, Estonia and Germany recorded values of 10-15% of optimally flourishing individuals. The group of European national labour markets was ended by France, Hungary, Ukraine and Slovakia with the share of 7% of optimally flourishing individuals and finally labour markets in Bulgaria, Portugal and Russia got the wooden spoon. Optimal flourishing of the European population grows proportionally together with their level of education, earnings and health condition. According to Slezáčková (2012, p. 32) the research study mentioned in this document confirmed a connection between the optimal flourishing of selected European population and their satisfaction in life. A medium positive relation was confirmed between the optimal flourishing and satisfaction in life. While 12% of respondents in the selection file satisfied the criteria of optimal flourishing, 17.7% of them reported a high level of satisfaction in life. Only 7.2% of Europeans are very satisfied on the labour market, they are optimally flourishing and are doing well in various aspects of their work life. According to Slezáčková (2012, p. 29) the amount of available energy and vitality is influenced by satisfaction in life in 70%. According to Keyes and Haidt (2007) only individuals that have high level of emotional, psychological and social comfort also have sufficiency of energy and vitality. They maintain close and intimate interpersonal relations, practice self-development and experience a meaningful working life. Their inner attitude towards working life contains real mental wealth. In connection with inner attitude towards working life Deci and Ryan (2002) formulated *the theory of self-determination*, where they put the highest emphasis on inner motivation. They distinguish within inner motivation between two variables (MP), by which an individual influences his/her working life, including the process of decision-making in the course of professional career. The first variable is *a control* of decision-making forced by duties, obligations and standards. The second variable is *independence* in decision-making according to their independent choice and their own will. According to Deci and Ryan (2002) content and meaningful working life, including professional career, is conditioned by satisfaction of three needs. They include *competence* (I have what it takes!), *autonomy* (I do the right things!) and *integration* (I know where I belong!). According to Ryff and Singer (2002) *competence* gives to an individual a feeling of manageability of the environment and general knowledge of all that other stuff going on, including taking opportunities and using personal capabilities to choose and create an environment suitable for realization of personal needs and values. According to Ryff and Singer *autonomy* can be understood as a self-determination and ability of an individual to resist social pressure, including maintaining their own manner of thinking and acting as well as independence from assessment by others. According to Ryff and Singer (2002) *integration* consists of creating positive and intimate interpersonal relations with others as well as concern for welfare of others, including his/her empathy, intimacy and mutuality.

The mentioned aspects of the theory of self-determination are also reflected in the decision-making process in the course of working life and future professional career of university students. Meaningfulness and satisfaction in their working life, including future professional career, influence the process of professional decision-making. Influence and impacts of professional decision-making are confirmed by opinions of Deci (2011), who explains why individuals with a high level of self-reliance are involved in work activities by reason of their personal interest and meaningfulness of the given activities for them. They are not only more satisfied in their working life, but they are also more creative, flexible and have higher interest in work activities, where they show better physical condition and better quality of interpersonal relations as compared to individuals with predominant level of control. *What are impacts of control and independence as motivational variables on professional decision-making of selected university students?* Professional decision-making as a process of thoughts takes place in brain, which is linked to human body. Body gives signals to an individual and this way influences their decision-making process. Individuals experience that they make their decision according to facts and logical arguments, even though they experience trembling sensation in stomach. This trembling sensation says: *Do not do that!* Human wisdom calls this trembling sensation: *It is not my cup of tea!* or *My heart says no!* According to Bohoňková (2010, p. 83-84) if individuals want to remain in harmony with their self-conception and not miss out anything important in their professional decision-making, they address gradually the three components of their *Ego*:

- 1) *head* that represents brain, thinking and logic,
- 2) *stomach* that represents intuition as the sixth sense,
- 3) *heart* that represents feelings and emotions.

With regard to components of *Ego*, *their psychological wealth* that contains *contentment and happiness in life, spirituality and meaningful life, positive attitudes and positive emotions, positive interpersonal relations, active involvement in working activities, values and targets in life that lead towards practical realization, physical and mental health and material sufficiency to satisfy the necessities of life* can be considered as a significant prerequisite of professional decision-making of university students to access the European labour market (Diener, Biswas-Diener, 2008). According to Keyes and Haidt (2007) the second prerequisite of professional decision-making is *overall flourishing of a personality*. It concerns a state of mental health of individuals who have positive emotional mood to be successful in their future professional career. Positive mental health is influenced by their *emotional and social well-being*. *Emotional well-being* is ensured by the presence of positive emotions, feeling of happiness and satisfaction in life. *Emotional well-being* is formed by positive emotions as being of good cheer, being joyful, feeling of peace, mental balance and vitality. *Social well-being* consists of social acceptance, social updating, social benefit, social cohesiveness and social integration. Social acceptance means a positive attitude to people, recognition and acceptance of others. Social updating assumes interest in social happenings, hope in good society and potential for positive social development. Social benefit assumes a sense of self-value that is beneficial for the society and appreciation of personal working activities from the society. Social cohesiveness expresses concern and care for happening in the society and perception of social world as a comprehensible, logic and predictable world. Social integration means existence in the society with the sense of support, sense of belonging and sharing with others.

### 3 Methods and data

It is useful to monitor the content of psychological wealth and overall flourishing of a personality also among students of universities at development stages of *early and medium* adulthood. *Early* adulthood is a transitional period between adolescence and full adulthood. According to Langmeier and Krejčířová (2006, p. 167) adulthood can be determined by taking age, adoption of development tasks and achieving of a certain level of *personal and career* maturity into consideration. According to Langmeier and Krejčířová (2006, p. 168) development tasks of *early* adulthood include in the area of working life a career choice, strengthening of identity of an adult, identification with professional roles, professional orientation, specification of professional targets, independence from parents and gradual acquiring of responsibility in profession. Development tasks of *medium* adulthood include in the area of working life further strengthening of professional identity, top of labour productivity, strengthening of responsibility in professional roles, clear observance of objectives in profession and gaining of independence from former advisers. Langmeier and Krejčířová (2006, p. 168) refer to *the model of logical normative crises* assuming that development in adulthood follows sequences of social and emotional changes of an adult. There is a general plan of human development in this connection that can be realized differently in various social conditions, however none of development stages can be missed out or omitted. *A model of timing of events in life* assumes that circumstances signalized by significant events in life play more important role in case of an adult. Langmeier and Krejčířová (2006, p. 169) point out that if an event in life occurs at the time when it is socially expected, such events in life are called *normative* and working life, including professional career, proceed fluently. Respondents, who participated in the research of *professional decision-making to access the European labour market*, did not form a usual population of university students. With enrolling for optional study subjects of *Professional consultancy* and *Career consultancy* at SU OPF in Karviná they expressed their committed interest in the specified research topic. From the viewpoint of target the submitted research of professional decision-making of university students was realized in form of a case study with the application of research method of *focus groups*.

#### 3.1 Focus groups as a research method of the case study

Mogran (1997) describes focus groups as a research method to acquire qualitative empirical data with utilization of group interaction at discussion on the topic determined by a questionnaire. A researcher specifies a topic of discussion and focus derived from the research target and research questions put to respondents. A focus can be defined more freely as a thematic area or as a phenomenon that is the subject of research. It must be delimited and comprehensible for all respondents in the group discussion. Record of respondents' acts is linked to an environment, where the focus group is realized, and consists of interactions taking place during discussion. Focus groups are created and controlled by a researcher, who after delimitation of a focus moderates directly content and course of acquiring of empirical data. In addition to managing the basic communication strategies and skills the researcher must be able to work with group dynamics. Calderon, Baker and Wolf (2000, p. 91-95) mention in connection with the group dynamics that focus groups contribute to collective significance of language, values, wishes and opinions of a particular target group. By the mentioned reason it is important to know how group phenomena can influence the determined focus. *In our case the research focus is a research of professional decision-making of selected university students to access the European labour market and group phenomenon is satisfaction of their needs according to the theory of self-determination. How is the professional decision-making of selected university students influenced by satisfaction of their needs according to the theory of*



*self-determination?* In our case we worked with *structured groups*, where questions were asked to which all respondents of ongoing focus groups responded. They were informed in advance about thematic areas and sequence of asked questions. A researcher was engaged here as a presenter of discussion, who played a role of group examiner working within the *question – answer* mode. *Satisfaction of needs of selected university students, competence, autonomy and integration in relation to professional decision-making to access the European labour market were the group factors of structured focus groups.* Structured focus groups took place in a uniform standard environment with a fixed time frame of 45 minutes of duration of one group. High standard of structured focus groups was convenient, where we came from an identical source material and compared results of selection sets of university students by form of university study. Time and thematic delimitation of structured focus groups brought consistent empirical data on the basic thematic areas that included:

- 1) *Effect of motivational variables on satisfaction of needs*
- 2) *Effect of motivational variables on functioning of decision-making factors*
- 3) *Impacts of control as a motivational variable on functioning of factors of professional decision-making*
- 4) *Impacts of independence as a motivational variable on functioning of factors of professional decision-making*
- 5) *Professional decision-making of selected full-time study respondents by stages of their life path*
- 6) *Professional decision-making of selected combined study respondents by stages of their life path*

It was known in advance what was expected from respondents and they were provided with the same space to express their answer. The main communication direction took place between the researcher and respondents. Researcher as a presenter of discussion, who played a role of group examiner, had a list of all participating respondents to address them, and a description of thematic areas, including questions in form facilitating quick orientation. Each respondent of the structured focus group received a record sheet to write his/her notes he/she had ready when a thematic area which they concern was going to be discussed. Researcher and respondents needed a peace and certainty for their work, because possible stress linked to a situation, *to be afraid of forgetting something*, would reduce their energy needed for monitoring and reduce their sensitivity and readiness to interact with others, including presenting discussion by a researcher.

Structured focus groups took place at four stages. *The first stage* was opening, where it was necessary to define a position of researcher and other respondents. Basic rules were determined before *dragging* respondents into group discussion this means that only one person could speak, side talks were not allowed, all respondents participated in group discussion, nobody played a dominant role, everyone could present his/her own opinion, including the option to comment on opinion of another respondent, the option to refuse to answer in case of discomfort, if he/she did not want to continue, terminate participation in the group from own will, acquired information did not belong to other persons, they were addressed by their names and records were used only for research purposes, including personal data protection. *The second* stage was introductory discussion and motivational works with respondents. Group discussion towards determined focus, i.e. professional decision-making of selected university students to access the European labour market, was gradually *put in motion*. We used during this work the strategy of *funnel* so as to achieve gradually narrowing of topic. We explained that professional decision-

making should be used for accessing the European labour market after graduating from the university study. *The third* stage was progress to the core of structured focus group, which was the centre of attention of case study. Researcher's ability of communication strategy, who played the role of a group examiner, consisted in timing of questions with putting emphasis on *influence of motivational variables on satisfaction of needs, impacts of control and independence of selected university students on functioning of factors of professional decision-making and types of professional decision-making of selected full-time study and combined study respondents by stages of their life path*. Some respondents managed to get involved in common discussion more quickly. However the researcher directed their group dynamics in the course of discussion so that all respondents had equal space for answers to asked questions and nobody dominated. The researcher kept the group discussion vital until expiration of determined time limit as long as all respondents brought relevant consistent empirical material to evaluate the focus topic. *The fourth* stage was ending of the structured focus group in the manner that we let the discussed focus topic to *get to the finish* and verified, where respondents were after group discussion. They had a space to submit their additional comments on the topic as they needed and made a short run allowing for feedback to the researcher and to other participants. This way respondents realized in what the professional decision-making to access the European labour market is important for them. The number of respondents of structured focus groups was dependent on technical-organizational possibilities of case study so that each of them had a comparable space within the *question - answer* mode. Structured focus groups included 15-20 participants as maximum and that is why position and role of an observer were determined – performed by an assistant researcher. The number of structured focus groups was affected by the need to complete results of case study and provide acquired results with interpretation for conceptualization of types of professional decision-making of selected university students to access the European labour market. With *the intentional selection* two selection sets were created for the case study. Based on defined groups of the basic set we selected a number of respondents for each selection set separately from groups of students by their enrolment for study subjects of *Professional consultancy* and *Career consultancy*. According to Miovský (2009, p. 137) precondition for application of intentional selection is to describe differentiation criteria, according to which groups of the basic set differentiate. *Form of university study* (Table 1) became a differentiation criterion in our case.

Tab. 1. Basic set of university students at SU OPF 2015/2016

Form of university study			
Total		2 522	100%
Bachelor's degree programme	Full-time study	1 124	64,7%
	Combined study	613	35,3%
Master's degree programme	Full-time study	448	57,1%
	Combined study	337	42,9%

Source: SU OPF. *IS STAG SU OPF in Karviná 2016*. [online]. [2016-21-03]. Available at: [www://stag.slu.cz/portal/studium/prohlizeni.html](http://www://stag.slu.cz/portal/studium/prohlizeni.html)

With reference to fulfilment of the differentiation criterion focus groups for selection of a number of respondents from registered students were determined. Our intention was to create selection sets so as to provide qualitative empirical data for conceptualization of types of professional decision-making of university students in the Bachelor's degree programme and in the associated Master's degree programme at the Silesian University, Faculty of Business Administration in Karviná, (SU OPF) for the academic year of 2015/2016. That is why the selection sets consisted of university students in the Bachelor's degree programme and in the

associated Master's degree programme, who enrolled for the winter semester 2015/2016 for the study subject of *Professional consultancy* and in the summer semester 2015/2016 for the study subject of *Career consultancy*. According to form of university study 264 (100%) respondents were acquired into the selection sets. From the total number, there were 105 (57.4%) full-time students and 78 (42.6%) students of combined form of study in the Bachelor's degree programme, and 32 (39.5%) full-time students and 49 (60.5%) students of combined form of study in the Master's degree programme. They provided qualitative empirical material for conceptualization of types of professional decision-making of selected university students to access the European labour market. (Table 2)

Tab. 2. Selection sets of university students at SU OPF 2015/2016

Form of university study			
Total		264	100%
Bachelor's degree programme	Full-time study	105	57,4%
	Combined study	78	42,6%
Master's degree programme	Full-time study	32	39,5%
	Combined study	49	60,5%

Source: own

#### 4 Results and discussion

Conceptualization of the professional decision-making of selected university students to access the European labour market comes from combining of impact of control and independence as motivational variables and functioning of components of *Ego* as decision-making factors. *How is satisfaction of needs reflected in professional decision-making of selected university students?* Control as a motivational variable does not satisfy needs of selected university students. Compared to that *independence* as a motivational variable has a positive effect on satisfaction of their needs. Control and independence also affect functioning of factors of professional decision-making. Control has a negative effect on functioning of factors of professional decision-making of selected university students, while to the contrary independence has a positive effect on their professional decision-making. (Tables 3 and 4)

Tab. 3. Effect of motivational variables on satisfaction of needs

Needs	Control	Independence
competence	I do not have what it takes!	I have what it takes!
autonomy	I do not do the right thing!	I do the right thing!
integration	I do not know where I belong!	I know where I belong!

Source: own

Tab. 4. Effect of motivational variables on functioning of decision-making factors

Decision-making factors	Control	Independence
head	I will not do that!	I will do that!
stomach	It is not my cup of tea!	It is my cup of tea!
heart	My heart says no!	I am anchored in my life!

Source: own

*How do the selected university students find out what motivational variable affects their professional decision-making more?* According to Ryff and Singer (2002) combination of motivational statements on satisfaction of needs with ideas of Bohoňková (2010) concerning harmony at functioning of components of *Ego* as decision-making factors confirms both the effect and impacts of motivational variables. For these reasons professional decision-making of selected university students takes place as a motivational process that has a *control* or

*independent* character. Impacts of a specific motivational variable affect what type of professional decision-making is characteristic for selected university students. Impact of control causes disharmony at functioning of decision-making factors and that is why competence, autonomy and integration as needs of selected university students are not satisfied sufficiently. *Passivity* (-) that has a negative impact and causes a *control* type of professional decision-making results from that. (Table 5)

- 1) head: I do not have what it takes! x I do not do that! = competence as an unsatisfied need
- 2) stomach: I do not do the right things! x It is not my cup of tea! = autonomy as an unsatisfied need
- 3) heart: I do not know where I belong! x My heart says no! = integration as an unsatisfied need

Tab. 5. Impacts of control on functioning of factors of professional decision-making

Decision-making factors	Control	Control	Needs
head	I do not have what it takes!	I do not do that!	competence -
stomach	I do not do the right thing!	It is not my cup of tea!	autonomy -
heart	I do not know where I belong!	My heart says no!	integration -

Source: own

On the contrary self-reliance of selected university students ensures harmony at functioning of their decision-making factors. By the mentioned reason competence, autonomy and integration as needs are satisfied sufficiently. *Activity* (+) that has a positive impact and ensures an *independent* type of professional decision-making results from that. (Table 6)

- 1) head: I have what it takes! x I will do that! = competence as a satisfied need
- 2) stomach: I do the right things! x It is my cup of tea! = autonomy as a satisfied need
- 3) heart: I know where I belong! x I am anchored in my life! = integration as a satisfied need

Tab. 6. Impacts of independence on functioning of professional decision-making factors

Decision-making factors	Independence	Independence	Needs
head	I have what it takes!	I do that!	competence +
stomach	I do the right thing!	It is my cup of tea!	autonomy +
heart	I know where I belong!	I am anchored in my life!	integration +

Source: own

Satisfaction of needs and harmony at functioning of decision-making factors affect professional decision-making of selected university students. According to intensity of effect both control and self-reliance affect professional decision-making in the course of stages of life path of selected university students. Out of motivational variables, *self-reliance* affects more harmony at functioning of decision-making factors of selected university students□ it has a

*positive* impact on their professional decision-making without being limited by *control*. Childhood is in the course of life path a period of compulsory school attendance (6-15 years), coming of age is a period of secondary school study (15-19 years) and adulthood starts with study at university (19 years up to the present day). Motivational variables affect the professional decision-making of selected university students on the basis of three levels. From the viewpoint of *Ego* it can be stated that they have *low* effect on the level of *head*, *medium* effect on the level of *stomach* and *high* effect on the level of *heart*. So, what is similar and different in professional decision-making of selected university students to access the European labour market by levels of decision-making factors and form of university study?

It is obvious from results of the case study that professional decision-making of selected university students was not a purely logical process. The reason was that head did not dominate among decision-making factors to access the European labour market, but rather *stomach* like an intuition and mostly *heart* with regard to experienced emotions. According to stages of life path the motivational variables affected the course and results of performed work activities at satisfying of needs of full-time and combined study students - respondents.

At the stage of *childhood*, *competences* of full-time students - respondents were strengthened by schooling, courses, competitions, educational excursions, professional practice, travelling and cooperation with friends.

At the stage of *coming of age*, *autonomy* of full-time students - respondents were developed by attention, capability, knowledge, experiences, active movement and desire for freedom.

At the stage of *adulthood*, self-assertiveness had a share in *integration* of full-time students - respondents, since they longed for improvement of their own personality. They wanted to be active, win and longed for certainty and safety. (Table 7)

Tab. 7. Professional decision-making of respondents of full-time form of study by stages of life path

Stages of life path	Childhood	Coming of age	Adulthood
Effect of motivation/needs	Competence	Autonomy	Integration
head – low	schooling, courses, competitions	attention, capability	assertiveness, improvement
stomach – medium	educational excursions, professional stays	knowledge, experiences	activity, winning,
heart – high	travelling, friends	movement, freedom	certainty, safety

Source: own

At the stage of *childhood*, *competences* of students – respondents of combined form of study were strengthened by study, sources, hobbies, temporary jobs, study stays and family.

At the stage of *coming of age*, *autonomy* of students - respondents of combined form of study was developed by strong-mindedness, physical condition, new knowledge, experiences, meaningful activities and personal identity.

At the stage of *adulthood*, interest in advancement and improvement, initiative and success with regard to searching for background and love had share in *integration* of students - respondents of combined form of study. (Table 8)

Tab. 8. Professional decision-making of respondents of combined form of study by stages of life path

Stages of life path	Childhood	Coming of age	Adulthood
Effect of motivation/needs	Competence	Autonomy	Integration
head – low	teaching, courses, hobby	strong-mindedness, physical condition	advancement, improvement
stomach – medium	temporary jobs, study stays	knowledge, experiences	initiative, success
heart – high	family	sense, personal identity	background, love

Source: own

The structured focus groups were running as long as qualitative empirical data were bringing new knowledge to researcher and respondents. According to Corbin and Strauss (1997) saturation of empirical data was applied on conceptualization of types of professional decision-making of selected university students until theoretical anchoring of case study took place. According to Seligman's concept PERMA (2011) the theoretical anchoring of types of professional decision-making to access the European labour market tells about the state of *overall flourishing* of selected university students. The PERMA concept consists of initial letters of English words marking its components - *Positive Emotion, Engagement, Positive Relationships, Meaning and Accomplishment*. Each component of the concept is a motivational target in conjunction with type of *independent* professional decision-making with the use of *activity* of a particular respondent. By the mentioned reasons *positive emotions of their personality, vitality with interest in a particular working activity, meaningfulness of performed activities* can be included among the key criteria of independent professional decision-making of selected university students and *self-respect, optimism, mental resilience, vitality of personality and sense of self-determination*, including *positive relations with others* into the secondary criteria. With non-observance of both the key criteria and secondary criteria of professional decision-making disharmony at functioning of decision-making factors occurs. Because there is a need of harmony at functioning of decision-making factors in the process of overall professional decision-making to access the European labour market, it can be recommended to selected university students to work with the following coaching questions:

- 1) *What thoughts does the professional decision-making evoke?*
- 2) *What happens in your conscious mind during professional decision-making?*
- 3) *What does your heart say to professional decision-making?*
- 4) *How do you feel and what emotion (joy, fear, concern) do you experience at professional decision-making?*
- 5) *What does your stomach say to professional decision-making? Is your stomach calm or do you have trembling sensation in stomach?*
- 6) *Are any components of your Ego in disharmony at professional decision-making?*
- 7) *Does any component of your Ego react differently than the others at professional decision-making?*
- 8) *What does any certain component of your Ego want to add to professional decision?*
- 9) *What else should your head know to make the right professional decision?*
- 10) *What should your head, stomach and heart know to make a professional decision?*

Researches concerning professional decision-making on the European labour market prove that direct advancement to the top of professional career is not the most significant factor of the

decision-making process of life path. Side or even descending development can be equally efficient for satisfaction of needs in the professional career. Therefore four stages of the professional career concept of *climbing wall* as formulated by Beverly and Giulioni (2012, p. 44-47) can be recommended to selected university students to use motivational variables efficiently in the process of overall professional decision-making. *Climbing wall* is at the same time a fitting metaphor for branching of procedures of searching for and discovering of effective decision-making factors of future professional career, since they offer more interesting parallels and options for professional decision-making:

- 1) Direct path to the top of professional career does not necessarily need to be a target. A path across European labour markets can be used to get a dream job. *I do not want to swim against the tide. I do not want to have problems of a managing worker, but I also do not want to stagnate in position, where I am now. I need to get a new challenge and recognize, where I am and influence the course of my opportunities.*
- 2) There are more ways to get from point A to point B on the European labour market. *I have discovered myself several times during my professional career. Advancement from sale to operations and now to customer service was not of course straightforward, but I got exactly what I needed during my journey.*
- 3) Journey through the European labour markets towards a target sometimes requires a fall. *I was really interested to work on development of products for customers, but I recognized that I would never succeed, since I was not willing to devote all my time to satisfaction of all customers' needs. So, I deliberately limited my work position to gaining experiences that I needed. In final consequence it paid off.*
- 4) Accession to the European labour market requires choosing more procedures. One can choose a safer or more risky procedure, but it is necessary to have "*crampons and holds*" of personal professional career secured depending on actual conditions of the European labour market. *When my youngest child got sick, I knew that I would not manage to keep up with requirements for development of my working group. I had to decide how to solve this situation. I was grateful when my employer recommended me to work on position with regular working time mode. Now, when I arranged everything at home, I want to return to the original working time mode and pace.*

## 5 Conclusion

Conceptualization of types of professional decision-making to access the European labour market (a control type and independent type) confirms differences among selected university students at the Silesian University, Faculty of Business Administration in Karviná, (SU OPF). However, it remains valid that students – respondents of the combined form of study used more professional decision-making as an independent decision compared to students – respondents of the full-time form of study. It is significant in this context that a certain type of professional decision-making is a characteristic attribute for selected respondents by form of university study. Then distribution of needs as inner motives contributes to better understanding of their inner motivation. Compared to full-time students, the students of combined form of study experienced a stronger effect of inner motivation in particular at functioning of decision-making factors when satisfying the needs of professional career according to demands in various stages of life path. According to functioning of components of their personal self-conception as decision-making factors the assumption that they were interested in professional decision-making to access the European labour market mainly by practical reasons was confirmed. Working activities performed in the course of stages of life path prove that their activities came



from authentic experiences from practice on the labour market and from better harmony at functioning of components of their personal self-conception. However, according to the theory of self-determination by Deci and Ryan (2002) it is necessary to interpret conclusions of the case study with a certain level of caution. Types of professional decision-making to access the European labour market can be generalized only for selected university students at SU OPF, not for university students as a target group. For the mentioned reasons conclusions are formulated only for respondents, who underwent the structured focus groups. On the other hand results of the case study on professional decision-making of university students to access the European labour market are understandable according to the aspects of the theory of self-determination. Conceptualization of types of professional decision-making helped university students at recognizing the significance of satisfaction of needs as inner motives of professional career. Their performed work activities according to the challenges of stages of life path were selective. Harmony at functioning of decision-making factors was affected by the level of effect of self-reliance and control as motivational variables. There is still a problem with disharmony at functioning of decision-making factors in case of respondents - full-time students due to lack of their *activity* for *independent* professional decision-making to access the European labour market. However they need to have good knowledge of effect of decision-making factors to aim for further professional career development. Better understanding of decision-making factors would allow them to apply more actively the concept of professional career – *climbing wall* to access the European labour market. *In what is the professional decision-making to enter the European labour market specific for selected university students according to the concept of Climbing wall?* The concept of Climbing wall models the decision-making on professional career from a viewpoint of practice abroad. It directs attention of selected university students at the impact of their professional decision-making – how to get safely through the European labour market, with an adequate level of risk, from one point to another. *What is the role of a career adviser?* Every selected university student *climbs* his/her own climbing wall as an active player on the European labour market. Each student enhances his/her career opportunities and career paths. Career adviser stands on the ground and lets selected university students climb the climbing walls independently. He does not tell them where to put their hands on the climbing wall and where to stand. He only helps them to investigate the decision-making procedures and it is only up to them how to get to the peak. The career adviser can offer a unique viewpoint, however every university student has to see results and career opportunities independently. It cannot be expected that each of them has to be the first one on the peak. Only motivated individuals will get to the peak, individuals who really want. The career adviser appreciates view from the top of each climbing wall, interesting and exciting career paths in all directions. He does not leave even experienced university students alone on the climbing wall, however he motivates them. So participation of the career adviser as a coach in this concept of climbing wall is supporting. Sometimes selected university students need encouragement and help at investigating new career possibilities. At another time, he has to hold a climbing rope so as they can rest and then climb higher or provide necessary support for safe climbing-down.

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## THE COMPARISON OF THE INPUT-OUTPUT AND CGE MODELS: THE CASE OF TAX APPLICATION AT REGIONAL LEVEL

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### Abstract

Input-output models and CGE models represent the most used instruments for modelling at a regional level. Their combination offers an especially strong tool for their use. This work deals with a theoretical and practical comparison of the two approaches. We apply both given models to evaluate macroeconomic impacts on regions in the Czech Republic. A model application of an exogenous shock into the price level sets the background for comparing the results of the two types of models. Both models arise from the same data background, i.e. input-output tables and model data calculations. The work mainly focuses on evaluating the impact on the results in the Moravian-Silesian region.

### Keywords

Input-Output, CGE, Impact evaluation, Regional Input-Output.

JEL Classification: C67, C68, R13, E31

## 1 Introduction

Evaluation of differences between the results gained from the Computable general equilibrium (hereafter CGE) model and the Input-Output (hereafter I-O) model represents one of the main topics of the economic theory. In this paper, we decided to present differences based on using tax application at regional level. The importance of this topic arises from the questionable results gained by means of I-O models. Generally, Input-Output price models comprise two types. One assumes that customers maintain the same level of consumption and they accept price changes, i.e. if prices rise, the value of consumption increases as well. The other model supposes that customers keep the value of consumption; thus, they change the level of consumption, i.e. they observe a specific budget constraint. CGE models follow a different assumption. Customers react to price changes but not proportionally as the I-O model of the second type suggests. We assume elasticity which defines the customers' reaction to price changes. I-O models can be interpreted as an extreme case of CGE with zero or infinite elasticity of customer preferences. These facts have dramatic influence on the interpretation of I-O models.

Data represents another problem in the process of the evaluation of impact at the regional level. Many analysts either use national I-O tables or regional I-O tables without interregional flows. We dealt with that in our previous work (Šafr and Sixta, 2017) and since then we have been using regional I-O tables with inter-regional flows. Due to a different structure of regional economy and economic development compared to other Czech regions we have chosen the Moravian-Silesian region to illustrate the mentioned issues.

In the first part of our paper we present the current state of knowledge. The third chapter describes I-O price models and the CGE model along with data and finally, the fourth chapter deals with differences between the models.

## 2 Literature review

W. Leontief introduced I-O analysis in the 1950s (Leontief, 1951) based on the work of preceding authors (e.g. M. Barengolt, V. G. Groman, P. I. Popov, L. N. Litoschenko (Akhabbar, 2008)). The core of Input-Output analysis (hereafter: IOA) lies in the structure of the Input-Output table (hereafter: IOT). IOT describes the structure of economy in a specific time and place (usually one year in a single country). The strength of this table arises from a detailed description of the structure of economy industry-by-industry. IOA follows the assumption that the structure of economy is fixed proportionally to the output of the industry which uses the goods (Technical coefficients). The following research led authors to more detailed IOTs, which allowed the beginning of regional IOA. One of the first models were the Multiregional Input-Output model (Chenery, 1953) and the Isard's (Isard, et al, 1960) Interregional IO model (IRIO model). The regional models vary in the relationship among the regions and data demands. Another research into I-O models led authors to establishing dynamic Input-Output models (Leontief, 1970). Due to the detailed description of economy, IOA is still used for impact evaluations without any change of the original Leontief's Form from the 1950s.

The CGE model was introduced by Johansen (1960) based on Chenery's work (Taylor, 2016). CGE models took the national accounts identity (similarly to I-O models) and set it into a dynamic concept (from the point of view of relationship elasticities in the model). CGE models involved the agent optimization problem – Households, Firms, Government and other sectors interacting in markets. That allows us to monitor the effects of a shock to the structure of economy more precisely.

The two model concepts share a lot of characteristics. In general, CGE models are calibrated from IOT (Burfisher, 2011). Several concepts of CGE model follow this structure directly (Sue Wing, 2004) or partially (Ronson, 1991). The common framework and the fact that CGE models copy the national accounts identity leads authors to the opinion that CGE models have the same background as the I-O model (Taylor, 2016).

Several studies evaluate the effect of either method on regional results not only in the Czech Republic. Šafr (2017) evaluated how methods of data compilation of Capital matrices affect the CGE and I-O models. Šafr's paper indicated that the two methods often lead to different results. Cardenete and Sancho (2004) evaluated the effect of updating Social account matrices on the CGE model. They did not prove that such updating has any significant effect at macro-level of economy. Šafr and Sixta (2017) showed that different methods of estimating output flows among regions does not strongly affect the results of CGE either (due to elasticities). However, they did not evaluate the effects on IOA that is inelastic in its nature. The percentage deviance between the methods was between 0.9% and 9.2% which can have a significant effect on I-O models. From national CGE models we should mention E3ME model which was used to analyzing Environmental Taxation in the Czech Republic (Ščasný, et al, 2009) or Hurník's (Hurník, 2004) who examined the fiscal consolidation programs for small open economy using CGE model.

### 3 Methods and data

#### a. Input-Output model

The Leontief I-O price model is based on technical coefficients which represent the relationship between intermediate use and output.

$$a_{ij}^{rs} = \frac{x_{ij}^{rs}}{x_j^s}, \quad (1)$$

where  $a_{ij}^{rs}$  represents the technical coefficient for intermediate goods emerging from the  $i$ -th industry (in the  $r$ -th region) and is used in the  $j$ -th industry (in the  $s$ -th region).  $x_{ij}^{rs}$  represents the intermediate flow between the regions and industries.  $x_j^s$  corresponds with the total output of the  $j$ -th industry in the  $s$ -th region. The following formula represents the classical I-O model:

$$(\mathbf{I} - \mathbf{A})^{-1} \mathbf{y} = \mathbf{x}, \quad (2)$$

where  $\mathbf{I}$  is identity matrix,  $\mathbf{A}$  represents the technical coefficient matrix,  $\mathbf{y}$  comprises final use and  $\mathbf{x}$  constitutes total product. The row sums of transposed technical coefficients ( $(\mathbf{I} - \mathbf{A}^T)^{-1}$ ) lead to value indices vector. Then we can use it to estimate the change of price level in the whole economy.

$$(\mathbf{I} - \mathbf{A}^T)^{-1} \mathbf{Q} \mathbf{v} = \mathbf{p}, \quad (3)$$

where  $\mathbf{A}^T$  is the transposed technical coefficient matrix,  $\mathbf{Q}$  represents price value added,  $\mathbf{v}$  comprises value added coefficients and  $\mathbf{p}$  constitutes the final vector of prices (per industry in the economy).

#### b. Computable General Equilibrium model

Standard CGE holds the same macroeconomic identity as the I-O model. The difference lies in the behavior optimization of the agents inside. A household maximizes its utility and a firm its profit. We used the standard CGE model introduced by Hosoe, Gasawa and Hashimoto (2010) at the regional level. The optimization for households is expressed as:

$$\begin{aligned} \max_{x_{i,p}^p} U &= \prod (x_{i,p}^p)^{\alpha_{j,p}}, \\ \text{s.t.: } \sum p_{i,p}^q x_{i,p}^p &= \sum p_h^f FF_h - S^p - T^d \end{aligned} \quad (4)$$

This means that households maximize their utility by consuming goods ( $x_{i,p}^p$ ) subject to the given household's budget which contains the total cost of consumption ( $\sum p_{i,p}^q x_{i,p}^p$ ), i.e. the wages ( $\sum p_h^f FF_h$ ) minus the household's savings ( $S^p$ ) and taxes ( $T^d$ ).

Firms maximize their profit function which is defined in two stages. In the first stage, they maximize the value of output minus the cost of primary input (without intermediate goods). This stage gives rise to the composite factor (or semi-product). In the second stage, they maximize the value of gross domestic product less the cost of intermediate goods and composite

goods subject to Leontief's production function. The following formula represents the first stage:

$$\max_{Y_{j,p}, F_{h,j,p}} \pi_{j,p}^y = p_{j,p}^y Y_{j,p} - \sum p_{h,p}^f F_{h,j,p}, \text{ s.t.: } Y_{j,p} = b_{j,p} \prod F_{h,j,p}^{\beta_{h,j,p}} \quad (5)$$

The following formula describes the second stage:

$$\max_{Y_{j,p}, X_{i,j,p}, Z_{j,p}} \pi_{j,p}^z = p_{j,p}^z Z_{j,p} - (\sum p_{j,p}^y Y_{h,j,p} + \sum p_{i,p}^q X_{i,j,p}) \quad (6)$$

The formula above is subject to the inelastic structure of the Leontief's product function:

$$Z_{j,p} = \min\left(\frac{x_{j,p}}{a_{i,j}^{SP}}, \dots, \frac{x_{n,p}}{a_{n,n}^{SP}}\right), \quad (7)$$

where  $Y_{j,p}$  represents a semi-product,  $p_{j,p}^y$  comprises the price of the semi-product,  $F_{h,j,p}$  constitutes the  $h$ -th factor used in production function,  $p_{h,p}^f$  is the price of the  $h$ -th factor,  $b_{j,p}$  represents the scale factor for the  $j$ -th goods produced in the  $p$ -th region.  $Z_{j,p}$  comprises final goods produced in the  $j$ -th industry in the  $p$ -th region,  $p_{j,p}^z$  constitutes the price of the final goods,  $X_{i,j,p}$  represents the intermediate consumption used in the production of final goods, and  $p_{i,p}^q$  is its price. The whole model is summarized in the appendix and it constitutes a version of the standard CGE model by Hosoe, Gasawa and Hashimoto (2010) rewritten to the regional context.

### c. Data

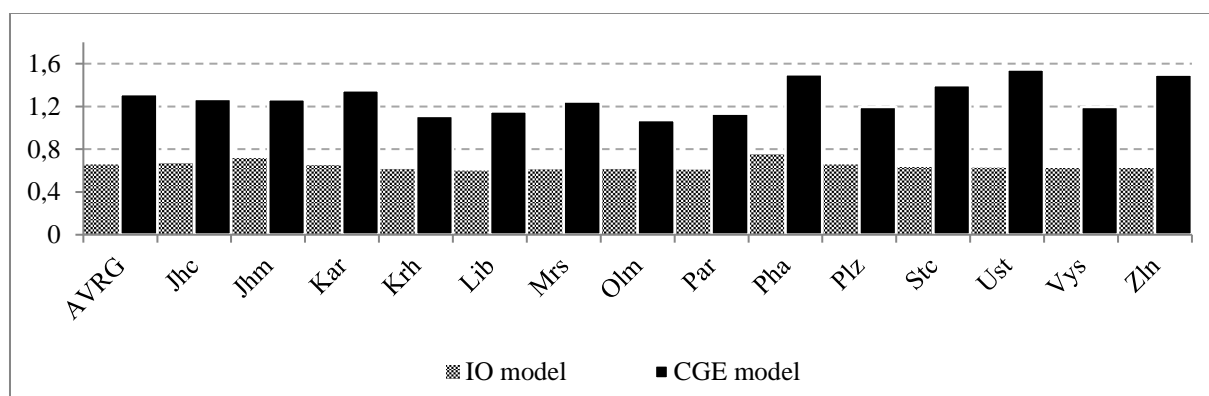
We used data from several sources. The main data source comes from the Department of Economic Statistics at the University of Economics in Prague that provides regional IOTs compiled according to their own methodology (Sixta and Vltavská, 2016). These regional IOTs are compiled for the year 2013 and do not contain the flows among regions. To fill this gap, we used the data provided by Šafr (2017) using the Gravity method with adjusting the flows to storages. The Czech Statistical Office represents another source of data – especially regional/national accounts. We also used the structure of government income for the year 2013. These data help us estimate the final social accounting matrix (SAM) from IOTs by means of the methodology described in Hosoe, Gasawa and Hashimoto (2010).

## 4 Results and discussion

We simulated a 50% growth of taxes on the product in both models. We ran the models in the full size of the economy (at NACE level 2). The I-O model consisted of 1,148 equations described by 2,296 variables. The standard CGE model at the regional level contains 1,339,622 equations described by the same number of variables. These figures led us to not publishing them in the paper but presenting only the aggregated results. We aggregated the prices (as the weighted price) and the results of changes by selected products (CZ-CPA classification) of individual industries. Fig. 1 presents the impacts on regional consumer price indices (hereafter: CPI). Prague achieved the most significant changes based on the I-O model (0.75). On the contrary, the change of CPI caused by the 50% growth of taxes caused the lowest increase in the Liberecký region (0.59). The CGE model shows different results, however. The Usti region

recorded the most significant change of CPI caused by the 50% growth of taxes (1.55) and the Hradec Kralove region the lowest (1.11).

The difference among regions is caused by the structure of final use and the ratio of final use in taxes. The I-O model follows the proportion of the variables and the shock that arises from them. The elasticities in the CGE model are calibrated based on the local structure of use. In the regions where the final use is more concentrated in more tax-value added product the shock is bigger. This is caused by low elasticities of domestic products which allowed bigger rise of prices. In the regions where the elasticities of domestic products (and generally the elasticities in utility function) is smoother, households can easily switch from domestic products to imported products. According to our calculations, such situation led to a lower shock within the prices of domestic products. Due to this, the structure of consumption changes to a higher ratio of imported products to total consumption.



**Fig. 12** Change of CPI by regions caused by 50% growth of taxes (Source: Source: Authors' work)  
Note: Note: Pha –Prague, Stc – Central Bohemia Region, Jhc – South Bohemia Region, Plz – the Plzen Region, Kar – the Karlovy Vary Region, Ust – the Usti Region, Lib – the Liberec Region, Krh – the Hradec Kralove Region, Par – the Pardubice Region, Vys – the Vysocina Region, Jhm – the South Moravian Region, Olm – the Olomouc Region, Zln – the Zlin Region, Mrs – the Moravian-Silesian Region, AVRG – national average

Fig. 1 shows interesting results for the comparison of I-O model and CGE model in the Moravian-Silesian region. Therefore, we focus only on this region in the following text. Tab. 1 presents the changes in the CPI in structure of the products (CZ-CPA) in the Moravian-Silesian region in comparison with the Czech Republic.

The results correspond to the different structure of the models. The key point in the I-O model is that price change is proportional to the ratio of the tax rate to output. The price change in the CGE model is not proportional to output but corresponds with the optimization behavior of firms which face the optimization behavior of households (and imports). The production of domestic products reduced by 0.364% and the import of foreign goods dropped by 0.158% using CGE. The Armington function of import (used as a function of preference of imports) assumes specific product elasticity. This elasticity (a skewness to imported goods) means that the drop of domestic products production was not fully covered by foreign goods. The maximization of profits leads the firms to increase their prices by 0.8% (meaning producers' price index using CGE). The price of capital falls by 0.15% (CGE). The I-O model disregards the change of proportion of goods (import/domestic) in consumption and not the optimization behavior of the agents inside the model. This assumption of the I-O model caused a minor change of CPI. The presented results deal only with the effect on domestic goods and we do not include the consumption of foreign goods in CPI indices. As the I-O model disregards it altogether we do not compare the results in the given area.

The most significant difference between the inelastic reaction of the I-O model and CGE was detected in the Moravian-Silesian region in CZ-CPA 01-03 (Products of agriculture, forestry, and Fish and other fishing products) and CZ-CPA 90-93 (Cultural services). Generally, substituting services with foreign goods comprises a significant problem – which allowed firms to increase their prices dramatically. On the other hand, CGE demonstrates one of the smallest effects of taxes (and similar as I-O model) in the electricity industry due to good substitutability between domestic and imported goods in sectors of such type.

One of the biggest disadvantages of the CGE model is that it assumes full employment and disregards the intertemporal savings, as it only takes into account the ratio of savings to income.

**Tab. 4** Change of CPI by products caused by 50% growth of taxes

Products	Czech Republic		Moravian - Silesian	
	IO	CGE	IO	CGE
A	0.389	1.642	0.106	1.561
B	0.925	1.218	0.936	1.298
C	0.978	1.327	0.214	1.148
D	0.689	0.769	0.485	0.758
E	0.276	1.302	0.015	1.278
F	0.647	1.196	0.707	1.163
G	0.587	1.511	0.181	1.464
H	1.157	3.142	0.413	2.805
I	0.891	1.352	0.554	1.361
J	0.535	0.881	0.160	0.856
K	0.355	0.947	0.339	0.957
L	0.605	0.858	0.087	0.841
M	0.383	1.263	0.161	1.247
N	0.664	1.252	0.241	1.176
O	0.617	2.034	0.194	2.024
P	0.591	1.061	0.240	1.053
Q	0.412	2.006	0.425	1.935
R	0.457	3.779	0.182	3.824
S	0.547	1.536	0.272	1.525

Source: Authors' work

Note: A - Agriculture, forestry and fishing, B - Mining and quarrying, C – Manufacturing, D - Electricity, gas, steam and air conditioning supply, E - Water supply; sewerage, waste management and remediation activities, F – Construction, Services: G - Wholesale and retail trade; repair of motor vehicles and motorcycles, H - Transportation and storage, I - Accommodation and food service activities, J - Information and communication, K - Financial and insurance activities, L - Real estate activities, M - Professional, scientific and technical activities, N - Administrative and support service activities, O - Public administration and defense; compulsory social security, P – Education, Q - Human health and social work activities, R - Arts, entertainment and recreation, S - Other service activities, T - Activities of households as employers and producers for own use.



## 5 Conclusion

In this paper we present the differences between the I-O model and the CGE model using the example of the changes of the CPI value due to the growth of taxes. We aimed to show how significantly the acquired results differ mainly at the regional level and in the breakdown to products produced in each region. We used the Moravian-Silesian region for the study as it represents a region interesting due to having a different structure of economy compared to other Czech regions. The study demonstrated that the I-O model systematically underestimated the results. From the point of view of the whole region, the I-O model stated that the 50% growth of taxation led to an increase of CPI by 0.25 in comparison with the growth by 1.25 employing the CGE model. Focusing on individual products, the acquired results differ even more dramatically. For example, with the CZ-CPA R product (Arts, entertainment and recreation) the 50% growth of taxation leads to an increase of CPI by 0.182 using the I-O model and to an increase of CPI by 3.824 employing the CGE model. The results showed that the I-O model systematically leads to biased results (compared to the CGE model). The exact size of effect in CGE is affected by a lot of parameters and we tried to set both models to the same data background. The policy makers should take the I-O models and their results as the mean values of impact which should not give an extreme results on very detailed level. Future research should test the sensitivity of the regional CGE. Evaluating the transition cost for each good and region comprises another intriguing matter for research. These data allow us to create a model to evaluate the flow among the regions more realistically in the future.

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## Appendix

Regional CGE MODEL based on standart CGE model (Hosoe et al, 2010) firstly used in Šafr and Sixta (2017).

### Regional production:

$$Y_{j,p} = b_{j,p} \prod_h (F_{h,j,p})^{\beta_{h,j,p}}, \quad \forall i, p$$

$$F_{h,j,p} = \frac{\beta_{h,j,p} P_{j,p}^Y}{P_{h,p}^f} Y_{j,p}, \quad \forall h, j, p$$

$$X_{i,j,r,p} = ax_{i,j,r,p} Z_{j,p}, \quad \forall i, j, r, p$$

$$Y_{j,p} = ay_{j,p} Z_{j,p}, \quad \forall j, p$$

$$p_{j,p}^z = ay_{j,p} p_{j,p}^y + \sum_r \sum_i ax_{i,j,r,p} p_{i,r}^q \quad \forall j, p$$

**Government:**

$$T^d = \tau^d \sum_p \sum_h p_{h,p}^f FF_h$$

$$T_{j,p}^z = \tau_{j,p}^z p_{j,p}^z Z_{j,p} \quad \forall j, p$$

$$T_{i,p}^m = \tau_{i,p}^m p_{i,p}^m M_{i,p} \quad \forall i, p$$

$$X_{i,p}^g = \frac{\mu_{i,p}}{p_{i,p}^q} \left( T^d + \sum_p \sum_j T_{j,p}^z + \sum_p \sum_i T_{i,p}^m - S^g \right) \quad \forall i, p$$

**Investment and savings:**

$$X_{i,p}^v = \frac{\lambda_{i,p}}{p_{i,p}^q} (S^p + S^g + \varepsilon S^f) \quad \forall i, p$$

$$S^p = sS^p \sum_p \sum_h p_{h,p}^f FF_h$$

$$S^g = sS^g \left( T^d + \sum_p \sum_j T_{j,p}^z + \sum_p \sum_i T_{i,p}^m \right)$$

**Regional households:**

$$X_{i,p}^p = \frac{\alpha_{i,p}}{p_i^q} \left( \sum_p \sum_h p_{h,p}^f FF_h - S^p - T^d \right) \quad \forall i, p$$

**National export and imports:**

$$p_{i,p}^e = \mathcal{P}_{i,p}^{W_e} \quad \forall i, p$$

$$p_{i,p}^m = \mathcal{P}_{i,p}^{W_m} \quad \forall i, p$$

$$\sum_p \sum_i p_{i,p}^{W_e} E_{i,p} + S^f = \sum_p \sum_i p_{i,p}^{W_m} M_{i,p}$$

### Substitution between imports and domestic goods:

$$Q_{i,p} = \gamma_{i,p} \left( \delta m_{i,p} M_{i,p}^{\eta_{i,p}} + \delta d_{i,p} D_{i,p}^{\eta_{i,p}} \right)^{\frac{1}{\eta_{i,p}}} \quad \forall i, p$$

$$M_{i,p} = \left[ \frac{\gamma_{i,p}^{\eta_{i,p}} \delta m_{i,p} p_{i,p}^q}{(1 + \tau_{i,p}^m) p_{i,p}^m} \right]^{\frac{1}{1-\eta_{i,p}}} Q_{i,p} \quad \forall i, p$$

$$D_{i,p} = \left[ \frac{\gamma_{i,p}^{\eta_{i,p}} \delta d_{i,p} p_{i,p}^q}{p_{i,p}^d} \right]^{\frac{1}{1-\eta_{i,p}}} Q_{i,p} \quad \forall i, p$$

### Transformation between exports and domestic goods:

$$Z_{i,p} = \theta_{i,p} \left( \xi e_{i,p} E_{i,p}^{\phi_{i,p}} + \xi d_{i,p} D_{i,p}^{\phi_{i,p}} \right)^{\frac{1}{\phi_{i,p}}} \quad \forall i, p$$

$$E_{i,p} = \left[ \frac{\theta_{i,p}^{\phi_{i,p}} \xi e_{i,p} (1 + \tau_{i,p}^z) p_{i,p}^z}{p_i^e} \right]^{\frac{1}{1-\phi_{i,p}}} z_{i,p} \quad \forall i, p$$

$$D_{i,p} = \left[ \frac{\theta_{i,p}^{\phi_{i,p}} \xi d_{i,p} (1 + \tau_{i,p}^z) p_{i,p}^z}{p_i^d} \right]^{\frac{1}{1-\phi_{i,p}}} z_{i,p} \quad \forall i, p$$

### Market-clearing conditions:

$$Q_{i,p} = X_{i,p}^q + X_{i,p}^g + X_{i,p}^v + \sum_j X_{i,p} \quad \forall i, p$$

$$\sum_j F_{h,j,p} = FF_h \quad \forall h$$

### Variables

$Y_{j,p}$  - Composite factor, produced in the first stage and used in the second stage by the  $j$ -th firm in  $p$ -th region

$b_{j,p}$  - Scaling coefficient in the composite production function of  $j$ -th firm in  $p$ -th region.

$F_{h,j,p}$  - The  $h$ -th factor used in the  $j$ -th firm (at the first stage) in  $p$ -th region.

$\beta_{h,j,r,p}$  - The input share coefficient in the composite factor production function of the  $h$ -th factor in the  $j$ -th firm (from  $r$ -th to  $p$ -th region)

$p_{j,p}^y$  - The price of the  $j$ -th composite factor produced in  $p$ -th region.

$p_{h,p}^f$  - The price of the  $h$ -th factor in the  $p$ -th region

$\alpha x_{i,j,r,p}$  - The input-output coefficients. For the goods from  $i$ -th firm to  $j$ -th firm, from  $r$ -th region to  $p$ -th region.

$X_{i,j,r,p}$  - The intermediate input of the  $i$ -th firm (from  $r$ -th region) used in  $j$ -th firm (in  $p$ -th region).

$Z_{j,p}$  - The gross domestic output of the  $j$ -th firm in  $p$ -th region.

$\alpha y_{j,p}$  - The input requirement coefficient of the  $j$ -th composite good in  $p$ -th region for a output of the  $j$ -th good.

$p_{j,p}^z$  - Price of the gross domestic output of the  $j$ -th firm in  $p$ -th region

$p_{i,r}^q$  - Price of the  $i$ -th composite good ( $r$ -th region)

$FF_h$  - Endowments of the  $h$ -th factor for the household

$T^d$  - Sum of the direct tax

$\tau^d$  - The direct tax rate

$T_{j,p}^z$  - The production tax on the  $j$ -th good in  $p$ -th region

$\tau_{j,p}^z$  - The production tax rate on the  $j$ -th good in  $p$ -th region

$T_{i,p}^m$  - The import tariff on the  $i$ -th good in  $p$ -th region

$p_{i,p}^m$  - The price of the import of the  $i$ -th good to  $p$ -th region in domestic currency

$M_{i,p}$  - Import of the  $i$ -th good

$\tau_{i,p}^m$  - Import tariff rate of the  $i$ -th good in  $p$ -th region

$X_{i,p}^g$  - Government consumption of the  $i$ -th good in the  $p$ -th region

$\mu_{i,p}$  - Government consumption share of  $i$ -th good in  $p$ -th region

$X_{i,p}^v$  - Investment of the  $i$ -th good in  $p$ -th region

$S^p$  - Household saving

$S^g$  - Government saving

$S^f$  - Foreign saving

$\mathcal{E}$  - Foreign exchange rate (As ratio)

$\lambda_{i,p}$  - Investment share coefficient of  $i$ -th good in  $p$ -th region

$ss^p$  - average propensity for savings by the household

$ss^g$  - average propensity for savings by the government

$\alpha_{i,p}$  - coefficient of elasticity of consumption of  $i$ -th goods in  $p$ -th region

$p_{i,p}^e$  - price of export the  $i$ -th good from  $p$ -th region in domestic currency

$E_{i,p}$  - exports of the  $i$ -th good,

$p_{i,p}^{W_e}$ ,  $p_{i,p}^{W_m}$  price of the  $i$ -th good from  $p$ -th region in foreign currency (export/import)

$Q_{i,p}$  -  $i$ -th Armington composite goods in  $p$ -th region

$D_{i,p}$  - domestic goods of  $i$ -th firm in  $p$ -th region

$\delta m_{i,p}, \delta d_{i,p}$  - input share coefficients in the Armington production function

$\phi_{i,p}$  - The elasticity of substitution for  $i$ -th good in  $p$ -th region

$\eta_{i,p}$  - The parameter which defined the elasticity of substitution

$\gamma_{i,p}$  - The scaling coefficient (in the Arm. func.)

$\xi e_{i,p}, \xi d_{i,p}$  share coefficients for the  $i$ -th good transformation (for  $i$ -th good in  $p$ -th region)

## FACTORS OF SOCIAL QUALITY IN THE CZECH REPUBLIC

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### Abstract

The theory of social quality works with three groups of factors that are interconnected and affect the specific form of social reality. One of them are conditional factors that represent objective indicators. The article is targeted to this group of factors. Conditional factors of social quality include socio-economic security, social inclusion, social cohesion and social competence. The aim of the article is to compare the countries in terms of the level of conditional factors of social quality and to identify the position of the Czech Republic. The results showed a different position of the Czech Republic within the individual surveyed areas. Good results have been achieved in the area of social inclusion and, on the other hand, the worse position has been recorded in the field of social cohesion.

### Keywords

Social Quality, Conditional Factors, European Union, Quality of Life  
JEL Classification codes from the list: O57, I31, J17

## 1 Introduction

The theory of social quality works with three groups of factors that are interconnected and affect the specific form of social reality.

Conditional factors are indicators of objective nature. The contribution is targeted to this group of factors. Constitutional factors are subjective. Normative factors create prerequisites for measuring and comparing the level of social quality.

In this paper, attention will be paid exclusively to the conditional factors of social quality. Conditional factors of social quality include socio-economic security, social inclusion, social cohesion and social competence.

Within the European Union, there is an effort to harmonize these factors, as well as attempts to quantify them, which would make it possible to compare the level of implementation in individual countries.

The aim of the paper is to show the position of the Czech Republic in terms of conditional factors of social quality.

## 2 Literature review

Social quality is, according to the authors of the concept (theory), a multidimensional phenomenon. It involves a relatively wide area of social life, both from the point of view of an individual, institutions and organizations as well as from the point of view of the whole society. (Beck et al., 2001)



The methodological approach to the study of social quality presupposes the creation of concrete indicators that will clearly define the level of social quality and its factors in society.

Phillips (2006) has a specific attitude to conditional factors. In his view, the four conditional factors are independent, because each factor is a separate variable, and they do not overlap. They complement each other and form a complementary whole in the form of social quality.

According to Chinoracká (2015), conditional factors of social quality are only relatively independent on one another. It is possible to examine each of them individually, but to understand the concept of social quality, it is necessary to identify relationships among factors and the degree of interdependence. In her work, for example, there are examples of the expression of conditional factors based on the results of the research carried out in this area by individual authors. It also identifies the level of social quality in individual countries based on selected indicators that have been reduced by factor analysis to create a synthetic index. Subsequently four sub-indices of conditional factors and synthetic indexes of social quality were created using two methodologically different approaches. For the purpose of meeting the objective of this contribution, 10 partial indicators of socio-economic security, 10 partial indicators of social inclusion, 10 partial indicators of social cohesion and 11 partial indicators of social competence were used.

### 3 Methods and data

The system of indicators used in the paper is based on the results of the work *Social quality and its determinants* (Chinoracká 2015).

Socio-economic security is the fact that all the basic needs of people (income, social protection, health care, etc.) are guaranteed in society. In other words, to what extent people have access to security and to what extent they ensure people their existence under reasonable conditions.

It is not just income security (employment, social security), but also access to services (transport, education, health, housing) and the fulfillment of economic, social and cultural rights (e.g. safe working environment).

Overview of the indicators used:

- Se1 - Early leavers from education and training. Eurostat
- Se2 - Share of young adults aged 18-34 living with their parents by self-defined current economic status. Eurostat (EU-SILC)
- Se3 - Share of children (aged less than 18) living with their parents. Child living with both married parents. Eurostat (EU-SILC)
- Se4 - Average number of rooms per person. Eurostat (EU-SILC)
- Se5 - Share of people living in under-occupied dwellings Eurostat (EU-SILC)
- Se6 - Formal childcare by age group and duration - % over the population of each age group. Eurostat (EU-SILC)
- Se8 - Total population living in a dwelling with a leaking roof, damp walls, floors or foundation, or rot in window frames of floor. Eurostat (EU-SILC)
- Se11 - Volume of passenger transport relative to GDP. Eurostat
- Se12 - Involuntary part-time employment as percentage of the total part-time employment. Eurostat
- Se14 - Pollution, grime or other environmental problems. Eurostat (EU-SILC)

Social inclusion is an area in which people have access to the institutions and social relationships which form their everyday life. Society should promote social inclusion to the fullest extent, on the other hand it should seek a minimum level of social exclusion. The implementation of social quality should therefore provide support for inclusion and prevention as well as solutions to real exclusion.

According to Walker and Wigfield (2004), the concept of social inclusion is based on addressing two important social problems at present, which are poverty and social exclusion.

Overview of the indicators used:

- Si1 - People at risk of poverty or social exclusion by income quintile. Eurostat
- Si2 - 80/S20 income quintile share ratio. Eurostat (EU-SILC)
- Si3 - Long-term unemployment (12 months or more) as a percentage of the total unemployment. Eurostat
- Si4 - In-work at-risk-of-poverty rate by type of contract. Eurostat (EU-SILC)
- Si5 - Material deprivation rate for the 'Economic strain' and 'Durables' dimensions. Eurostat (EU-SILC)
- Si6 - Relative median income ratio (65+). Eurostat (EU-SILC)
- Si7 - Employed persons working in the evenings as a percentage of the total employment. Eurostat
- Si8 - Arrears (mortgage or rent, utility bills or hire purchase). Eurostat (EU-SILC)
- Si9 - Gini coefficient of equivalised disposable income. Eurostat
- Si10 – Inability to face unexpected financial expenses. Eurostat (EU-SILC)

Another conditional factor of social quality is social cohesion, which points to the cohesion of different communities and societies. It is an inevitable element of social development, but also of individual self-realization. It represents the identification of individuals with social values and norms on the basis of which solid and permanent social relations are formed (Pytliková et al, 2016; Balcar et al, 2014).

Overview of the indicators used:

- Sk1 - Individuals using the internet for participating in social networks - % of individuals aged 16 to 74. Eurostat
- Sk2 - Noise from neighbours or from the street. Eurostat (EU-SILC)
- Sk3 - Level of citizens' confidence in EU institutions. Eurostat (EU-SILC)
- Sk4 - Household internet connection type: broadband - percentage of households. Eurostat (EU-SILC)
- Sk5 - Gender differences in the relative median income ratio (65+). Eurostat (EU-SILC)
- Sk6 - Gender pay gap in unadjusted form. Eurostat
- Sk7 - Corruption perceptions index. Transparency International
- Sk8 - Political participation. Economist Intelligence Unit
- Sk9 – Civil liberties. Economist Intelligence Unit
- Sk10 – Democracy index: Economist Intelligence Unit

In social value theory, social competence represents indicators of people, their qualifications, attitudes, but also of ideas, wishes, needs and positions (see e.g. Karásek et al. 2011, Balcar 2016 for a discussion on their importance for the life quality).

This conditional factor of social quality refers to the development of the citizens' ability to participate in the processes of society.

Overview of the indicators used:

- Sc1 - Healthy life years at birth in percentage of the total life expectancy - females. Eurostat
- Sc2 - Healthy life years at birth in percentage of the total life expectancy – male. Eurostat
- Sc3 - Pupils and students in education by age groups - as % of corresponding age population. Eurostat
- Sc4 – GDP per inhabitant. Eurostat
- Sc5 - Participation rate in education and training (last 4 weeks) by age 18-24. Eurostat
- Sc6 – Persons with tertiary education (ISCED) and/or employed in science and technology. Eurostat
- Sc7 - Individuals' level of computer skills. Eurostat
- Sc9 – Mobility of students in Europe. Eurostat
- Sc10 – Graduates in tertiary education by age groups - per 1000 of population aged 20 -29. Eurostat
- Sc11 – Expected school years of pupils and students. Eurostat

Data for 2015 was used. Eurostat Source, as a rule EU SILC - European Union Statistics on Income and Living Conditions. It is assumed that each indicator has the same weight. For each indicator, all 28 EU countries were ranked in such a way that a country with a more favorable indicator value was assigned a lower ranking value. In the case of an identical indicator value for several countries, these countries were assigned the same order.

The next step was to determine the order of the countries in all four components, so that the order of countries for the individual indicators was summed up and the countries were then re-sorted according to the sum.

In the last step, the sum of all 4 values for individual factors was added and the total order of countries was determined from the point of view of the social quality concept.

In all cases (individual partial indicators, individual conditional factors and overall indicator), the status of the Czech Republic was investigated and evaluated.

#### **4 Results and discussion**

From the point of view of the sum of the ranking of countries according to the individual indicators that make up this factor, Ireland, Cyprus, Finland, the Netherlands and Sweden ranked first in the EU ranking. We can say that in the case of a conditional factor of socio-economic security, these countries have very good results. The Czech Republic, together with

Greece, is in the 14th place. The results also showed that in the countries of Latvia, Lithuania, Bulgaria, Hungary and Portugal, the level of the conditional factor (expressed by the country's ranking according to the measured indicators) is worse.

Favorable position was achieved within the SE8, SE1, SE4 and SE12 indicators. In the last place within the EU countries, the Czech Republic ranked within the SE11 indicator. Also, within SE2, SE5 it ranked 19th out of 24.

The country order from the point of view of the conditional factor of socio-economic security is expressed in the table

**Table 1** EU countries from the point of view of the conditional factor of socio-economic security

2015	Social - Economic Security										Sum	Ranking
	se1	se2	se3	se4	se5	se6	se8	se11	se12	se14		
IE	7	10	12	2	1	2	13	16	20	1	84	1
CY	3	8	3	4	2	5	25	2	27	8	87	2
FI	13	1	16	4	12	14	1	11	16	5	93	3
NL	12	4	11	6	7	1	18	22	1	14	96	4
SE	8	2	26	5	14	12	3	9	13	4	96	4
HR	1	18	2	11	22	23	6	4	12	2	101	5
DK	10	3	19	4	13	19	19	6	9	3	105	6
AT	9	24	13	6	17	3	7	14	3	11	107	7
BE	16	5	23	1	4	16	21	13	2	18	119	8
FR	13	7	27	5	10	9	9	5	21	13	119	8
LU	14	15	10	2	8	11	14	19	7	22	122	9
ES	25	5	9	4	5	7	17	20	25	9	126	10
UK	17	23	20	2	6	6	15	21	11	6	127	11
DE	16	14	8	5	16	10	10	17	6	26	128	12
MT	24	26	7	3	3	10	5	18	8	27	131	13
CZ	6	19	15	8	19	15	4	24	10	15	135	14
EL	11	9	1	10	26	8	16	1	28	25	135	14
EE	19	13	25	7	11	22	12	15	5	7	136	15
SI	2	11	22	8	15	20	26	7	4	21	136	15
SK	7	25	5	10	24	17	2	25	14	12	141	16
RO	23	17	4	12	28	4	10	8	23	20	149	17
PL	4	21	14	11	23	21	8	23	15	10	150	18
IT	22	6	6	9	21	13	22	10	26	23	158	19
PT	21	12	18	7	9	24	27	12	22	16	168	20
LT	5	16	17	8	18	25	20	26	17	19	171	21
BG	20	22	21	10	20	26	11	3	24	20	177	22
HU	18	17	20	10	27	18	24	15	19	17	185	23
LV	15	20	24	10	25	27	23	24	18	24	210	24

Source: Eurostat, 2017, calculation by the author

From the point of view of the sum of the order of the countries according to the individual indicators that make up the factor of social inclusion, Sweden, Austria, the Czech Republic, Finland and the Netherlands are ranked first in the EU countries. We can say that in the case of the conditional factor of socio-economic security these countries have achieved very good results. The results also showed that in the countries of Bulgaria, Greece, Lithuania, Latvia, Cyprus and Romania, the level of the conditional factor (expressed by the country's ranking

according to the measured indicators) is worse. The position of the Czech Republic is very good within the EU (3rd place). The best value for all countries is achieved in SI1 (Percentage of people who are on the poverty line or are subjected to severe material deprivation or live in a household with very low work intensity), SI2 (Share of total income of 20% of the population with the highest income to 20% of the population with the lowest income), SI8 (Percentage of people out of the total population who have arrears (mortgages or rents, bills or repayments), SI9 (Gini coefficient), SI4 (Share of part-time workers with an equalized disposable income lower than 60% of the national median disposable income) and SI6 (The ratio of the median income of persons at the age of 65 compared to the income of persons under the age of 65).

The order of countries from the point of view of the conditional factor of social inclusion is expressed in Table 2.

**Table 2** Countries of the European Union from the point of view of social inclusion

2015	Social Inclusion										Sum	Ranking
	si1	si2	si3	si4	si5	si6	si7	si8	si9	si10		
SE	2	3	1	18	1	16	13	4	4	1	63	1
AT	7	4	6	13	5	6	9	6	7	3	66	2
CZ	1	1	18	5	9	14	6	1	3	11	69	3
FI	4	2	3	2	3	14	21	13	4	8	74	4
NL	3	3	11	8	4	10	24	3	6	4	76	5
LU	9	7	5	22	2	1	14	2	11	5	78	6
DK	6	5	2	7	6	17	17	5	8	7	80	7
FR	5	7	13	15	8	2	2	9	12	10	83	8
BE	12	3	20	9	10	16	7	7	5	6	95	9
MT	13	6	8	1	14	18	11	14	9	2	96	10
UK	15	11	4	3	11	11	6	12	17	13	103	11
SK	8	1	27	4	15	8	22	8	1	12	106	12
PL	14	10	9	10	14	5	4	15	16	17	114	13
DE	11	9	14	19	7	12	23	2	14	9	120	14
SI	10	2	21	14	10	9	20	20	2	18	126	15
IE	17	8	22	11	13	12	12	18	13	19	145	16
PT	18	13	23	16	16	7	5	12	19	16	145	16
EE	16	14	7	25	8	22	19	10	22	12	155	17
ES	20	16	19	23	12	3	18	16	21	14	162	18
HR	23	11	26	6	21	13	1	23	15	23	162	18
HU	19	7	16	28	22	3	10	22	10	26	163	19
IT	21	12	24	20	17	5	16	17	17	15	164	20
LT	24	18	10	21	19	19	7	11	26	21	176	21
RO	27	19	12	12	24	4	15	21	25	20	179	22
CY	22	11	17	27	20	15	8	24	18	25	187	23
LV	25	15	15	26	21	21	3	19	23	26	194	24
EL	26	15	28	17	23	2	25	26	20	22	204	25
BG	28	19	25	24	25	20	12	25	24	22	224	26

Source: Eurostat, 2017, calculation by the author

From the point of view of the value resulting from the order of the countries according to the individual indicators that make up the social cohesion factor, Luxembourg, Sweden, Denmark, Finland and the Netherlands are in the top positions in the EU ranking. We can say that these countries have the best results from the point of view of this conditional factor. On the other

hand, Spain, Bulgaria, Portugal, Romania, Greece and the Czech Republic are found on the opposite side.

The Czech Republic is lagging within the SK6 indicator (the difference in hourly earnings by sex as a percentage of the hourly earnings of men's earnings), SK1 (Percentage of the total population that uses the internet in the given manner) and SK5 (gender differences in the relative medium level of income of the older persons over 65). On the contrary, solid results are achieved within SK9 (civil liberties) and SK8 (participation in political life).

The order of countries from the point of view of the conditional factor of social cohesion is expressed in Table 3.

**Table 3** EU countries from the point of view of social cohesion

2015	Social Cohesion							sk8	sk9	sk10	Sum	Ranking
	sk1	sk2	sk3	sk4	sk5	sk6	sk7					
LU	1	22	4	1	1	1	4	5	2	6	47	1
SE	5	7	5	7	14	9	2	2	2	1	54	2
DK	4	16	3	6	6	12	1	2	3	2	55	3
FI	8	5	3	3	11	17	2	3	2	3	57	4
NL	7	25	6	2	2	15	3	1	3	5	69	5
IE	12	1	13	7	13	8	7	3	1	7	72	6
BE	2	19	8	10	14	3	5	7	3	14	85	7
MT	7	26	4	8	9	6	14	6	2	9	91	8
UK	3	16	19	3	7	21	4	5	3	10	91	8
AT	17	18	7	9	5	22	6	2	3	4	93	9
DE	9	27	13	4	6	23	4	3	4	8	101	10
PL	20	6	7	15	8	4	10	5	4	25	104	11
EE	10	3	9	5	21	25	8	6	5	16	108	12
SI	22	9	14	11	8	5	12	5	5	18	109	13
HU	6	10	7	13	4	9	16	9	9	27	110	14
FR	21	15	16	12	3	14	8	3	5	15	112	15
LT	15	13	1	17	18	10	11	6	2	19	112	15
SK	11	8	8	11	8	20	16	7	5	23	117	16
IT	21	20	15	14	12	1	18	4	7	12	124	17
CY	11	17	17	15	19	9	11	5	4	20	128	18
LV	8	12	10	14	20	16	15	7	4	22	128	18
HR	16	2	11	12	15	18	16	7	8	26	131	19
CZ	20	11	14	12	17	24	13	5	3	13	132	20
EL	18	21	17	17	6	7	17	5	3	21	132	20
RO	18	23	2	18	11	2	17	8	6	28	133	21
PT	14	24	12	16	16	19	9	5	3	17	135	22
BG	19	4	7	19	22	13	19	4	8	24	139	23
ES	51	14	18	11	10	11	13	4	3	11	146	24

Source: Eurostat, 2017, calculation by the author

Within the framework of the conditional factor of social competence, Sweden, Luxembourg, Denmark, Germany and Ireland have ranked highest in the European Union. On the opposite side of the list there are Romania, Croatia, Italy, Hungary and Slovakia. The Czech Republic occupies the 14th position. Good values are achieved by indicators SC11 (Expected years of

education throughout life), SC1 (Percentage ratio of women's healthy years to total population), SC2 (Percentage ratio of men's healthy years to total population) and SC8 (level of foreign languages - the average number of foreign languages per a young student at elementary school). On the contrary, the indicator SC3 (Percentage of young students and students aged 0-29 of the total population of the given age) is not favorable.

The order of countries in terms of the conditional factor of social competence is expressed in Table 4.

**Table 4** EU countries from the point of view of social competence

2015	Social Competency											Sum	Ranking
	sc1	sc2	sc3	sc4	sc5	sc6	sc7	sc8	sc9	sc10	sc11		
SE	2	1	8	3	7	2	4	4	14	15	3	63	1
LU	18	14	23	1	1	1	1	1	1	17	6	84	2
DK	20	19	1	2	2	3	3	8	17	12	2	89	3
DE	5	5	7	9	5	5	11	7	12	23	4	93	4
IE	4	4	4	6	24	15	20	11	4	2	3	97	5
NL	22	20	2	5	3	4	12	10	17	16	3	114	6
FR	13	15	9	10	8	9	7	4	18	22	6	121	7
BE	8	8	3	8	16	11	16	10	15	25	4	124	8
FI	27	21	5	7	14	6	2	6	15	20	1	124	8
UK	10	12	16	11	26	7	5	4	25	3	5	124	8
EL	9	10	14	14	9	27	21	3	10	5	4	126	9
MT	1	2	22	16	28	19	18	4	5	9	6	130	10
ES	15	13	6	13	6	25	19	3	24	8	4	136	11
LT	17	17	12	22	10	12	9	7	7	24	4	141	12
AT	21	28	18	4	18	8	10	4	22	4	5	142	13
CZ	6	7	27	19	11	13	17	7	16	19	4	146	14
EE	25	27	21	20	15	10	6	3	8	10	4	149	15
BG	3	3	20	28	20	26	27	6	6	13	5	157	16
PL	7	9	28	25	13	18	25	4	23	1	4	157	16
PT	28	24	11	18	12	20	15	10	11	6	5	160	17
SI	23	22	10	17	4	14	13	9	20	26	4	162	18
CY	12	16	26	15	25	17	23	4	2	21	6	167	19
LV	26	26	15	23	23	16	14	4	9	7	4	167	19
SK	24	23	24	21	19	24	8	5	3	11	6	168	20
HU	11	11	17	26	17	21	26	8	21	14	5	177	21
IT	16	18	13	12	22	22	24	4	19	27	6	183	22
HR	19	25	19	24	21	23	22	2	13	15	5	188	23
RO	14	6	25	27	27	28	28	4	13	18	6	196	24

Source: Eurostat, 2017, calculation by the author

The overall ranking of countries in terms of social quality is shown in Table 5. The table shows that the best levels of social quality measured through indicators of four conditional factors of social quality are achieved in Sweden, Denmark, Luxembourg, Finland and the Netherlands. On the opposite side of the list there are Latvia, Bulgaria, Romania, Hungary and Italy. The Czech Republic ranks 13th among 28 countries of the European Union.

**Table 5** EU countries from the point of view of social quality

2015	Social Quality				Sum	Ranking
	SE	SI	SK	SC		
SE	96	63	54	63	276	1
DK	105	80	55	89	329	2
LU	122	78	47	84	331	3
FI	93	74	57	124	348	4
NL	96	76	69	114	355	5
IE	84	145	72	97	398	6
AT	107	66	93	142	408	7
BE	119	95	85	124	423	8
FR	119	83	112	121	435	9
DE	128	120	101	93	442	10
UK	127	103	91	124	445	11
MT	131	96	91	130	448	12
CZ	135	69	132	146	482	13
PL	150	114	104	157	525	14
SK	141	106	117	168	532	15
SI	136	126	109	162	533	16
EE	136	155	108	149	548	17
CY	87	187	128	167	569	18
ES	126	162	146	136	570	19
HR	101	162	131	188	582	20
EL	135	204	132	126	597	21
LT	171	176	112	141	600	22
PT	168	145	135	160	608	23
IT	158	164	124	183	629	24
HU	185	163	110	177	635	25
RO	149	179	133	196	657	26
BG	177	224	139	157	697	27
LV	210	194	128	167	699	28

Source: Eurostat, 2017, calculation by the author



## 5 Conclusion

The results obtained have shown the different position of the Czech Republic within individual conditional factors of social quality. In the case of social security, the Czech Republic occupied the 14th place among the EU countries in 2015. In the social inclusion factor it reached the 3rd best place within the EU. On the other hand, within the context of the social factor of social cohesion it reached 20th position and, in the case of the social competence factor, it ranked 14th out of 28 EU countries. Within the overall expression of the level of social quality, it is on the 13th place.

Further research on the expression and assessment of social quality will focus on:

- calculating the Social Quality Index for 2015 using factor analysis and other advanced statistical methods,
- identifying changes in the level of social quality in EU countries for 2011-2015,
- evaluation of individual partial indicators in terms of their possible correlation,
- designing new indicators to express more clearly individual conditional factors of social quality.

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## DUÁLNI EKONOMIKA A NEFINANČNÍ PODNIKY V ČR: VYBRANÉ INDIKÁTORY DUAL ECONOMY AND NON-FINANCIAL CORPORATIONS: SELECTED INDICATORS

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### Abstract

This paper deals with enterprises as the largest creator and contributor of gross value added at the national level. More precisely sector of non-financial corporations with respect to their ownership. The main aim is to evaluate differences in behaviour between national private non-financial corporations and foreign controlled non-financial corporations. Selected indicators of sector analysis are employed: gross value added ratio, gross profit share, gross return on capital employed (before taxes), gross investment rate and gross saving rate in the Czech Republic during two periods 1993 - 2015 and 2005 - 2015. By means of analysis of variance was found that differences between indicators are significant except gross investment rate.

### Keywords

Dual economy, non-financial corporations, share indicators  
C43, E01, E22

## 1 Úvod

V tržní ekonomice je zcela běžné, že vedle sebe působí domácí a zahraniční kapitál. Zahraniční kapitál se do ekonomiky dostává zpravidla prostřednictvím přímých zahraničních investic. Vzájemná koexistence domácího a zahraničního kapitálu však není typická pro centrálně plánované ekonomiky, kde je silná dominance státního vlastnictví.

Na začátku 90. let 20. století byl v tehdejší Československu nastartován transformační proces s cílem přechodu od mechanismu centrálního plánování k tržní ekonomice<sup>27</sup>. Pro tržní ekonomiku je naopak charakteristická převaha soukromého vlastnictví. Jak uvádí Žďárek (2005), moderní ekonomiky jsou vzájemně propojeny pomocí kapitálových toků. Obecně se jedná o přímé zahraniční investice, portfoliové nebo ostatní investice. V rámci toků přímých zahraničních investic dochází v České republice jak k jejich přílivu, tak odlivu.

Přímé zahraniční investice přinášejí hostitelské zemi řadu pozitivních tak negativních efektů (Benáček, 2000). Damborský, Dobrá a Wokoun (2010) člení dopady přímých zahraničních investic z několika hledisek: krátkodobé a dlouhodobé, makroekonomické a mikroekonomické, přímé a nepřímé. Blažek a Drášilová (2013) doplňují ještě hledisko investora a hostitele.

Jedním z těchto negativních efektů je tzv. duální (paralelní) ekonomika. Podle Benáčka (2000) a Zamrazilové (2007) znamená zaostávání domácího segmentu ekonomiky za segmentem zahraničních firem. Podle Blažka a Drášilové (2013) dochází v hostitelské zemi k rozdělení na dva sektory. Jeden tvoří efektivní podniky pod zahraniční kontrolou, druhý pak méně efektivní domácí podniky. Spolupráce mezi těmito dvěma skupinami podniků je velmi

<sup>27</sup> Po zániku Československa transformační proces dále pokračoval odděleně v nástupnických státech – České republice a Slovenské republice.

malá nebo žádná, což může v konkurenčním boji vést k přeorientaci domácích podniků na méně náročné trhy, následnému zaostávání až k ukončení činnosti.

V krátkodobém horizontu přílivu přímých zahraničních investic z rozvinutých ekonomik do tranzitivních jsou rozdíly mezi podniky v domácím a zahraničním vlastnictví přirozené. Z dlouhodobého hlediska by však domácí firmy měly navázat výrobní a obchodní vztahy se zahraničními podniky. Dalším projevem duality může být vědomé vytlačování slabších domácích konkurentů z trhu, jde o tzv. vytěsňující efekt (Zamrazilová, 2007).

Cílem článku je zjistit, jestli v českém hospodářství dochází k významným rozdílům v chování mezi podniky v domácím soukromém vlastnictví a podniky pod zahraniční kontrolou, tzv. duální ekonomice. Rozdílnosti v chování budou zkoumány pomocí zvolených indikátorů: podíl hrubé přidané hodnoty, hrubý podíl na zisku, hrubá rentabilita investovaného kapitálu (před zdaněním), hrubá míra investic a hrubá míra úspor.

Článek je rozdělen včetně úvodu a závěru do šesti částí. Po úvodu, který se zaměřuje na následky jednoho z negativních efektů přímých zahraničních investic na hostitelskou ekonomiku – duální ekonomika, následuje druhá část zabývající se pojetím duální ekonomiky, třetí část charakterizuje a vymezuje předmět zkoumání, čtvrtá část představuje použité metody a ukazatele, pátá část stručně charakterizuje chování obou skupin podniků na základě indikátorů a zjišťuje významnost formy kapitálu, šestou částí je závěr.

## **2 Pojetí duální ekonomiky**

Pojem duální ekonomika se původně užíval v souvislosti s málo rozvinutými nebo zaostalými ekonomikami, kde rozdíly mezi vyspělejšími zahraničními a zaostalejšími domácími firmami byly velké (např. Jorgenson, 1961 nebo Auriol, 2013).

Literaturu, která se zabývá zahraničními investicemi a jejich vlivem na ekonomiku včetně výše zmíněné duality, je možné rozdělit do několika skupin. První skupinu tvoří studie, které rozvíjejí oblast teorie duální ekonomiky (např. Oster, 1979). Na tuto skupinu navazují studie, které zkoumají vlivy zahraničních investic v rámci střetávání podniků z vyspělých hospodářství se subjekty v méně vyspělých nebo rozvojových ekonomikách, jak dokumentují např. Chenery (1983), Gang a Gangopadhyay (1987), Basu a Guariglia (2007), Vollrath (2009) nebo Wingender (2015). Zpravidla se jedná o střetávání méně vyspělé oblasti zemědělství s více vyspělou oblastí průmyslu. Ve všech případech bylo vyhodnocování prováděno pomocí regresní analýzy, kdy byla zjišťována rozdílnost mezi faktorovou produktivitou.

Další skupinu tvoří studie, které zkoumají efekty přímých zahraničních investic, ať už pozitivní nebo negativní, mezi podobně vyspělými ekonomikami nebo stejnými odvětvími nebo bývalými tranzitivními ekonomikami, např. Barrell a Holland (2000), Hagemeyer a Tyrowicz (2012), Tülüce a Dogan (2014) nebo Iwasaki a Tokunaga (2016). Sabirianova, Terrell a Švejnar (2005) zjišťují efekty přelévání pomocí panelové regrese s tzv. dummy proměnou, která odlišuje domácí podniky od podniků zahraničních.

Podskupinu předchozí skupiny tvoří studie, které v rámci zkoumaných efektů přímých zahraničních investic na hostitelskou zemi akcentují nebo samostatně nahlíží na efekt duální ekonomiky. Podle Benáčka (2000) se česká ekonomika stává duální už od roku 1993. Ke stejnému závěru dochází také další studie v průběhu času, např. Srholec (2004), Zamrazilová (2007) nebo Blažek a Drášilová (2013).

## **3 Podniky a sektor nefinančních podniků**

Hospodářství země je výsledkem činnosti velkého počtu jednotek, které provádějí různé transakce za účelem výroby, financování, rozdělování, spotřeby a akumulace. Tyto jednotky se

označují jako institucionální jednotky. Podle současné metodiky Evropského systému národních a regionálních účtů v Evropské unii (zkráceně ESA 2010) je národní hospodářství charakterizováno jako souhrn rezidentských institucionálních jednotek. (ČSÚ, 2015)

Institucionální jednotky (rezidentské), které mají podobný typ ekonomického chování, jsou seskupovány do vyšších celků – sektorů a subsektorů. Podle metodiky ESA 2010 institucionální jednotky, které mají podobné ekonomické chování, jsou dále seskupovány do vyšších celků - sektorů a subsektorů. Národní hospodářství tvoří pět rezidentských institucionálních sektorů (ČSÚ, 2015):

- nefinanční podniky,
- finanční instituce,
- vládní instituce,
- domácnosti,
- neziskové instituce sloužící domácnostem.

Sektor nefinančních podniků zahrnuje všechny soukromé a veřejné podniky, které se zabývají produkcí zboží nebo poskytováním nefinančních služeb, přičemž jak zboží, tak služby mají tržní určení (ČSÚ, 2015). Jinak řečeno, nefinanční podniky představují veřejné nebo soukromé podniky a společnosti všech odvětví národního hospodářství s výjimkou finančních, pojišťovacích nebo netržních služeb (Hronová a Hindls, 2012). Hlavní činností jednotek sektoru nefinančních podniků je výroba tržních výrobků a poskytování tržních nefinančních služeb (ČSÚ, 2015).

Sektor nefinančních podniků je z hlediska vlastnictví (kontroly majetku) rozdělen na tři subsektory (ČSÚ, 2015):

- veřejné nefinanční podniky,
- národní soukromé nefinanční podniky,
- nefinanční podniky pod zahraniční kontrolou.

Subsektor veřejných nefinančních podniků sdružuje jednotky, které jsou pod kontrolou státu (Hronová et al, 2009), přesněji řečeno pod kontrolou jednotek vládních institucí (ČSÚ, 2015). Subsektor národních soukromých nefinančních podniků seskupuje jednotky, které jsou v soukromém vlastnictví subjektů daného státu a subsektor nefinančních podniků pod zahraniční kontrolou tvoří jednotky, které jsou pod kontrolou nerezidentů (ČSÚ, 2015).

#### 4 Metody a data

Sektor nefinančních podniků je vyhodnocován jednak v celém období, tj. 1993 – 2015 a v období 2005 – 2015, což je období, kdy se vývoj ukazatele podílu hrubých přidaných hodnot domácích i zahraničních podniků víceméně stabilizoval. Veškeré údaje byly získány z Českého statistického úřadu z databáze národních účtů.

Srholec (2004) sleduje a hodnotí existenci duální ekonomiky v ČR na základě srovnání ukazatelů produktivity práce, investiční aktivity, vývozní orientace v podnicích v domácím a zahraničním vlastnictví. Zamrazilová (2007) rozsah duality v ekonomice zjišťuje pomocí produktivity práce, rentability nákladů a dle dynamiky vývozu mezi podniky.

K naplnění cíle práce, tj. ke zjištění, jestli vlastnictví kapitálu hraje důležitou roli v rozdílnosti mezi zvolenými ukazateli, byla zvolena metoda analýzy rozptylu (ANOVA). Rozdílnosti bude tato metoda zkoumat na následujících podílových ukazatelích sektorové analýzy. (Hronová et al, 2009)

Podle Hendla (2012, s. 348) je postup následující: „základní statistikou v analýze rozptylu je *F-testovací statistika rozdílnosti skupinových průměrů*, pomocí níž se testuje hypotéze, zda

*průměry ve skupinách určených kombinacemi faktorů se od sebe liší více než na základě působení náhodného kolísání. Pokud se průměry neliší významně, usuzujeme, že faktory nemají na závisle proměnnou vliv“.*

Je tedy zkoumána nulová hypotéza ( $H_0$ ), že průměry hodnot jsou stejné v obou skupinách, tzn.  $H_0$  říká, že původ kapitálu nemá vliv na průměrnou hodnotu:  $H_0 = \mu_1 = \mu_2$ , kde  $\mu$  je právě střední hodnota skupiny,  $H_1 = \mu_1 \neq \mu_2$  (Hendl, 2012).

Základním podílovým ukazatelem je podíl hrubých přidaných hodnot (*GVAR – Gross Value Added Ratio*) podle (1):

$$GVAR = \frac{GVA_s}{GVA_{NFC}} \quad (1)$$

kde *GVAR* představuje podíl hrubé přidané hodnoty příslušného subsektoru ( $GVA_s$ ) na hrubé přidané hodnotě celého sektoru nefinančních podniků ( $GVA_{NFC}$ ).

Dalším ukazatelem je hrubý podíl na zisku (*GPS – Gross Profit Share*)<sup>28</sup>, který v podnikové finanční analýze koresponduje s ukazatelem *rentability tržeb (ROS – Return on Sales)*. *GPS* pak může být zapsán jako (2):

$$GPS = \frac{GOS}{GVA} \quad (2)$$

kde *GOS* představuje *hrubý provozní přebytek (Gross operating surplus)*, tj. *EBIT* v podniku a *GVA* potom *hrubou přidanou hodnotu*, tj. *Sales* v podniku. Hrubý provozní přebytek zahrnuje to, co sektoru nefinančních podniků zbude po uhrazení všech nákladů, které jsou spojeny s jeho produktivní činností (Hronová et al., 2009). Hrubá přidaná hodnota pak vyjadřuje hodnotu nově vytvořené produkce, která byla sektorem prodána. Jedná se o hlavní ukazatel ekonomické výkonnosti sektoru, ukazuje tak schopnost sektoru nefinančních podniků generovat zisk z výroby (Hronová a Hindls, 2012), tj. jak velkého zisku jsou podniky v ekonomice schopny dosáhnout na jednu jednotku hrubé přidané hodnoty.

Hrubá rentabilita investovaného kapitálu, před zdaněním (*GROCE – Gross Return On Capital Employed, before taxes*) koresponduje v případě podnikové finanční analýzy s ukazatelem *rentability celkového (dlouhodobého) investovaného kapitálu (ROCE – Return On Capital Employed)*. *GROCE* může být zapsán jako (3):

$$GROCE = \frac{GOS}{MFL} \quad (3)$$

kde *GOS* představuje, stejně jako výše, *hrubý provozní přebytek*, tj. *EBIT* v podniku, *MFL* tzv. *hlavní finanční závazky (Main financial liabilities)* tj. (investovaný kapitál v případě podniku) zahrnují: dluhové cenné papíry, půjčky, účasti a podíly v investičních fondech. Ukazatel *GROCE* podobně jako *ROCE* komplexně hodnotí efektivitu sektoru nefinančních podniků. Používá se pro porovnání rentability podniků a zohledňuje množství investovaného kapitálu (Kislingerová et al, 2007; Růčková, 2015). Ukazatel podává informaci o tom, jak velký zisk vytvoří podniky jednou jednotkou dlouhodobého kapitálu.

Hrubá míra investic (*GIR – Gross Investment Rate*) ukazuje, jakou část hrubé přidané hodnoty věnuje sektor nefinančních podniků na investice a to jak čisté, tak obnovovací a je vypočtena dle (4):

<sup>28</sup> Ukazatele *GPS*, *GROCE* jsou vypočítány na základě metodiky Eurostatu (Eurostat, 2016)

$$GIR = \frac{GFCF}{GVA} \quad (4)$$

kde *GFCF* představuje *hrubou tvorbu fixního kapitálu*, tj. investice do dlouhodobého hmotného a nehmotného majetku, *GVA* pak označuje *hrubou přidanou hodnotu*, tj. hodnotu zboží a služeb sektorem nově vytvořených.

Hrubá míra úspor (*GSR* – *Gross Saving Rate*) ukazuje, jakou část hrubé přidané hodnoty si dokázal sektor nefinančních podniků udržet pro financování investic z vlastních zdrojů, tzv. samofinancování a je vypočtena dle (5):

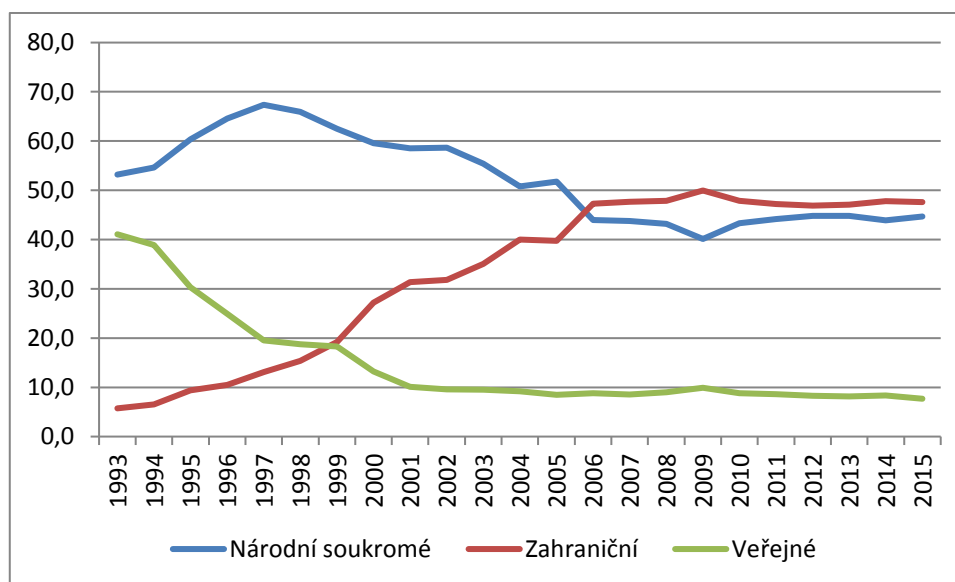
$$GSR = \frac{GS}{GVA} \quad (5)$$

kde *GS* vyjadřuje *hrubé úspory*, tedy vlastní zdroj pro financování investic.

Při vynásobení hodnot ukazatelů stem, lze výsledky interpretovat v procentech.

## 5 Empirické výsledky

Obr. 1 zachycuje vývoj podílu hrubých přidaných jednotlivých subsektorů na hrubé přidané hodnotě sektoru nefinančních podniků v období 1993 – 2015. I když zkoumané období začíná rokem 1993, i tak je v rámci transformačního procesu zřejmý pokles veřejných nefinančních podniků a růst soukromých podniků. Za deset let, tj. od roku 1993 do roku 2002 došlo k poklesu o 31,5 p. b. veřejných nefinančních podniků. Subsektor národních soukromých podniků zaznamenal počáteční nárůst v letech 1993 - 1997 o 14,2 p. b., zatímco subsektor nefinančních podniků pod zahraniční kontrolou rostl od roku 1993 neustále až do roku 2009 (o 44,3 p. b.). Od roku 2006 je podíl na hrubé přidané hodnotě zahraničních podniků v české ekonomice vyšší než podíl domácích soukromých podniků.



**Obr. 13** Podíl HPH subsektorů na HPH sektoru nefinančních podniků, v % (Zdroj: ČSÚ, 2017)

Z podílových dat dále vyplývá, že zatímco mezi lety 1993 – 1997 byl úbytek podílu veřejných nefinančních podniků na hrubé přidané hodnotě nahrazen více výkonem národních soukromých podniků než podniků pod zahraniční kontrolou. Od roku 1998 dochází k situaci,

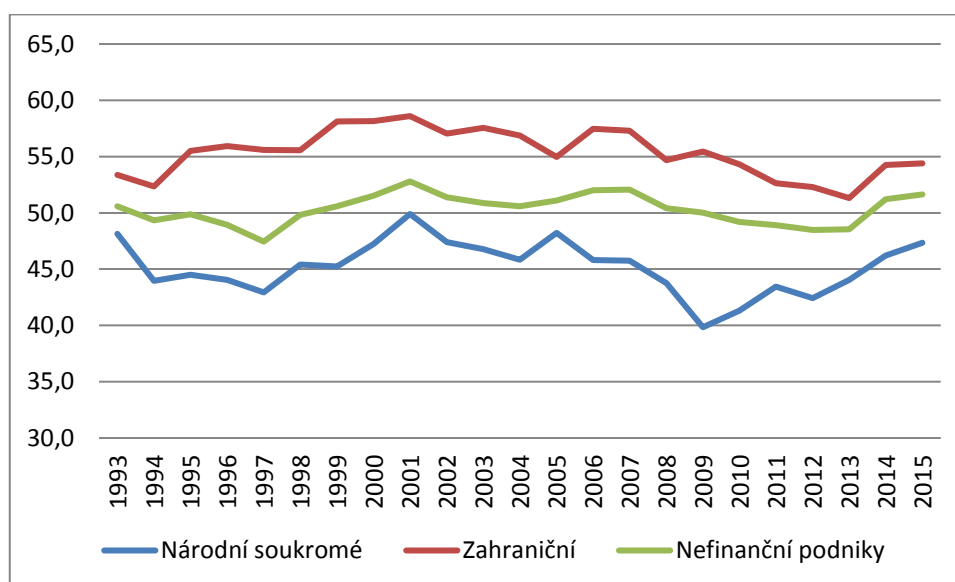
kdy i výkon národních soukromých podniků (společně s veřejnými) je nahrazován podniky pod zahraniční kontrolou.

V celém sledovaném období (1993 - 2015) dosáhly domácí podniky průměrného podílu 52,2 %, zatímco podniky pod zahraniční kontrolou podílu 33,1 %. V rámci kratšího období (2005 – 2015) je však situace zcela opačná, vyššího podílu na hrubé přidané hodnotě dosahují podniky pod zahraniční kontrolou (47,0 %) oproti domácím podnikům (44,4 %).

Pomocí metody ANOVA bylo zjištěno, že rozdíly v chování subsektorů národních soukromých a zahraničních nefinančních podniků jsou statisticky významné (v obou sledovaných obdobích). Původ kapitálu má tedy vliv a české hospodářství tak v tomto ukazateli vykazuje známky duální ekonomiky.

S ohledem na zjištění duality v ekonomice jsou pro posuzování efektu vlastnictví kapitálu metodou ANOVA vyhodnocovány údaje za národní soukromé nefinanční podniky a nefinanční podniky pod zahraniční kontrolou, jsou dále zkoumány jen tyto dva subsektory včetně údajů za sektor nefinančních podniků jako celku.

Dalším ukazatelem je hrubý podíl na zisku. Vývoj tohoto ukazatele zachycuje obr. 2.



**Obr. 2** Hrubý podíl na zisku, v % (Zdroj: ČSÚ, 2017)

Průměrná výše hrubého podílu na zisku sektoru nefinančních podniků činí 50,3 % v období 1993 – 2015, stejně tak v období 2005 – 2015. Podniky dosahují z 1 Kč vytvořené hrubé přidané hodnoty 0,50 Kč zisku. Podniky pod zahraniční kontrolou dosahují vyšší průměrné rentability (55,4 %, resp. 54,5 %) oproti národním soukromým (45,2 %, resp. 44,4 %).

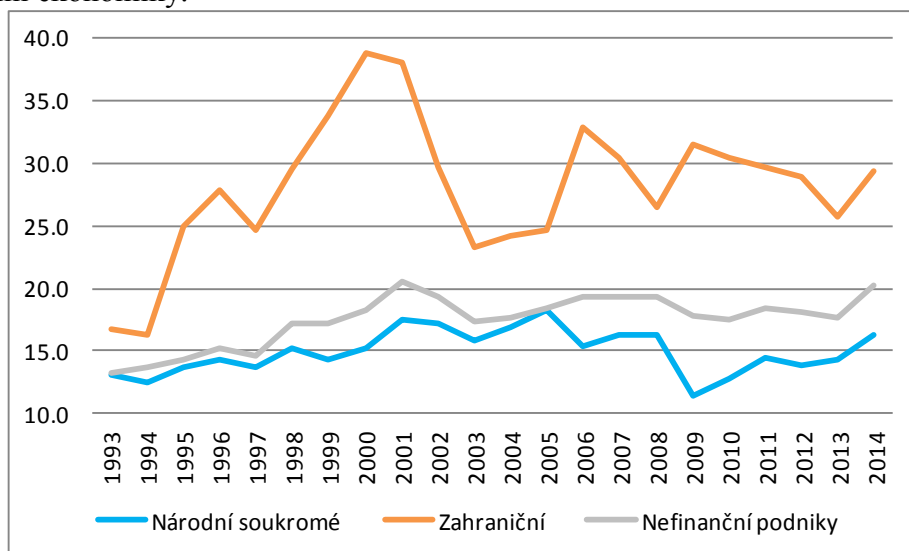
Také zde bylo zjištěno, že rozdíly v chování subsektorů národních soukromých a nefinančních podniků pod zahraniční kontrolou jsou statisticky významné (v obou sledovaných obdobích). Původ kapitálu má tedy vliv a české hospodářství tak v tomto ukazateli vykazuje známky duální ekonomiky.

Vývoj hrubé rentability investovaného kapitálu (před zdaněním) v období 1993 – 2014 zachycuje obr. 3. Sektor nefinančních podniků dosáhl průměrné hodnoty tohoto ukazatele 17,5 %, resp. 18,6 %, národní soukromé pak 14,9 % v obou obdobích, zatímco podniky pod zahraniční kontrolou dosáhly průměrné hodnoty rentability 28,1 %, resp. 29,0 %. Z uvedeného je zřejmé, že podniky pod zahraniční kontrolou v průměru vytvoří z 1 Kč dlouhodobého



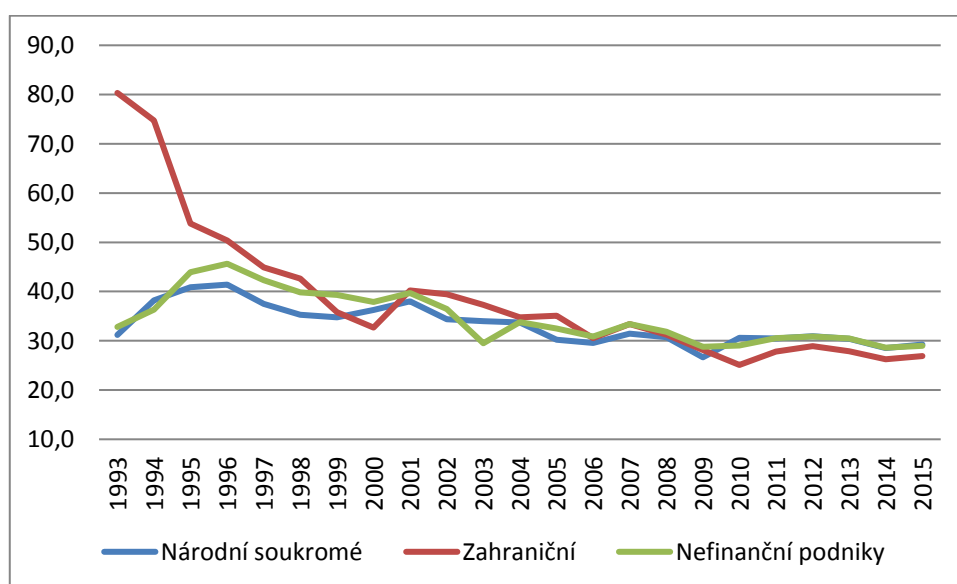
investovaného kapitálu zisk s hodnotou 0,28 Kč, zatímco národní soukromé podniky jen 0,15 Kč.

Také u tohoto ukazatele byly zjištěny rozdíly v chování subsektorů národních soukromých a zahraničních nefinančních podniků jsou statisticky významné (v obou sledovaných obdobích). Původ kapitálu má tedy vliv a české hospodářství tak v tomto ukazateli vykazuje známky duální ekonomiky.



**Obr. 3** Hrubá rentabilita investovaného kapitálu, před zdaněním, v % (Zdroj: ČSÚ, 2017)

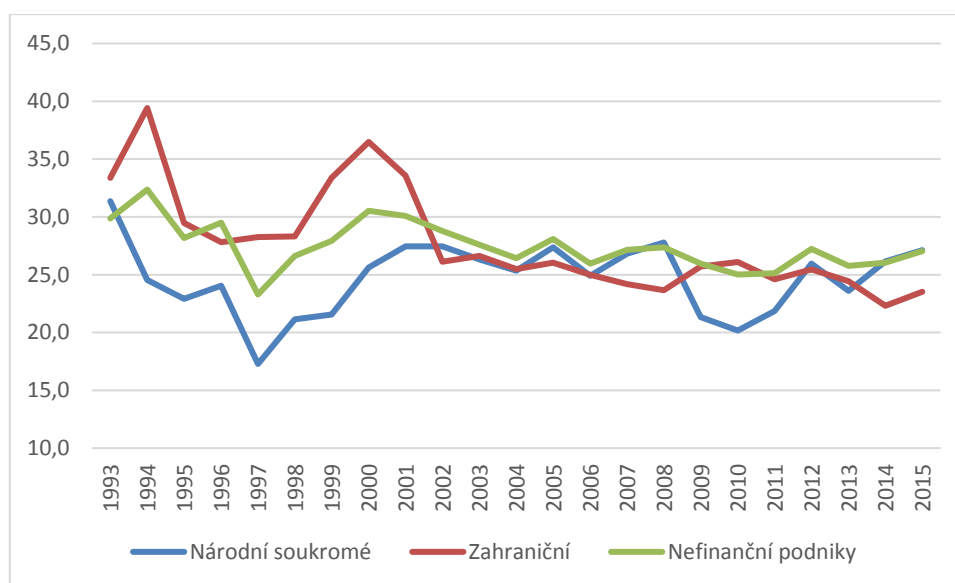
Hrubou míru investic zachycuje obr. 4. Z obrázku je zřejmá vysoká investiční aktivita podniků pod zahraniční kontrolou v první polovině devadesátých let, která byla spojena s transformačním procesem a investicemi do nově nabytého majetku. Průměrná hrubá míra investic sektoru nefinančních podniků v ČR v celém období činila 34,5 %, resp. 30,5 %, což znamená, že celý sektor věnuje z 1 Kč hrubé přidané hodnoty 0,34 Kč na investice (čisté a obnovovací). Subsektor národních soukromých podniků vykázal průměrnou výši 33,2 %, resp. 29,9 % oproti 38,6 %, resp. 29,2 % podniků pod zahraniční kontrolou.



**Obr. 4** Hrubá míra investic, v % (Zdroj: ČSÚ, 2017)

I přes počáteční rozdíly mezi hrubou mírou investic v rámci subsektorů nejsou podle metody ANOVA difference v chování národních soukromých a zahraničních nefinančních podniků statisticky významné (v obou sledovaných obdobích). Původ kapitálu tak nemá vliv a české hospodářství tak v tomto ukazateli nevykazuje známky duální ekonomiky.

Hrubou mírou úspor jako vlastní zdroj hrubých investic zachycuje obr. 5. Průměrná hrubá míra investic sektoru nefinančních podniků činila v celém období 27,5 %, resp. 26,4 %, což znamená, že celý sektor si dokázal z 1 Kč hrubé přidané hodnoty v průměru udržet necelých 0,28 Kč pro financování investic z vlastních zdrojů. Národní soukromé podniky vykázaly průměrnou hodnotu 24,7 %, resp. 24,8 %, zatímco podniky pod zahraniční kontrolou průměrnou výši 27,8 %, resp. 24,6 %.



Obr. 5 Hrubá míra úspor, v % (Zdroj: ČSÚ, 2017)

Pomocí metody ANOVA byla zjištěna významnost rozdílů v celém sledovaném období, v období 2005 – 2015 se však významnost rozdílů neprokázala.

Z uvedeného je zřejmé, že česká ekonomika podle podílu hrubé přidané hodnoty, hrubého podílu na zisku, hrubé rentability investovaného kapitálu (před zdaněním) a hrubé míry úspor vykazuje známky duální ekonomiky v celém sledovaném období. Dualita nebyla potvrzena v hrubé míře investic mezi podniky. Nicméně, jak upozorňuje Vašendová (2006, s. 20) „*duální ekonomika je v konečném důsledku patrně lepší nežli nepřítomnost zahraničních firem*“.

## 6 Závěr

Přímé zahraniční investice jako zdroj zahraničního kapitálu mají řadu jak pozitivních tak negativních vlivů na hostitelskou ekonomiku. Článek se zabýval jedním z těchto negativních vlivů – duální ekonomikou.

Cílem článku bylo zjistit, jestli v českém hospodářství dochází k významným rozdílům v chování mezi podniky v domácím soukromém vlastnictví a podniky pod zahraniční kontrolou. Rozdílnosti v chování byly zkoumány pomocí zvolených indikátorů, kterými byly: podíl přidané hodnoty, hrubý podíl na zisku, hrubá rentabilita investovaného kapitálu (před zdaněním), hrubá míra investic a hrubá míra úspor. Zkoumání probíhalo ve dvou časových obdobích od roku 1993 do roku 2015, druhé pak v kratším časovém úseku 2005 – 2015

z důvodu stabilnějšího chování obou skupin podniků a překlenutí úvodní turbulentní fázi transformace.

Bylo zjištěno, že česká ekonomika podle podílu hrubé přidané hodnoty, hrubého podílu na zisku, hrubé rentabilitě investovaného kapitálu (před zdaněním) a hrubé míry úspor vykazuje známky duální ekonomiky v celém sledovaném období. Dualita nebyla potvrzena v hrubé míře investic mezi podniky.

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## THE EFFICIENCY OF INNOVATION ECONOMIC POLICY: THE CASE OF THE CZECH ECONOMY BETWEEN 2012 AND 2014

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### Abstract

This paper evaluates innovation economic policy in the Czech economy between 2012 and 2014. The analysed sample consists of 10144 observations of which 1588 are about new-to-the-market innovators. The estimation uses three stages from the innovation process model and accounts for selection bias. There is strong evidence that public support is not a very efficient public policy tool and ambiguous results were observed in the detailed view. The local government funding was statistically insignificant in case of the innovation input intensity measured by the log of R&D expenditures per employee and also in the case of innovation output intensity measured by sales from innovated goods and services. Central government funding led to a crowding-effect of public support in the market, but it was not present in manufacturing industry. The EU funding was the most successful economic policy tool although no additional effect of this funding was observed on the innovation output. Framework programmes were an unsuccessful economic policy tool and in case of service industry they contributed to a negative innovation output.

### Keywords

Economic policy, framework programmes, manufacturing, innovation, subsidies.  
O33, L60, D24, O38.

## 6 Introduction

The efficiency analyses of economic policies are needed in order to allocate public resources in the best use. Innovation activities of firms are an important factor of sustainable and continuous economic growth. This theory is well rooted in the economic literature since the 90s of the 20<sup>th</sup> century. The so-called “Solow residual” proved to be endogenous (in the econometric sense) and the critics (Lucas, 1988) started to develop alternative theories which were not dependent on the exogenous nature of technology. Since then, a variety of neoclassical endogenous growth theories and models have emerged.

This paper assumes endogenous nature of technology and importance of innovation activities. It is based on the evolutionary view of J. A. Schumpeter. His theories, however imperfect, have been a source of inspiration for the Schumpeterian growth theories, and the evolutionary growth theories. Propagators of these theories are building on the tradition of creative destruction (Grossman, 1993), potential competition, uncertainty (Aghion and Howitt, 1998) and the theory that, “*At a fundamental level, economic development is about the building of individual and institutional capabilities that we understand exist but do not as yet model well.*” (El-Erian and Spence, 2008, p. 94). That is why models of creative destruction and their empirical testing are aimed at the economic history of recently developed countries. This paper analyses the Czech economy which has undergone a transition from a planned economy to the mixed market based economy. The evolutionary theories amplify the role of dynamic efficiency, the competition outcomes, the survival conditions (Dopfer, 2005). There is an innovation potential, a technological frontier, and a spill-over effect which allows a firm to know its place in the market competition and the necessary market and firm strategy to adapt accordingly (Silverberg and Verspagen, 1994). This paper assumes that Czech companies operate in the rather small national market in comparison, for example to German market, and their strategies are interdependent.

The effectiveness of state support, i.e. public funding of innovation activities as well as the innovation behavior of firms in the Czech manufacturing industry and the role of the firm's size and market concentration is analyzed using an innovation process model (Crépon et al., 1998). Four types of public support are analyzed. The efficiency of funding organized by a) local governments, b) national government, c) EU, and d) EU Framework programmes. This paper is aimed at the efficiency at the level of innovation input (R&D) intensity and the innovation output (commercialization). The analyzed period (2010-2014) is characterized by the fading of the economic crisis of 2008. According to Balcar and Gottvald (2016) this period was accompanied by the changes related to human capital (returns to education and work experience). This period also belongs to the funding period of Operational Programme Enterprise and Innovation (OPEI) 2007 – 2013 and economic policy established in National Innovation Strategy of the Czech Republic (Government Resolution No. 714 of September 27, 2011).

## 7 Literature review

The innovation process is well known and described in the literature. Schmookler (1966) described the initial phase (1<sup>st</sup>) as a generation of ideas through (2<sup>nd</sup>) experiments and problem solving methods. The final phase is characterized by (3<sup>rd</sup>) the implementation of ideas and (4<sup>th</sup>) its market and society diffusion. In this paper innovation input is recognized as (1<sup>st</sup>) basic research activities, followed by (2<sup>nd</sup>) applied and experimental research. It is modelled by R&D expenditures. In the output phase we observe (3<sup>rd</sup>) piloting and prototyping, followed by (4<sup>th</sup>) commercialization, and changes to the market and in the society (Greenhalgh and Rogers, 2009). This is modelled by sales from innovated goods at the firm level (Mairesse and Mohnen, 2010).

There is theoretical background for public support and innovation economic policy. Arrow's (1962) paper deals with basic research and argues in favor of state intervention in basic (generic) research. The only reasonable and justifiable policy (following Arrow's argument) would be to give entrepreneurs, regardless the nationality, the opportunity to participate in basic research.

Public support and incentives to engage in R&D are not usually estimated because an R&D subsidy means future R&D expenditures and a positive coefficient is assumed (Masso and Vahter, 2008). However, we are more interested in the effectiveness of those public subsidies in terms of higher innovative output (number of patents and amount of sales from innovated goods and services). It is very probable that a firm engaging in innovation activity supported by public funding would spend more on *R&D per employee* than an unsupported company. There are some doubts about it. Local government funding seemed to have zero effect in France, Germany, Spain and the UK (Griffith et al. 2006), also in manufacturing and service sector in the Netherlands (Polder et al., 2009). There is evidence of negative effect of Local government funding in the sample of 16 European countries (Hashi and Stojcic, 2013).

There are ambiguous results at the level of national government funding as well. Negative effect of funding is observed in France and Spain (Griffith et al., 2006), zero effect is observed in the UK (Griffith et al. 2006), Germany, Sweden (Janz et al., 2004) and Italy (Fassio, 2015). But majority of papers reports positive effect of national government funding on R&D expenditures per employee in various European countries (Polder et al., 2009; Hashi and Stojcic, 2013; Masso and Vahter, 2008; Roud, 2007; Ebersberger and Löf 2005; Raffo et al., 2008; Hall et al., 2009).

Again, there are ambiguous results at the level of European Union funding (standard and Framework Programmes). There is no effect of EU funding on R&D expenditures in Germany, Italy (Raffo et al., 2008), Spain, and the UK (Griffith et al., 2006). Positive effect is observed

in the Dutch manufacturing and service sector (Polder et al., 2009), Switzerland (Raffo et al., 2008) and overall in the sample of 16 European countries (Hashi and Stojcic, 2013).

The idea of public support of innovation activities is not only to increase innovation intensity (R&D expenditures). The main goal is to increase productivity through a higher innovation output (patents, sales from innovated goods and services) as well. In this stage of innovation process, we can observe that public support seems again complicated and results in the literature suggest rather negative (Ebersberger and Lööf, 2005; Janz et al., 2004) or insignificant (Masso and Vahter, 2008; Mairesse and Mohnen, 2010) effect of public support to innovation output.

Economic research is also aimed at other topics. Multinationals are, on average, more productive than domestic entrepreneurs (Ebersberger & Lööf, 2005; Bloom et al., 2007) and they employ different strategies to capture profits such as looking for state support and monopoly privileges (Cantwell and Piscitello, 2002).

We can also face a problem with over-reported R&D because of tax incentives and other R&D benefit programs. Then there is a possible crowding out effect of public subsidies. Will firms, and which, do their R&D projects anyway? Lokshin and Mohnen (2010) looked at this issue and assessed level-based R&D incentives in the Netherlands which are aimed at tax incentives from all qualified R&D expenditures and find higher crowding out probability for larger companies. Public support of R&D projects didn't contribute to additional private investments in Italy and a complete crowding-out effect was observed there (Bronzini and Iachini, 2014). Aguiar and Gagnepain (2017) suggest that the impact of European Union Framework programmes on firms' labor productivity is higher in comparison to unsupported companies in the analyzed years 1998-2002.

Some authors stress the importance of intellectual property rights. They see them as an incentive for companies to innovate and efficient public policy. A debate about the importance of specific research (new- to- the- market innovations) is a popular matter in the field of intellectual property rights (Scotchmer, 2004).

## **8 Methods and data**

In this paper a process definition of innovation is used. Innovation is an act of innovating, it has on average some distinguishable stages (Greenhalgh and Rogers, 2009), and it is overall a very complex process. The typology of the final “product” of innovating is well described in the Oslo manual (OECD, 2005). For company size we will follow the methodology of the Commission of the European Communities (2003). This definition along with countless theories of economic growth is also well supported by and reflected in the CDM model used in the analytic section.

Two Community Innovation Survey (CIS) waves (2012 and 2014) were used for the analysis. Data from the Czech Statistical Office (2017) questionnaires were used and connected. The firm level innovation data and financial statements were not joined because CZSO no longer provides the opportunity to join data from two questionnaires. That is why only three stages of innovation process are estimated in this paper.



**Tab. 5** Summary statistics for CIS waves in 2012 and 2014 in the Czech industry

Variable	Observations	Mean	Std. dev.	Min	Max
Number of employees	10481	185.65	750.07	10	33440
Sales (10 <sup>3</sup> CZK)	10481	1.04×10 <sup>5</sup>	7.73×10 <sup>6</sup>	7	3.62×10 <sup>8</sup>
R&D total expenditures (10 <sup>3</sup> CZK)	10377	15984.90	224675.40	0	1.51×10 <sup>7</sup>
Multinational company	10481	0.30	0.46	0	1
Manufacturing sector	10481	0.60	0.49	0	1
Service sector	10481	0.30	0.46	0	1
Trade sector	10481	0.07	0.25	0	1
Being part of a group	10481	0.37	0.48	0	1
New-to-the-market innovator	10481	0.18	0.38	0	1
Funding – local GOV	10481	0.02	0.15	0	1
Funding – central GOV	10481	0.11	0.31	0	1
Funding – EU	10481	0.10	0.30	0	1
Funding – EU Framework Programmes	10481	0.02	0.14	0	1

Source: Own processing based on the data of Czech Statistical Office, 2017.

The data sample features 18 % of innovator firms (Tab. 1), which introduced innovations new to the market. The smallest firm has 10 employees; there are also large firms with more 30,000 employees. The Czech manufacturing industry and Czech financial service sector is characterized by the foreign presence and in the data sample there are about 30 % of multinational firms and 37 % of companies are part of a group of companies. The share of manufacturing companies is 60 %, there are 30 service companies and the rest is trade and other industries. The information about funding relates to the sample of innovators and non-innovators. The most common type of funding was of national government one European Union funds. The EU Framework programmes were aimed at the most ambitious innovation projects and smaller number of companies was supported.

The estimation is based on the model introduced by Crépon et al. (1998). The estimation is cross-sectional with the robust standard error to account for heteroscedasticity in the data sample. The system of 3 equations is as follows:

$$r_i^* = \begin{cases} 1 & \text{if } r_i = (X_{1i}\beta_1 + \rho_i + \varepsilon_{i1}) > 0 \\ 0 & \text{otherwise } (r_i \leq 0) \end{cases} \quad (1)$$

$$k_i^* = \ln(k_i) | (r_i > 0) = X_{2i}\beta_2 + \rho_i + \varepsilon_{i2} \text{ with } Df(k_i) = (0, \infty) \quad (2)$$

$$t_i^* = \ln(t_i) | (k_i > 0) = X_{3i}\beta_3 + \rho_i + \alpha k_i^* + \varepsilon_{i3} \text{ with } Df(t_i) = (0, \infty) \quad (3)$$

where  $X_{ni}\beta_n$ 's (with  $n = 1, 2$ , and  $3$ ) are vectors of explanatory variables (public funding, size etc.) and  $\varepsilon_{in}$ 's (with  $n = 1, 2$ , and  $3$ ) are random-error terms. The error terms are assumed to be independent of the exogenous variables. In the first (1) and the second equation (2), the error term is estimated as a system. The vector of parameters to be estimated is denoted  $\beta_n$  (with  $n = 1, 2$ , and  $3$ ) and the single parameter to be estimated is  $\alpha$  in the third (3) equation.

The first equation ( $r_i^*$ ) accounts for selection into R&D activities. We are interested in the probability of a firm  $i$  to engage in R&D. This is specified as a probit model, i.e.  $P(r_i^* > 0) = \Phi(X_{1i}\beta_1)$ , where  $r_i^* = 1$  if the firm  $i$  is a new-to-the-market innovator and reports R&D

expenditures. The second linear equation ( $k_i^*$ ) describes innovation input, which is related to the log of R&D expenditures to the number of employees of a firm  $i$ , conditional of being a new-to-the-market innovator and doing R&D.

In both equations there are a number of potential determinants ( $X_{ni}\beta_n$ 's), for example, a firm's size, or size categories, ownership, being-part-of-a-group of companies, cooperation, subsidies etc. Some of them are used uniquely to identify each equation in a simultaneous estimation. Both equations ( $r_i^*$  and  $k_i^*$ ) are estimated using the Heckman procedure, which controls for selection bias through a non-selection hazard variable (Mill's ratio) in the second equation (Heckman, 1976).

The third linear equation ( $t_i^*$ ) models the log of innovation sales of goods and services to the number of employees. We are interested in the input output elasticity  $\alpha$  and other explanatory variables ( $X_{ni}\beta_n$ 's) describing behaviour and market determinants of innovators. In the result section only second and third equations are reported. The decision equation (1) is based on 10144 observations of which 8556 were censored (non-innovators) and 1588 uncensored (innovators). The Mill's ration was used as control variable in the third (3) and fourth equation (4). The estimation is aimed at the whole economy, then manufacturing industry and service sector.

## 9 Results and discussion

In the first model of the Czech economy (Tab. 2), local funding had zero effect on R&D intensity and had a negative effect on innovation output. Central government funding was beneficial to R&D intensity; however had a negative effect on innovation output. The best policy tool was EU funding. This type of funding contributed to higher R&D intensity. It had no additional effect on innovation output, but it contributed through the innovation input output elasticity (16.5 %). In other words, EU support contributed to the higher R&D expenditures per employee which contributed to the higher sales from innovated goods and services. This is not the case of EU Framework programmes funding which are statistically not significant in both innovation stages. Multinationals are companies owned by a foreign entity (the company share is more than 50 %). Their R&D intensity is higher as well as innovation output. Their ability to capture profits from innovated goods is superior to local owned companies in the Czech industry in the period 20010-2014.

**Tab. 6** All industries, new-to-the-market innovators, Czech Republic 2012-2014

	(1)	(2)
Czech industry	Log of R&D expenditures per employee	Log of sales of innovated goods per employee
Funding – local GOV	0.016	-0.264*
	(0.14)	(0.15)
Funding – central GOV	0.666***	-0.198**
	(0.10)	(0.09)

Funding – EU	0.535***	-0.100
	(0.11)	(0.10)
Funding – EU	0.293	0.038
Framework programmes	(0.18)	(0.15)
Log of R&D expenditures per employee		0.165***
		(0.02)
Log of employees	-0.476***	-0.309***
	(0.12)	(0.11)
Cooperation	0.575***	-0.221***
	(0.09)	(0.08)
Multinational company	0.608***	0.734***
	(0.11)	(0.09)
Constant	35.953	8.895***
	(87.57)	(1.23)
Number of observations	1588	1586
Adjusted R <sup>2</sup>	13.8 %	9.6 %
* p < 0.10, ** p < 0.05, *** p < 0.01 Robust standard errors in parentheses		

Source: Own processing based on the data of Czech Statistical Office, 2017.

The next analysis aims at manufacturing and service industry to look for differences and specifics of these two industries. Local funding was not a successful economic policy tool. Innovation intensity and output was not affected in both industries (Tab. 3). Central government funding was a successful tool only in manufacturing. It had a positive effect on innovation intensity and no additional effect on innovation output. But the positive effect was observed through the positive (14.2 %) innovation input output elasticity. This tool was not successful in the service sector. It has similar positive effect as in manufacturing on R&D intensity but the additional effect on innovation output was negative. This relationship suggests the presence of the crowding-out effect of public support. EU funding was successful tool only in manufacturing sector and again there was no direct and additional positive effect on innovation output. The EU Framework programmes were not a successful economic policy tools. In manufacturing they had no effect on innovation input intensity (R&D expenditures per employee) and innovation output (sales from innovated goods and services).

**Tab. 7** New-to-the-market innovators in manufacturing and services, Czech Republic 2010-2014

Czech Manufacturing & Services	(3)	(4)	(5)	(6)
	Manufacturing	Manufacturing	Services	Services
	Log of R&D expenditures per employee	Log of sales of innovated goods per employee	Log of R&D expenditures per employee	Log of sales of innovated goods per employee
Funding	0.164	-0.245	-0.389	-0.280
– local GOV	(0.15)	(0.17)	(0.30)	(0.31)
Funding	0.584***	-0.118	0.553***	-0.374**
– central GOV	(0.11)	(0.10)	(0.19)	(0.17)
Funding	0.556***	-0.040	0.314	-0.215
– EU	(0.12)	(0.11)	(0.23)	(0.22)
Funding – EU	0.183	0.220	0.253	-0.490*
Framework Prog.	(0.19)	(0.17)	(0.41)	(0.29)
Log of R&D exp. per employee		0.142***		0.177***
		(0.03)		(0.05)
Log of employees	-0.299**	-0.174	-0.447**	-0.380**
	(0.15)	(0.13)	(0.20)	(0.19)
Cooperation	0.621***	-0.240**	0.561***	-0.107
	(0.11)	(0.09)	(0.18)	(0.18)
Multinational company	0.461***	0.665***	0.379	0.558***
	(0.13)	(0.10)	(0.23)	(0.19)
Constant	-27.956	7.506***	6.735***	9.422***
	(104.05)	(1.49)	(2.35)	(2.23)
Observations	1115	1115	420	419
Adjusted R2	15.6 %	11.4 %	10.9 %	9.3 %
* p < 0.10, ** p < 0.05, *** p < 0.01 Robust standard errors in parentheses				

Source: Own processing based on the data of Czech Statistical Office, 2017.

## 10 Conclusion

This paper contributed with the evaluation of economic policy aimed at innovation activities of firms. The analyzed sample consists of 10144 observations which 1588 of them are about innovators. The data comes from 2012 and 2014 Community innovation Survey in the Czech Republic. The estimation uses three stages from the innovation process model and accounts for selection bias. Only new-to-the-market innovations are considered in the analysis.

There is strong evidence that public (EU or governmental) support is not a very efficient public policy tool and ambiguous results were observed in the detailed view. The local government funding was statistically insignificant in case of the innovation input intensity measured by the log of R&D expenditures per employee and also in the case of innovation output intensity measured by sales from innovated goods and services. In case of central government funding a crowding-effect of public support is observed, but it was not present in case of manufacturing industry. EU funding was the most successful economic policy tool in the analysed period although no additional effect was observed on the innovation output. Framework programmes were similarly to local government funding unsuccessful economic policy tool and in case of service industry they contributed to a negative innovation output.

## Acknowledgement

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## TAX WEDGES AND LABOUR COSTS

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### Abstract

The tax wedge shall express the share of taxes and social security contributions in total labour costs in a given state. The Czech tax wedge, published by the OECD, expresses this relationship correctly only because we do not have mandatory private pension savings, significant occupational pension schemes or similar products. The annual OECD publication “Taxing Wages” ignores non-tax compulsory payment wedges, even though the OECD calculates and reports them on its website. From the widely published data in Taxing Wages, it is not possible to generate recommendations to reduce the tax burden of labour or merely the rate of employer social security contributions in Czechia. Various welfare regimes use different forms of social security funding with an automatic impact on the structure of labour costs. In Czechia, the rationalization of personal income tax and social security contributions can be relatively straightforward, resulting, in particular, in integrating the personal income tax and the employee social security contributions. This paper constitutes an international comparison and analysis of the labour cost structure, aiming at correcting or confirming the conclusions and recommendations of the OECD and the EC for Czechia.

### Keywords

Taxing wages, Tax Wedge, Compulsory payment wedge, Income tax, Social security contributions, Welfare regimes.

JEL Classification codes: H24, H55, I13, J32.

## 1 Introduction

*Taxing Wages* is an OECD’s annual flagship publication on the various taxes levied on wages and salaries. It provides unique cross-country comparative data on income tax paid by employees as well as the associated social security contributions made by employees and employers across the OECD, both of which are key factors when individuals consider their employment options and businesses make hiring decisions. EU recommendations on tax policy, among others, which are then reflected in the general proposals of selected Czech political parties, ensue from this publication. Similar evaluations can be found e.g. in the competitiveness reports of the World Economic Forum. Important relative Czech weaknesses are tax bureaucracy, motivation to work and tax rates. (Schwab, 2016)

In this paper, we will focus on a highly topical issue of tax wedges and labour taxation, which is a cornerstone of the OECD and EU assessment and recommendations for Czechia. We will point to weaknesses in the measurement of tax wedges by the OECD; we will take advantage mainly of the data published by the OECD itself; we will also analyse the role of social security contributions in the main branches of social security in an effort to rationalize the funding of these sectors, which can be significantly reflected in the Czech labour taxation. This is a very topical issue that affects the competitiveness of the Czech economy and, consequently, also the wages and standard of living overall. Our starting hypothesis, based on a previous study of social theory and policy, is the need, possibility and necessity to substantially rationalize the wage taxation and social security contributions that would not only lead to simplification of these systems but also to a substantial increase in motivation to work with a subsequent increase of job supply. One method of analysis is to compare the Czech system of wage taxation with the model systems abroad.



## 2 Literature review

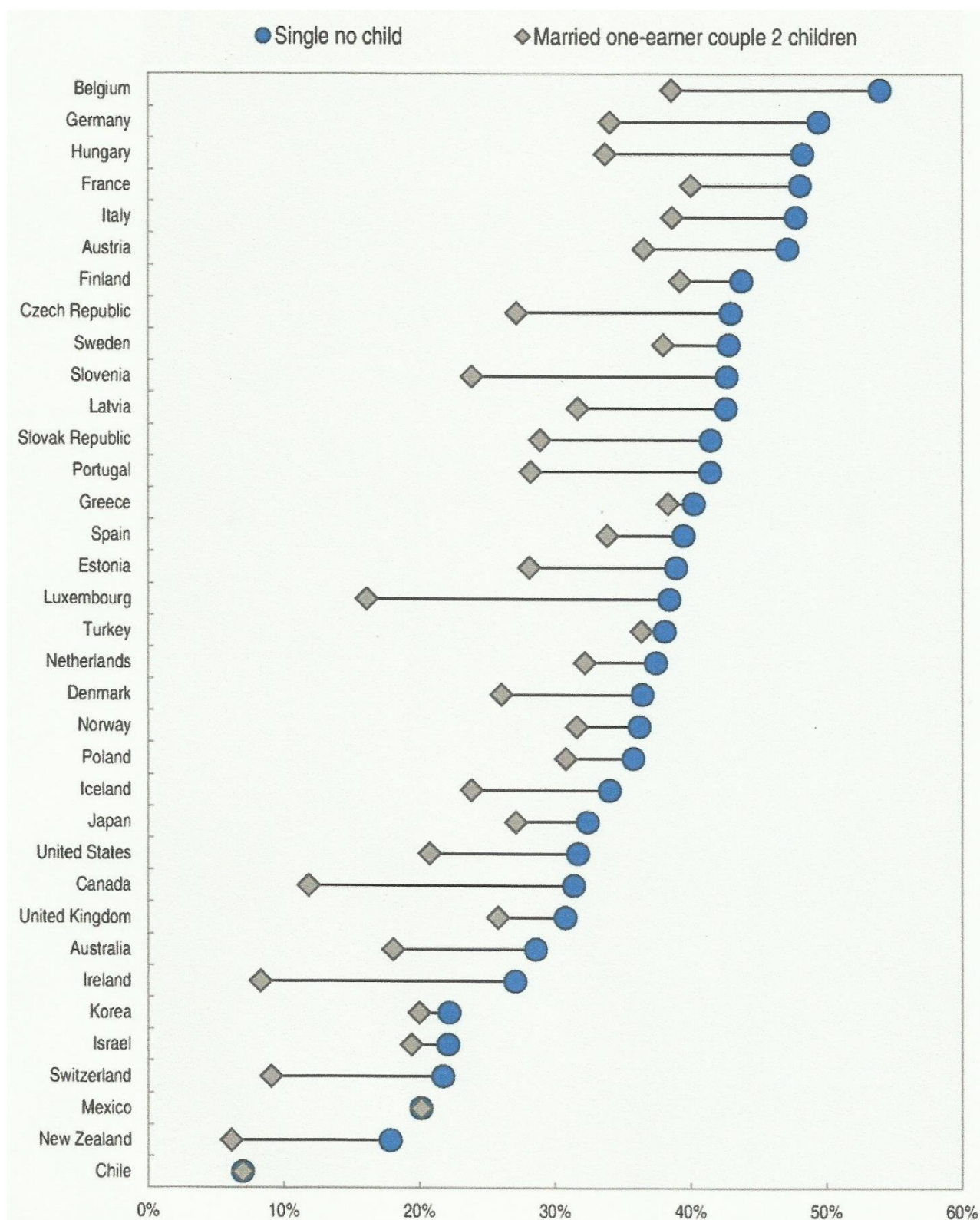
Tax wedge is generally defined by the OECD as the ratio between the amount of taxes paid by an average single worker (a single person at 100% of average earnings) without children and the corresponding total labour costs for the employers. The average tax wedge measures the extent to which tax on labour income discourages employment. This indicator is measured in percentage of labour cost. (OECD, 2017a). OECD publishes a range of tax wedges not only for childless singles at 100% of average wages (AW), but also for other family types (married with and without children, single earner and two-earner families, singles with children) and wage levels (67%, 100%, 167%).

The above-mentioned tax wedge definition can be considered an initial concept for reflection on the overall form and structure of labour taxation; after complementing the respective figure by the below-average (67% AW) and above-average (167% AW), we should get a picture of progressive pattern of this taxation. As soon as we take into account also children or the marriage itself, respective tax wedges also reflect the family policy in the field of wage tax (tax deductions, credits), and then, it is at least purposeful to also consider child allowances in tax wedges.

Tax wedges are calculated from the basic components of wage (income) taxation and family benefits. Therefore, these are model calculations, not statistical data on the overall level of wage or income taxation, which also depends on other factors taken into account in calculating tax liability of individual persons or couples. Figure 1 shows the most recent data for OECD member countries for 2016 in the two most commonly used variants: tax wedges for individuals with 100% AW and for a family with 2 children and one breadwinner earning 100% AW. According to this OECD data, the “basic” tax wedge for a childless single with average earnings in our country (43%) is significantly higher than the OECD countries’ average (36%). The OECD also publishes averages for 22 OECD member states, which are EU members. The same tax wedge for the OECD-EU 22 was 41.7% in 2016 (OECD, 2017b). From these data, it ensues that the Czech tax wedge is significantly higher than the OECD or EU average. At the same time, these data show a relatively big significance of total state support for families with children in the form of tax credit and child allowance.

The European Commission has been repeatedly dissatisfied with the Czech tax wedge; the Czech government does not follow its recommendations. The Commission commented on this issue in the most detailed manner in 2015: „Overall, the Czech Republic has made limited progress on addressing the 2014 country-specific recommendations. This includes recommendations to: reduce taxation on labour; reform the pension and healthcare systems. Tax revenue in the Czech Republic still relies heavily on taxation of labour income. Social security contributions are the highest in the EU and represent nearly half of all tax revenues while the rate of personal income tax is significantly lower than the EU average. The implicit tax rate on labour was in 2012 the second highest in the EU10 region and 1 pp higher than in Germany... Low-income workers, particularly those without children, face a relatively high labour tax burden. The tax wedge on labour for a single worker earning 50% of the average wage amounts to 36.2% and is above the EU average, which itself is considered high and an impediment to growth and employment. At 67% of the average wage, the tax wedge on labour amounts to 39.3%, which is again higher than the EU average and higher than in some of regional peers, such as Poland or Slovakia ... Low-income workers and second earners also face high inactivity traps but this is mainly due to the withdrawal of benefits, as the contribution of labour taxation is low. The concept of inactivity traps does not, however, take into account employers' social security contributions, which are particularly high in the Czech Republic. High-income groups, on the other hand, face a low tax burden compared to EU standards.” (EC, 2015) The 2014 Country-specific recommendation was: “Improve tax compliance with a

particular focus on VAT and reduce the costs of collecting and paying taxes by simplifying the tax system and harmonising the tax bases for personal income tax and social and health contributions. Reduce the high level of taxation on labour, particularly for low-income earners. Shift taxation to areas less detrimental to growth, such as recurrent taxes on housing and environmental taxes. Further reduce discrepancies in the tax treatment of employees and the self-employed.” (EC, 2015)



**Fig. 14** Income tax plus employee and employer contributions less cash benefits (2016), as a % of labour costs, by family type: single no child corresponds to a wage level of 100% of AW, married no earner couple 2 children corresponds to a combined wage level of 100%-0% of AW (Source: OECD, 2016)

Šatava (2016) analysed the impact of Czech wage taxation on the employment of females-mothers.

He concludes that the overall labour taxation (personal income tax and social security contributions) places a heavy burden even on the relatively low earnings of second earners in households, partners with lower earnings. Their motivation to work is generally very sensitive to the level of taxation. “Mothers who are the second earner in their household are subject to a participation tax rate (PTR) up to 30% higher than their partners, and yet a higher PTR results in lower motivation to work. Women with children and low earning potential are subjected to the highest PTRs in comparison with their partners. The current system of taxing work thus contributes, together with the conditions for paid parental leave and low availability of nurseries and pre-schools, to Czech mothers with young children having the highest employment drop-out rate in the whole of the EU. The share of Czech mothers with children under six years of age who are in work is thus the second lowest in the EU and almost half the equivalent share in the Netherlands.” (Šatava, 2016) To improve motivation to work among women with young children he proposes to reduce the social security contribution rate by 5 percentage points for parents who are the primary carers of a child aged up to 11.

The Czech authorities have been planning “to introduce some steps to simplify the tax system. The Ministry of Finance is in the process of drafting a new income tax law, to be presented in 2017. According to preliminary information, envisaged changes will include an integrated tax and social security administration, greater digitalisation of the tax administration and a shift towards self-assessment of tax obligations. The aim is to simplify the tax code while tackling other shortcomings in parallel.” (EC, 2017a) However, from the statement of the Ministry of Finance or some politicians (including the new Minister of Finance Pilný) it does not follow that it should also be about implementing the European Commission's recommendations on average and marginal tax wedges. Rather, we hear that the relatively high level of taxation on labour in Czechia is marked by very high employer social contributions, as the EC also points out – in addition it emphasizes that “the tax wedge for average income earners also suggests that employer contributions are as high compared to EU average.” (EC, 2016)

In the basic variant, the tax wedge in Germany is (even) higher than in Czechia. German social security contributions are mostly paid as follows: half by an employee and half by an employer; the premium rate paid by employer (thus) does not draw attention in tax wedge analyses. EU recommendations focus on reducing disincentives to work for second earners and the high tax wedge for low wage earners. The EC report (2017b) notes that, for the time being, there is no progress in reducing disincentives to work for second earners and there is a limited progress in reducing the high tax wedge for low wage earners. To ensure that the subsistence level remains tax-free and to offset the impact of fiscal drag, the minimum personal income tax allowance and child allowances have been increased and income tax brackets have been adjusted. These measures tend to benefit low and middle-income groups because they are affected by fiscal drag relatively stronger than high income groups. However, their impact on the tax wedge will be limited. In addition, joint taxation of income for married couples, in addition to other non-tax related factors remain disincentives to work for second earners. There are several reform scenarios to relieve middle and low-income earners from taxation, namely a flattening of the personal income tax tariff, a removal of the solidarity surcharge, and a combination of both (EC, 2017b).

The literature agrees on the OECD and EU interpretations that Czech tax wedges are above average. We will raise issues and make comments on that in the next chapter of this paper.

### 3 Compulsory Payment Wedges

We do not doubt the correctness of calculating tax wedges in our country in relation to foreign countries. However, the data presented in some countries are, by a first glance of social systems analyst, surprising, if not striking. According to OECD data, Chile has a single employee tax wedge of only 7% and, in searching for explanation, we learn that this figure comprises contributions to public health insurance at a rate of 7% of the gross wage. Chilean income tax has a high upper rate of income tax (40% in 2017); however, a zero tax rate applies to most taxpayers; it also applies to employees with average earnings. There is no problem here; after all, Sweden has a similar nationwide personal income tax. The main problem in the comparability of tax wedge of Chile and, for example, Czechia is that compulsory contributions for private pension (and other) security are not included in the tax wedge calculation in Chile. The mentioned Chilean tax wedges are reflected in the average tax wedges of the OECD, even without regard to Chile's importance in the world - the average for OECD countries is not weighted.

The key problem of tax wedge comparison is that OECD does not automatically include all substantial labour costs in all countries in labour costs. This does not apply to Czechia, but “only” to a number of other countries, such as the Netherlands, Chile, USA, Great Britain and Slovakia. The tax wedge calculated, for example, for the Netherlands does not include quasi-mandatory occupational pension schemes, which provide retirement pension to about 95% of employees at the level of about 70% of the final salary if the person concerned was an employee his/her whole life. The total average rate for occupational pension contributions is 19% in 2017, of which the employee pays 6% of the wage. The calculated and regularly published tax wedges for the Netherlands, Switzerland and the USA do not include compulsory contributions to private health insurance. Experts from many countries have highlighted this fundamental mistake in meetings with OECD staff in the past decade. Working Party of the OECD Committee on Fiscal Affairs decided in 2009 to start calculating “compulsory payment wedges” (CPWs) which combine taxes, non-tax compulsory payments (NTCPs) and benefits into overall “compulsory payment indicators” in addition to the well-established “tax wedges”. These new indicators, which were introduced in a Special Feature in the 2010 edition of *Taxing Wages*, are now published on an annual basis on the OECD online tax database (OECD, 2017) only – they are not included in the well-known regularly published *Taxing Wages*. The OECD explanation is formally simple: NTCPs are no taxes. But the „genuine“ social insurance premiums are a similar case: they are also no taxes! It is a problem of the OECD that they define these premiums as taxes.

The OECD defines taxes as compulsory unrequited payments to general government (including social security funds/schemes). Taxes are compulsory in the sense that governments impose an obligation on taxpayers to pay particular amounts. Taxes are unrequited in the sense that benefits provided by governments to taxpayers are not normally in proportion to the payments made by taxpayers. This means that there must be a redistributive element – implying redistribution across households – in order for a payment to be considered a tax (OECD, 2016).

Non-tax compulsory payments, as defined by the OECD (2017c), include:

- payments to general government earmarked for bodies outside general government where the government is simply acting in an agency capacity,
- contributions to schemes that are not institutions of general government even in cases where the schemes have actually been imposed by government.

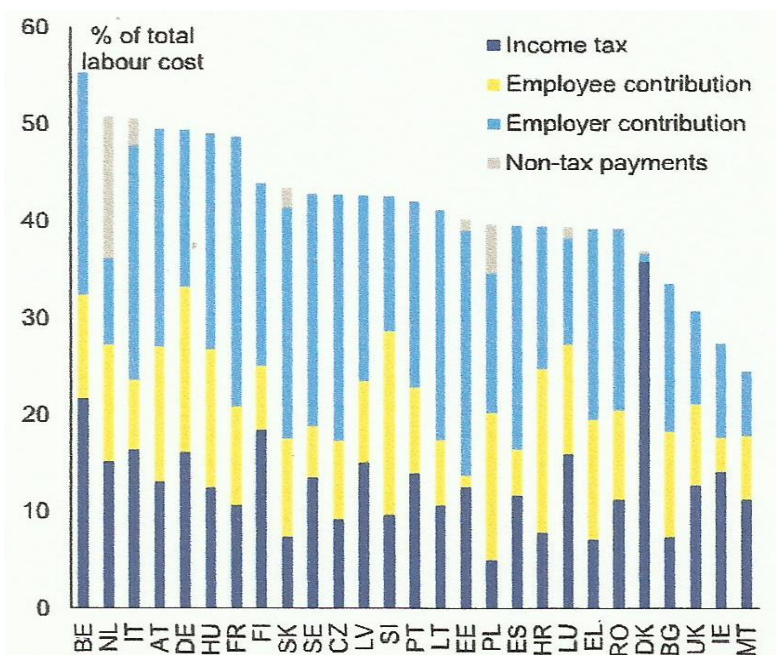
Not including contributions to mandatory private pension savings or health insurance schemes might be in line a neo-liberal welfare regime, but it results in a dramatic distortion when we compare e.g. the Czech tax mix with the Chilean one. Conversely, the inclusion of

social security contributions into the tax mix for the comparative purposes is very practical (Kubátová and Vítek, 1997), albeit it does not correspond to the social-economic definition of social insurance in a Christian-democratic (conservative) welfare regime, where social insurance is mainly understood as an instrument to apply the principle of equivalence between the benefits and premiums (in professional literature, the term „Bismarck model“ is often used, with /fully/ earnings-related benefits). As opposed to this scheme, there is a Beveridge model where the benefits do not depend on earnings or the premiums paid. The contradiction of these two models is very important in Czechia, as in principle, the two main public expenditure programmes do not have a character of social insurance. Often, we quite legitimately speak of the “health tax” and “pension tax” in Czechia.

Social security contributions in Sweden are estimated that approx. 60% of these contributions have a character of tax and only 40% can be considered standard social insurance premiums (Skatteverket, 2016). The Swedish NDC social pension insurance is a basically required as for the crediting of the capped insurance contributions to personal accounts of the employees. But the contributions paid by employers are a proportional payroll tax – without the earnings cap. We may suppose that this concept of social security contributions is typical for the social-democratic welfare regime. It is a simpler solution than a required (but segmented) social insurance schemes of the Bismarck/Christian-democratic type, combined with a more progressive personal income tax. The social-democratic model of labour taxation (in its Swedish version) thus consists in approx. 55% of social security contributions in the form of proportional income tax and approx. 45% of flat-rate municipal income taxes and dual-rate state income tax, the progressivity of which is given by non-taxable minimums.

Extending tax wedges to compulsory payment wedges (CPWs) increases the calculated wedges with respect to particular countries. Data for Czechia does not change with this extension because we do not have NTCPs (we do not consider an episode with introducing and cancelling the 2<sup>nd</sup> pension pillar). If we limit ourselves to a basic wedge – childless single employee with earnings of 100% AW, the Czech wedge of 43% of total labour costs in 2016 can be compared with (non-weighted) CPW average for OECD countries at 38.4 % and 44.2% for 22 EU countries. Although the Czech tax wedge is above average in relation to OECD countries, in relation to the 22 EU countries (which are members of the OECD), CPW is slightly below average. Figure 2 reproduces CPWs for all EU Member States (for 2015, published by the EC in 2017) but input data are not available – which is somewhat strange as the source mentioned in the footnote states that the OECD does not provide data on non-tax payments for non-members. From Figure 2 it can be derived that the average CPW for all EU countries is lower than for the 22 EU countries mentioned, and probably also for Czechia. Malta decreases the average for all EU countries the most, which highlights the problematic nature of using the non-weighted arithmetic average in this segment. In any case, we think that EC recommendation for Czechia – to reduce the scope of taxation of wages and social security contributions due to its above-average nature within the EU – is more than problematic.





**Fig. 2** Compulsory payment wedges of single person earning the average wage, 2015 (Source: EC, 2017c)

While the compulsory payment wedges, as defined by the OECD, significantly correct tax wedges and thus change the view of the Czech tax wedge at least in relation to EU countries average, the quality of this indicator may not be sufficient to consider the need to reduce the tax burden on wages. CPWs, for example in US, do not include a substantial part of mandatory healthcare and non-mandatory occupational and personal pension contributions. In 2016, the average annual premiums for employer-sponsored health insurance were \$6,435 for single coverage (of which employee contribution was \$1,126 and employer contribution was \$5,306) and \$18,142 for family coverage, of which the employee contribution was \$5,277 and employer contribution \$12,865. (Claxton et al., 2016). In 2016, 55% of employees had occupational health insurance schemes and for the purposes of labour costs/wedges comparison we can ensue from average costs in this healthcare segment. American employees who are not covered by these occupational schemes are required to conclude an individual health insurance contract. The premium rates in this private insurance are obviously higher than in occupational schemes. Employer-sponsored health insurance in the United States is, in fact, as a model “only” a substitute for compulsory private health insurance and it is definitely a mistake that respective labour costs are not included in the tax wedge or the NTC.

Most US employees also have an occupational retirement scheme and the system of matching contributions is often used here, where the employer contribution is conditioned upon the employee’s contribution payment at a specified minimum rate. Today, these schemes are characterized as “soft compulsion”; it is a refined variant of using behavioural economics in favour of neo-liberalism. If such a system involves more than half of employees, then it should be taken into account when calculating tax/labour wedges. In US, private industry 60% of the workforce has access to retirement plans. 51% of the total workforce is integrated into any kind of pension plan. Coverage in the public sector is much higher. Total contributions to autonomous pension funds represent 5% of GDP.

New Zealand’s work-based savings scheme KiwiSaver was introduced in 2007 as the world’s first national retirement savings scheme utilising auto-enrolment. The self-employed, beneficiaries, children and non-workers can join the KiwiSaver. Employees, automatically enrolled into KiwiSaver when they start a new job, have the 2<sup>nd</sup> to 8<sup>th</sup> week of employment to

‘opt-out’ and must advise their employer or the tax authority of their decision. Having opted-out, they cannot be auto-enrolled again until they change jobs but can re-join at any time. Scheme enrolment is not automatic for workers under 18, over 64. Deductions from net wages are at a rate of 3% of gross pay, unless the individual opts for the higher rate of 4% or 8%. Employers are compelled to contribute 3% of the pay of KiwiSaver members, but only the net amount after the ESCT tax is contributed to the member’s scheme. The only tax-funded inducement is a matching subsidy paid by the government for the member’s contributions (50 cents for each dollar of contributions to a maximum of \$1,043 contributions a year in 2016). KiwiSaver has been a big success as for the coverage of employees. There were 2.65 million members by the end of June 2016 which excluding children represents approximately 78 percent of the working-age population. The ‘soft compulsion’ automatic enrolment feature continues to be an influence in the design of opt-out schemes in other countries such as the UK and Ireland. KiwiSaver is well accepted as a vital part of New Zealand’s retirement system. (St John, 2016)

“Subsidised occupational saving schemes of all kinds (including for retirement) suffer a fundamental problem when they are voluntary (like KiwiSaver). Those who join receive a higher total remuneration than those who do not. The employer may find it difficult to justify (for two otherwise equivalent employees) a higher total remuneration for the member over the non-member. New Zealand employment law allows this to be taken into account when setting pay. If the employer has a ‘total remuneration’ policy, those who join KiwiSaver can see an adjustment to direct, taxable pay that reflects the requirement that the employer must contribute to KiwiSaver.” (St John, 2016)

KiwiSaver should be included in labour costs for the purposes of labour/tax wedges calculations and analyses. However, the OECD disagrees: “Employees join the scheme on a voluntary basis and so the payments are not considered to be NTCPs.” (OECD, 2017c) Although KiwiSaver also has a de facto impact on the structure of labour costs.

The latest phase of implementing new occupational pension schemes is currently underway in the UK, which is referred to as workplace pensions, is currently under way. Each employer must offer a qualified retirement scheme at the latest by 2018 (management of pension savings by a public provider – NEST – is also offered), with a total minimum contribution of 8% of the wage (of which 3% by employer, 4% by employee, 1% state contribution) and using automatic enrolment system. The employee can leave the system at any time, but he/she loses entitlement to the employer’s contribution. The system has been introduced gradually from 2012 and leads to an increase of employees’ coverage. As a result, membership of occupational schemes has increased from its historically lowest level – 46% in 2012 – to 59% in 2014 (Naczyk, 2016). Today two thirds of employees are enrolled. Here it holds true that contributions to UK workplace pensions have to be taken into account when comparing labour costs in our country and abroad, too.

When comparing tax wedges between OECD and EU individual countries, we ensue from the basic scheme of calculating net wage of an employee from his/her gross wage, without taking into account, for example, various deductibles. It is certainly practical; in the previous sentence, I only emphasize that average values are not used - as in the calculation of average effective taxation. Similar approach should be taken to NTCPs calculation. NTCPs for, e.g. the USA, New Zealand, and the UK should be significantly higher, which would also reflect the average CPWs. The OECD should publish this extended compulsory payment wedges. And publish and analyse these CPWs alongside their existing tax wedges, both of which are equally important. It is almost embarrassing that OECD only hide-publishes CPW on its website; after all, I have come across these data only by accident. As a result, the OECD and the EU



recommend that we reduce the tax burden on wages simply because we do not have occupational pensions and other benefits.

#### **4 Social Security Financing Regimes**

Another question is the issue of high employer contributions to social security and “high level of taxation on labour for low-income earners”. We respect the EU’s assessment/recommendation to „reduce the costs of collecting and paying taxes by simplifying the tax system and harmonising the tax bases for personal income tax and social and health contributions”. (EC, 2015).

As regards the amount of employer social security contributions, several welfare regimes can be distinguished. The classical Bismarckian (Christian-democratic) regime is based on the hypothesis that employees cannot afford to pay all contributions from their wages and that employers are also involved in the existence of social insurance (in order to maintain class conciliation) and this results in the concept of division of social security premium in the ratio of 50:50. The exception comprises social accident insurance, where the employer pays the insurance premium in full, because it basically deals with the problem of the employer liability for damage arising from occupational accidents and diseases. In relation to tax wedges and NCPWs we can add that this compensation is omitted from OECD/EU comparisons because in most countries there are too many variations in accident or liability insurance (prevalence of premium rates differentiation) – and, moreover, this premium is relatively low, so it cannot affect the total relations of wedges.

In the social-democratic regime of universal social insurance, the insurance premiums are fully paid by employers. If we disregard the penetration of tax elements into social insurance premiums in the social-democratic, or more precisely Swedish system (see above), which, after all, do not concern employees with an average national wage, from a model static point of view, the resulting impact of the social democratic regime is exactly the same as in the Christian-democratic regime. We illustrate this in Table 1; the insurance premiums and salary tax ratios in the Christian-democratic regime roughly correspond to today’s Germany. According to this Christian-democratic regime, the social-democratic regime is equally established so that the net salary and total labour costs are the same. In the next column of the table, the neo-liberal regime has the same labour costs, contributions, and income tax as the previous two regimes. This comparatively reflects the intention of the former Czech government: the transition to the taxation of super-gross wage (since 2008) should have been followed by an increase in gross wages to the level of super-gross wages, with the concurrent transition to the payment of full social security contributions by employees. This intention has not been implemented. However, the orthodox neo-liberal regime would not include income tax – it would be replaced by the taxation of consumption (e.g. VAT) or an expenditure tax. However, this orthodox version of the neo-liberal model is not comparable to the first two welfare regimes, as illustrated in the table. In the fourth column of the table we have inserted the current labour cost structure in Czechia, which is set so that net salary is the same as in the previous three columns. The resulting Czech labour costs in this comparison table are lower than in the Christian-democratic model, which corresponds to the situation in today’s Germany and Czechia. (In Germany, there are also significant occupational pensions that the current German government intends to strengthen further; not even German occupational pensions form a part of the CPWs in OECD materials.) The table also illustrates the fact that current Czech employer contributions to social and health insurance are above average in international comparisons – this in itself has no information value or implications for the total relative amount of labour costs. What plays its role here is the fact that we have a low relative level of tax on employee wage incomes, which

is not only due to a tax reform (in our country since 1993), when a relatively mechanical division of the previous wage tax into income tax from dependent activity and social insurance and health insurance was made. Some post-communist countries implemented a targeted reduction in income taxation in line with neo-liberal trends. Perhaps the most important consequence of these reforms was the very low taxation of capital income – also a manifestation of neo-liberal tendencies.

**Tab. 8** Comparative structure of labour costs under different welfare regimes

	Social-democratic regime	Christian-democratic regime	Neo-liberal regime	Czechia 2017
Gross salary	100	115	130	91.9
Employee contributions		-15	-30	-10.1
Income tax	-30	-30	-30	-11.8
Net salary	70	70	70	70
Employer contributions	30	15		31.2
Labour costs	130	130	130	123.1

Source: own elaboration.

Just as a matter of interest, we could complement the comparison of wage taxation and social insurance premiums with the Communist tax model. The Communist welfare regime considered social insurance to be a capitalist legacy; state social security was a public expenditure programme (according to current terminology). The whole taxation of population should have been abolished (in the Soviet Union during transition to build communist society), because it is systemically redundant – when the state essentially directly controls wages and prices, there is no need to tax wages. In this Communist model, it holds true that net salary = gross salary = labour costs. In practice, it corresponded to a policy of low wholesale prices, explained by an idea that it is necessary in order to immediately find out when a state-owned enterprise does not function efficiently. The Communist model recognized only two channels of “net income transfers” into the state budget: profit levies/transfers and turnover taxes. Assertion, at that time, that the turnover tax is not a tax, but a transfer of that net income created in state-owned enterprises, was quite comic. By way of a model, the turnover tax was the difference between the retail and wholesale price of the product. From a systematic point of view, this was the right approach; I am only concerned now that the communist theorists, at that time, did not invent a new name for the turnover tax (which was not at all reminiscent of the former turnover tax). Perhaps a similar analogy to this ideological approach is (today) the concept of social insurance premium as a tax and another assertion that compulsory contributions to private insurance are – in substance and in relation to labour costs – something completely different than social security contributions. This is an extreme neo-liberal approach, promoted by the OECD, which in practice leads to criticism of the alleged high tax wedge in Czechia. “Perestroika” of OECD policies is desirable not only with regard to the various existing welfare regimes in today's world but also from a purely practical point of view –

occupational schemes of crucial importance and comparatively important soft compulsion systems shall be integrated in the compilation of labour cost structure.

## **5 Rationalization of the Czech system of wage taxation and social & health insurance premiums**

The very glimpse of Table 1 raises a question, from which welfare regime the Czech social security system and the taxation of wages ensue. The social-democratic model is closest to it – as for the structure of labour costs. However, our aim here is not to propose a major restructuring of labour costs towards one or the other welfare regime. Public choice should decide on this. In addition, statically, it is indifferent who is paying social security contributions. From a dynamic perspective, this is no longer the case – in this respect, it is essential who (or in what share) will pay, for example, rising insurance premium – whether employers or employees. As we do not solve this problem, we will remain with the static view of the Czech public income system.

A key issue for a possible restructuring of the wage tax system and social security contributions is the nature of public social security expenditure programmes – whether (and to what extent) they are genuine social insurance systems. In Czech conditions, it is mainly about the system of “pension insurance” and “public health insurance”.

Czech public health insurance makes the impression that it is a competitive system of 7 health insurance companies. However, the competition is only formal, or possibly symbolic. (Originally, in the 1990s, this was not the case or more precisely it should not have been the case.) In reality, it is a system of public healthcare, complicated by insurance premium with a uniform premium rate of 13.5% of gross wages, whereas employers pay two thirds of this premium. Participation in the system of public health insurance is individual; family members not earning any income and pensioners are by law insured at the expense of the state, or possibly the “nominal” (fixed) premium from an artificially defined assessment base applies. Significant financial payments and flows are determined annually by the Ministry of Health’s “Reimbursement Decree” and health insurance companies intermediate financial flows for the provided healthcare. The receipts of health insurance companies are a function of the number and structure of their insured persons, partially taking into account the individual risks of individual insured persons (similarly as in Germany). The universal insurance premium with respect to employees and for employees has expressly the nature of a proportional payroll tax (calculated from all earnings), the premium rate has not changed for the entire period since its introduction, and this rate is in no way linked to the healthcare costs provided to employees (it is several times higher), or it does not anyhow correspond to national average cost of healthcare per participant in the system. From the system point of view, these premiums can also be cancelled. However, such a reform goes beyond this paper.

The simplest reform of health insurance administration is “mere” transfer of the collection of this tax from the individual health insurance companies to the Czech Financial Administration. It would also be possible to combine this with the transfer of obligation to pay this tax fully to the employer – in the form of the “exchange” the insurance premium at the rate of 4.5% (paid by the employee) for the pension insurance premium with the same rate. This small operation will also result in the payment of pension insurance premium by the employees at a rate of 11% of the gross wage and by the employer at a rate of 17% of the wage. The financial administration will transfer the collected health insurance premiums to the Health Insurance Fund at the Ministry of Health.

The second possible phase of the health insurance reform is its replacement by (health) payroll tax with the (current) rate of 13.5% paid to the state budget. Payment of insurance premiums by the state for the “state insureds” will cease. However, the role of an annual

“reimbursement decree” in public health funding will not change, “only” the Ministry of Health would probably not decide on it; rather it would be a decision of the whole government because all public spending on healthcare will be an integral part of the state budget. In this reform, “persons with no taxable income” should stop paying the health tax (because they have no income); it would probably not constitute a significant shortfall of system revenue, or more precisely the state budget.

The Czech sickness insurance premiums and contributions to the state employment policy are paid by employers in the total amount of 3.5% from gross wages (as part of the so-called social insurance premiums). From our perspective, it is critical that these two social security subsystems have a predominant character of social insurance and the corresponding premiums should/could exist in the future as well. However, there is a room for rationalization of the benefit construction, e.g. according to the German example.

More than from 60%, the Czech old-age “pension insurance” is a liberal system of a flat-rate pension (Vostatek, 2016), therefore it should not be financed (fully or mostly) from pension insurance premiums. In line with the modern pension theory and policy, it is necessary to divide this “pension insurance” into the solidary pension pillar (financed from general taxes) and social old-age insurance (financed by premiums). The social old-age insurance as such belongs both to the Christian-democratic and social-democratic welfare regimes. The flat-rate pension fits into both the liberal and social-democratic regimes. Our aim here is not to recommend a transition to one or another pension regime corresponding to the social policy of a true liberal, Christian-democratic or social-democratic party. Our task is to recommend a “mere” rationalization of the current system of financing of old-age pensions with a direct impact on the labour taxation in Czechia.

At the same time, at least some rationalization of disability and widow/widower pensions is necessary – since all Czech pensions include the same “basic assessment” which is annually valorised to 9% AW. This basic assessment of pensions is a remnant of the cost-of-living allowance introduced in 1990 – this benefit should have long been “dissolved” in any construction of old-age, disability and survivor pensions. The modern social-democratic concept of disability pensions assigns these pensions to sickness insurance, minimizes widow/widower pensions to temporary benefits over a span of several months (following partner’s death) and transforms orphan pensions into a universal supplement to universal child benefits. With higher universal flat-rate old-age pensions, also the survivor pensions in the liberal pension system no longer make sense and disability pensions are here integrated with other benefits, e.g. unemployment benefits. Christian-democratic systems have experienced minor reforms of disability and survivor pensions from social insurance.

The most important fact for our analysis is that setting the flat-rate old-age pensions aside from the social insurance will “free” approx. 11% p. p. of the current pension insurance premiums at 28% from gross wages. (Vostatek, 2016) For comparison: in Germany, current social pension insurance premiums amount to 18.7% from wages with an earnings cap about 200% AW (400% AW in Czechia), employees and employers pay 9.35% each. Germany manages “carefully” the premium rate as the labour cost component; they subsidize e.g. non-contributory periods from the state budget.

Purely rationalizing pension reform should only “show its true intent” – and divide today's old-age pensions into a basic flat-rate pension (at the level of about 31% AW) and an insurance pension with a premium rate of about 9% of the salary. Or on the contrary: pension insurance premium will be reduced by about 11 percentage points during this rationalization reform of old-age pensions. This pension reform can be implemented independently of the proposed reform of labour taxation – both before and after it.

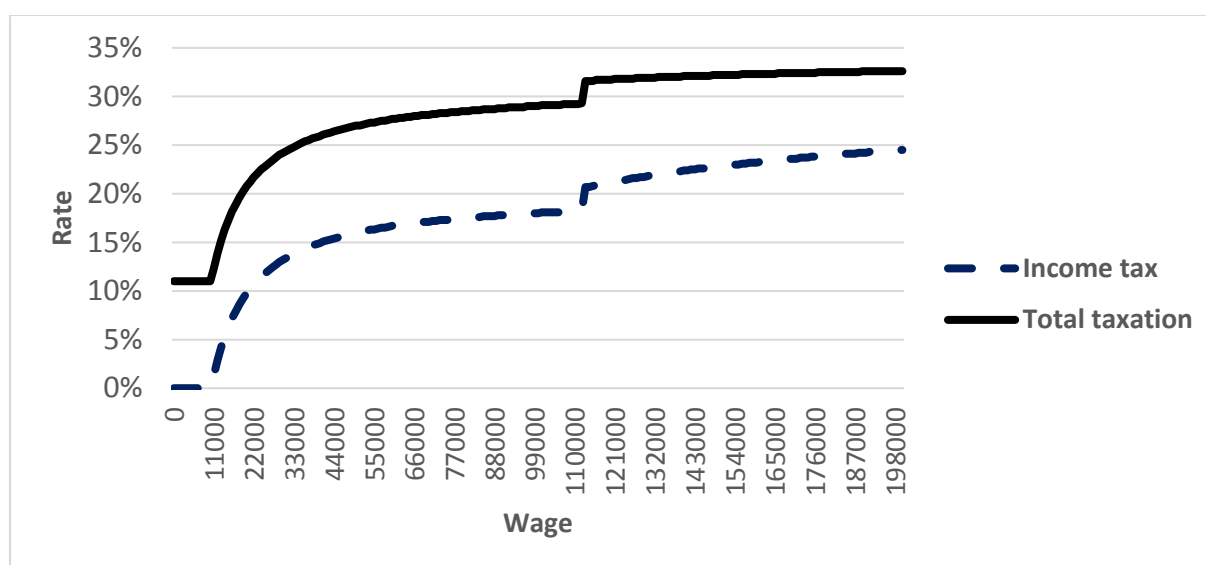
It terms of the rationality of labour taxation in our country it is essential that the insurance premium paid by an employee with a rate of 11% of the gross wage has in the full extent character of salary taxation – in essence, it is a redundant, separate personal income tax. In addition, it is an unfair income tax because it is degressive. Basic, flat-rate pensions in the world are tax-financed, unlike premiums for fair social pension insurance, which is collected from income up to the earnings cap usually in the range of 150-200% AW. In our country, the earnings cap for “pension insurance” is considerably higher – 400% AW and replacing it with a proportional “pension” income tax at 11% of the wage will result in higher taxation of high incomes that can be compensated by the abolition of the solidarity surcharge on income tax of natural persons.

It is possible and fully rational to merge the Czech personal income tax at a rate of 15% of super-gross salary (i.e. 20.1% of gross wage) with current “insurance premiums” paid by employees with a rate of 11% of gross wage. The rate of such an integrated personal income tax – about 31% of the gross wage – would be at the level of wage tax rates in Western countries.

Similarly, as with the reform of general health insurance, it also applies to pension insurance that pension reform is not a necessary prerequisite for the implementation of the rationalization reform of labour taxation. Pension insurance premiums are reasonable to reduce as soon as possible by those 11% of wage as envisaged.

## 6 Progressivity of the Czech Personal Income Taxation

Czech personal income tax is progressive, although we have basically only one rate of this tax (and, in addition, a solidarity surcharge) – see also Figure 3. Progressivity of the income tax is generated by the existence of a taxpayer credit (CZK 2,070 per month). This system of progressive income taxation has been in place since 2008. Income tax progressivity has since dropped considerably – to less than half, as the taxpayer tax credit has not been valorised at all. In order to increase the progressivity of income tax, therefore, it is sufficient to increase (and then continuously valorise) the taxpayer credit, for example to CZK 2,550 per month, or more precisely to keep it at about 9% of the national average earnings used to calculate the basic amount of old-age pensions. In general, the taxpayer credit can be significantly higher, as is the case in Sweden. The system of flat-rate tax (including the taxpayer credit) is comprehensible and simple.



**Fig. 3** Progressivity of the Czech personal income tax and total employee taxation in 2017 (Source: own elaboration)

The inclusion of social and health insurance premiums paid by employees in the wage tax and the increase of the taxpayer credit also addresses the problem of relatively high tax burden on low-income employees, which is underscored by the EU's evaluations.

An increase in the participation of second earners in the labour market can be achieved by abolishing tax credit for a spouse. However, we draw attention to the fact that this is primarily about the overall income tax concept – whether to consistently tax joint income of families or spouses (as required by the Christian-democratic model) or whether to strictly ensue from the concept of individual taxation (as it corresponds to the liberal and social democratic models).

Tax credits for children can follow the issue of taxpayer tax credits. In recent years, there has been a significant increase in these family benefits in Czechia and the increase of income-tested child allowance has recently been also enacted. Figure 1 indicates that the relative cumulative amount of these benefits is relatively high in Czechia – against the international average. The total level of these two Czech benefits roughly corresponds to the German universal child allowance – in relation to the average net earnings in the respective country. In Germany, the costs of a child with respect to an average income employee are more than three times higher according to the calculations made at the ministry for the family.

We were primarily concerned here with simplifying of Czech income taxation and of related child benefits. From this point of view, we draw attention to the possibility and effectiveness of transitioning to a system of universal child allowances, which would replace the current child tax credit and child allowance. A simple and effective solution is to bring these two systems together into one administratively simple system of a child benefit, managed by the Financial Administration – to make it more comfortable for employees. The initial rate of new child benefit for each child could be 10% of AW used to calculate the basic amount of pensions; this year it would amount to CZK 2,830 per month. The reform of tax credits and child allowances can be implemented ahead of implementation of the rationalization wage tax reform itself, too.

The relatively low progressivity of Czech wage income taxation can be simply reinforced by integrating employee contributions to social security into the personal income tax. The specific parameters of this tax reform as well as the related reform of family benefits are a matter of public choice.

## 7 Conclusion

The issue of structuring the total labour costs after deducting the employee net wage is very nuanced and yet for this reason the mechanical comparison of tax wedges according to the OECD definition is very disputable. It is striking that extended tax wedges, including the so-called non-tax compulsory payments, are only published by the OECD on its website, without wider publicity – and as its flagship publication it considers *Taxing Wages* with an embarrassing justification that non-tax compulsory payments are no taxes. However, in taxes it automatically includes contributions to genuine social insurance schemes, which are undoubtedly not taxes. And, on top of all that, in non-tax compulsory payments for many countries the OECD does not include significant social security systems such as occupational pensions, workplace pensions, and employer-sponsored health insurance schemes. Czechia does not have any of these non-tax compulsory payments systems and, for this reason, it cannot be inferred from the comparison of tax wedges of single childless employees (as defined by the OECD) that we have a high tax burden on labour and that it is necessary to reduce social security contributions paid by employers. After rectifying the OECD data, it was revealed that, in relation to the EU and OECD average we do not have a higher wedge between the total labour costs and the net wage of a single childless worker.

Czechia does not have a coherent concept of the social system, or more precisely its main branches financed by public funds. This results in a non-rational existence of universal public health insurance premium, which is moreover collected by 7 health insurance companies; employees and employers share this payroll tax in the ratio of 1:2. Even more irrational is the state-administered system of old-age “pension insurance”, which is predominantly of an implicit flat-rate nature. Premium at a rate of 28% of the gross wage is levied for the whole of “pension insurance”, of which the employee pays 6.5% of the wage. Under these conditions, it is obvious that the old-age pension insurance premium should be lower by about 11% of wage.

Low-income groups of employees are most burdened by the irrationality of old-age pension funding. Social security contributions paid by employees at a rate of 11% of gross wages are not progressive – and thus they constitute a bad income taxation. The Czech tax wedges also reflect the fact that the basic taxpayer credit has not been valorised since 2008, when this system of tax progressivity, solely based on tax credits, was introduced. These irrationalities also negatively affect the employment of second earners in families with children. Simple rationalization of the wage tax system and of the double contributions of employees to social security is self-evident: by merging the low taxation of employees’ earnings with their social security contributions one income tax will emerge, with a rate corresponding to the Western

countries. The basic taxpayer credit requires valorisation. Tax credits for children and related child allowances can be also simply rationalized.

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