Gainers and Losers from Economic Growth and Economic Recession[1]

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Abstract

Economic growth is frequently presented as the source and direct bridge to the overall welfare development. The GDP per capita is frequently referred in this connection as a measure of economic and social development. However this argument is not sufficiently supported by data covering the welfare situation of the country. According the EU Statistics on Income and Living Conditions (EU-SILC) project, in 2010 there are around 17% of the EU citizens living under the at-risk-of poverty threshold. To address the missing links between economic growth and the broader social development dynamics, the income situation of the households in selected EU member countries over the last years is investigated using the EU-SILC data. The empirical results confirm that losers from economic growth and recession are unequally distributed towards female, young, elderly, unemployed, retired and less educated. Gains are pertaining to more educated persons implying a greater focus on opportunities to education and on labour market.

Keywords: *income and living conditions, economic and social development, at--risk-of poverty threshold, households' income inequalities, Central European countries*

JEL Classification: I30, I32, A12, D31, D63

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Introduction

In a spite of positive cumulative economic growth in majority of the European Union (EU) countries between 2005 and 2010 income inequalities with growing poverty and social exclusion have remained important for both, old and new member countries. According to the Statistics on Income and Living Conditions (EU-SILC) there are some 85 million citizens (17%) of the EU living at-risk-of poverty (Eurostat, 2011). In broader sense, the quality of life of the EU citizens and its various attributes is also at risk.

The data on the income poverty measures, material deprivation, social exclusion and quality of life are derived from the statistical data collected under the EU-SILC project (Eurostat, 2009; 2011). At-risk-of poverty rate is defined as the percentage of persons living in households where the equivalized total disposable household income is below the officially defined threshold. This threshold is derived from the median value of the total disposable income calculated per households or per person. For various social groups and various types of households the different thresholds are calculated and applied for various EU countries. Among the most jeopardized social groups belong the young families with small children. The senior citizens in some countries and their quality of life are also under jeopardy. However, these data are raising questions not only because of their concrete values, but also because of their relation to the economic growth data.

The households (individuals) with total disposable income per household (per member of household) are classified as the at-risk-of poverty households (individuals). A major threat to these households and their members is the high probability of their subsequent social exclusion in very broad sense – significantly limited access to education, health and social services, culture opportunities, with consequent decrease of their quality of life. To avoid such consequences, the society needs to detect and to know in details all the determinants related to these income and socially risky groups of citizens to assist them with a targeted support policy.

Our research focuses on analysis of the household income situation in five Central European Countries (CEC-5), namely, the Czech Republic, Hungary, Poland, Slovakia and Slovenia. The CEC-5s were the first five members of the Central European Free Trade Agreement (CEFTA-5). In addition, the CEFTA-5 entered the EU on 1st July 2004. Their situation is analyzed and compared with the EU-27 averages. The period studied is 2005 – 2010, which covers the post-EU accession period with initial strengthen economic growth and later recession, except for Poland, with most recent a slight economic recovery and mixed results among the CEC-5.

The goals of the paper are formulated in the following ways: *Firstly,* to clarify the methodology for identification the core variables influencing the quality of life of different population groups and particularly the income poverty jeopardy for the EU-27 and CEC-5 citizens. *Secondly,* to present the association between economic growth and social development in the CEC-5 countries. *Thirdly,* to verify the possibility and reliability of classification methodologies in construction the homogeneous subgroups of countries within EU-27 with quasi similar attributes of the quality of life of their citizens. *Fourthly,* to derive the implications, conclusions and recommendations for the economic and social policies.

Literature Review and Hypotheses Development

A body of literature has been developed on investigation of relationship between inequality, poverty, and development (Lelkes and Gasior, 2011; Haughton and Khandker, 2009; Ahluwalia, 1976). The investigation of the relationship between economic growth and social development has given mixed results and findings on associations between GDP growth and social development within different countries and over time. In addition, the differences in results and findings are due to methodological and data limitations for such empirical analyses (Stehlíkova and Kabát, 2009). Vintrová (2005; 2007) presented usefulness and limitations of GDP indicators and alternative indicators of economic growth, real and nominal convergences focusing on the CECs. It is difficult to define the single measure of poverty and social statuses and there are different concepts of poverty based on a number of welfare indicators. Yet, there is a rare study to investigate the relation between economic growth and social development for the most recent years of the economic recession, which started in 2008.

The literature indicates general agreement about association between economic situation, income inequality and social situation (Wilkinson and Pickett, 2009), but there is less agreement about whether income inequality determines social situation independently of other factors. Namely, rising inequality has been a common feature of the transition process during initial transition stage of output decline and later during economic growth. Economic growth in CEC-5 differed by different time periods, and has been determined by the rising productivity, foreign trade and terms of trade, and growth in domestic demand (see Spěváček et al., 2008, for the Czech Republic). On the other hand, most transition countries have experienced a rise in labour earnings inequality since the transition began (World Bank, 2000; 2011). Factors usually argued as a major driving force of increased earnings inequality are increased returns to education,

sectoral and structural shifts in employment from lower value-added agricultural and industry activities towards higher value-added services. Moreover, Rosser, Rosser and Ahmed (2000) confirmed empirical evidence of a significant positive association between the level of income inequality and the share of the informal sector in the economy. As the informal sector in transition countries accounts for a significant percentage of overall economic activity (Schneider, 2004), this can be an additional factor that determines income inequality. Income inequality might be particularly harmful beyond a certain threshold.

European Commission (2010a) in its European platform against poverty and social exclusion argued for a European framework for social and territorial cohesion. The multiple factors dimension for the reduction of poverty and social exclusion are defined on the basis of three indicators: the at-risk-of poverty rate after social transfers, the index of material deprivation, and the percentage of people living in households with very low work intensity. Gender, age, educational level, marital status, industry sector, location and territorial dimension can be particularly important determinants.

There is a growing literature on economic and social situation within EU-27 and particularly within the selected CEC-5. Pauhofová and Páleník (2005) and Kabát (2005) analyzed households' income situation in Slovakia. Kabát and Hatrák (2006) analyzed income inequalities in Slovakia. Marek (2010) studied income distributions trends in the Czech Republic over the years 1995 – 2008 focusing on gender and age characteristics. Analogical problems for Poland were discussed by Toynbee (2010), while by Ékes (2009) and Obadovics and Bruder for Hungary (2012), Ignjatovič (2010) and Cepin (2010) for Slovenia. They found that the Gini coefficient of income inequality has increased. This implies that social development is likely diverging with overall economic growth for a large part of population. Income inequalities and at risk-of-poverty rate in CEC-5 during transition to a market economy have increased, but they are still lower than in most other OECD countries (OECD, 2011). Budinský and Valenčík (2009) argued on the importance of redistribution systems with functioning of institutions and different establishments, firms and other social systems to increase functional efficiency. The rising income inequalities in CEC-5 as well as in the EU-27 are also reported by the European Commission (2010b).

On the bases of these previous studies we set up *three hypotheses (H) that are investigated* in this article:

H1: *Level of inequalities in terms of at-risk-of poverty rate after social transfers, income quintiles ratio, material deprivation and unmet medical services or treatments are not driven by the speed of economic growth.*

During each of the periods of relatively high rates of economic growth and during recession are expected similarities in economic and social situation of households among losers and gainers. The empirical testing of this hypothesis requires longer longitudinal data, which for the CEC-5 are available only for few years. This data will be used in our analysis.

H2: *Main common characteristics pertaining to gainers and losers do not depend on the speed of economic growth or economic recession. Expected important characteristics are demographic characteristics (gender and age), economic activity status, and education.*

Inequality measures are expected to be particularly harmful beyond a certain threshold: female, young without employment and older with low pensions, unemployed and retired persons and persons with lower education attainments. Gains are expected to be pertaining to more educated persons, and therefore a greater focus should be on equal opportunities to education and on labour market.

H3: *People in lower socio-economic groups in countries with more equal income distribution may not face lower inequalities than those in lower socio--economic groups in more unequal income distribution countries.*

It is expected that even in more equal income distribution countries there are socio-economic groups that do face at-risk-of poverty, material deprivation and difficulties to gain from unmet medical services or treatments. However, they might be still better off than those in similar lower socio-economic groups in more unequal income distribution countries. The empirical testing of this hypothesis requires comparative micro-level longitudinal data, which for the CEC-5 are available only for few years, but have not been available for our research due to confidentiality reasons.

Methodology and Data

The in-depth-study on income situation and material deprivation of the households in the CEC-5 is based exclusively on the data generated by the EU--SILC project (Eurostat, 2011). Under this large scale survey frame, covering all EU countries, the data on income and material situation of individual households is collected annually for the previous year by national statistical offices in cooperation with Eurostat. EU-SILC data is then published after communication with the Eurostat in mid of the next year.

The organizational as well as technical details on data collection (including timing and minimum effective sample size) for the EU-SILC surveys are defined by the Regulations (EC) No. 1553/2005 and No. 1791/2006 of the European Parliament and of the Council. They are presented in Table 1.

T a b l e 1

Minimum Effective Sample Size for the Cross-sectional and Longitudal Components by Country

Countries	Households		Persons aged 16 or over	
	Cross-sectional	Longitudal	Cross-sectional	Longitudal
Czech republic	4 750	3 500	10 000	7 500
Hungary	4 750	3 500	10 250	7 750
Poland	6 000	4 500	15 000	11 250
Slovenia	3 750	2 750	9 000	6 750
Slovakia	4 250	3 250	11 000	8 250
Total EU	130 750	98 250	272 900	203 850

Source: Regulations (EC) No. 1553/2005 and No. 1791/2006 of the European Parliament.

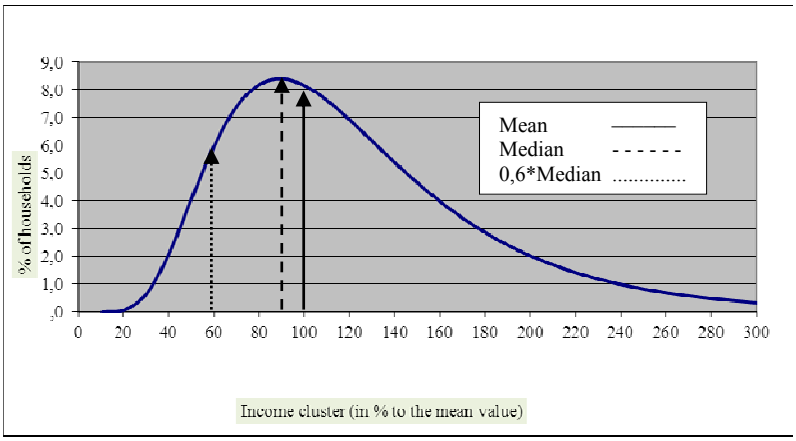
The core information for this paper is represented by *the disposable income* (*DI*) of the surveyed households, where disposable income is defined by Eurostat and OECD (2008). It is calculated as: *DI = Personal income – Taxes + Social transfers.*

According EU-SILC methodology the equivalized size of household is calculated according the formula: *ESH* = 1 + 0.5**number of adults* + 0.3**number of children.* Consequently the average equivalized disposable income variable (EDI) is calculated as *EDI = DI/ESH.*

The most important outcome derived from the individual values of the equivalized household disposable income variable is its *median value* (Graph 1). This value serves as a key measure for defining the income poverty line. In case of the EU-SILC project the *60% of the national equivalized income median* is used for setting *the national at-risk-of poverty line.*

G r a p h 1

Theoretical Distribution of Surveyed Households (Illustration)



Source: Authors.

Additionally, some other indicators reflecting income situation of the households in more details are applied. The most important of them are measures reflecting *the income inequalities*. Particularly the Gini coefficients and two measures comparing income levels of the top deciles (S90) and bottom deciles (S10), or top quintiles S(80) and bottom quintiles S(20) are used. Their *ratios* of the richest-to-poorest part of population *are presented as S90/S10* in case of deciles and *S80/S20* in case of quintiles.

From more than 150 recommended and available indicators available in the EU-SILC and some other relevant sources, after statistical analysis and identification of colinearity among them we reduced the list of these variables and excluded those with redundant information. Finally we analyzed 26 core indicators (variables) reflecting the complex information on income, material and social situation of households and individuals and quality of their life.

By cluster analysis, Everitt et al. (2011), with its hierarchical approach and discriminant analysis with its classification procedures (Huberty, 1994; Affifi, May and Clark, 2003; Rasgdale, 2008; Slate and Rojas-Lebouef, 2008), we developed the linear discriminant model with coefficients $F(j)$, enabling to classify the studied group of countries into a specific subgroups or classes, where attribute to class i is calculated as:

$$Class\ (i) = F0 + \Sigma\ (Fj)*VAR(ij), \qquad j = 1...\ n \tag{1}$$

where

diskr F0 and *(Fj)* – the coefficients of the discriminatory equation (1)
VAR (ij) – value of the *j*-th explanatory variable for the *i*-th country.

The classification procedure sorts the individual countries according the value *Class (i)*. The critical values of the Class *(i)* are defined by the discriminant functions values *at the group centroids.*

To investigate the working hypotheses H1 to H3 we use the aggregated *data of the EU-SILC* available on the Eurostat website. Main focus is on analysis of aggregated data between the CEC-5 and the EU-27 average and over time. In addition the graphical presentation is used.

Descriptive Empirical Results

Real GDP Growth

Growth rate of GDP volume as a percentage change on previous year has experienced considerable oscillations between CEC-5 and over time. During the years 2005 – 2008 Slovakia has experienced the highest growth rates, while Hungary the lowest ones (Table 2).

Poland is the only one that did not experience the negative growth rate of GDP volume in 2009. Yet, except for Hungary in 2007 and 2010, for the economic recession in Slovenia and Slovakia in 2009, and for Slovenia in 2010, the growth rates of GDP volume in the CEC-5 have been higher than for the EU-27 average. This implies, except for Hungary, catching-up of the CEC with the EU-27 average.

T a b l e 2

Real GDP Growth

% annual change, average and cumulative growth								
Region/country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**	**Total growth 2005 – 2010**
EU-27	1.9	3.3	3.1	0.5	–4.3	1.8	1.1	6.3
Czech Rep	6.3	6.8	6.1	2.5	–4.1	2.3	3.3	19.9
Hungary	3.2	3.6	0.8	0.8	–6.7	1.2	**0.5**	**2.9**
Poland	3.6	6.2	6.8	5.1	1.6	3.8	4.5	27.1
Slovenia	4.0	5.8	6.9	3.6	–8.0	1.4	2.3	13.7
Slovakia	6.7	8.5	10.5	5.8	–4.8	4.0	**5.1**	**30.7**

Note: **Bold figures** – the extreme values.

Source: Eurostat (2011) and author.

The catching-up tendencies with the EU economic development are clearly documented particularly by Slovakia, Poland and Czech Republic in terms of the cumulative GDP growth since 2004.

Income Poverty and Income Inequalities

During the same period, at-risk-of poverty rate *after social transfers* differs among the analyzed countries and over time. It is the highest for Poland, which has not experienced a recession and the lowest for all categories of population for the Czech Republic (Table 3). Income poverty for Poland is also above the EU-27 average level, and also for the other analyzed CEC. At-risk-of poverty rate after social transfers tends to decline a slightly over time for the analyzed CEC-5, while it has remained rather stable for the EU-27 countries. By gender, at-risk-of poverty rates in CEC-5 are slightly higher for females. This diverging pattern between the speed of economic growth and level of inequalities support the set H1.

In addition, the aggregated data is not sufficient for presenting the real situation with at the at-risk-of poverty population. For this reason some additional results of the EU-SILC are useful. At-risk-of poverty rates do not decline for all groups in society in the CEC-5 in the same extent. Comparing different groups in the analyzed countries offers also new findings regarding investigation of set hypotheses.

T a b l e 3

At-risk-of Poverty Rate after Social Transfers by Gender

% of total							
Region/Country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	16.4	16.5	16.7	16.4	16.3	16.4	16.5
Czech Republic	10.4	9.9	9.6	9.0	8.6	9.0	**9.4**
Hungary	13.5	15.9	12.3	12.4	12.4	12.3	13.1
Poland	20.5	19.1	17.3	16.9	17.1	17.6	**18.1**
Slovenia	12.2	11.6	11.5	12.3	11.3	12.4	11.9
Slovakia	13.3	11.6	10.5	10.9	11.0	12.1	11.6
% of males							
Region/Country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	15.6	15.7	15.9	15.5	15.4	15.7	15.6
Czech Republic	9.7	8.9	8.7	8.0	7.5	8.0	**8.5**
Hungary	13.9	16.3	12.3	12.4	12.8	12.6	13.4
Poland	21.3	19.7	17.6	17.0	16.9	17.4	**18.3**
Slovenia	10.6	10.3	10.0	11.0	9.8	11.3	10.5
Slovakia	13.2	11.8	9.8	10.1	10.1	11.7	11.1
% of females							
Region/Coutry	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	17.0	17.2	17.5	17.4	17.1	17.1	17.2
Czech Republic	11.0	10.8	10.5	10.1	9.5	10.0	**10.3**
Hungary	13.2	15.5	12.3	12.4	12.1	12.0	12.9
Poland	19.9	18.5	17.1	16.7	17.4	17.7	**17.9**
Slovenia	13.7	12.9	12.9	13.6	12.8	14.1	13.3
Slovakia	13.5	11.5	11.2	11.5	11.8	12.2	12.0

Note: **Bold figures** – the extreme average 2005 – 2010 values. *Source*: Eurostat (2011) and authors.

T a b l e 4

At-risk-of Poverty Rate by Age

% of total							
Region/Country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	16.4	16.5	16.5	16.4	16.3	16.4	16.4
Czech Republic	10.4	9.9	9.6	9.0	8.6	9.0	**9.4**
Hungary	13.5	15.9	12.3	12.4	12.4	12.3	13.1
Poland	20.5	19.1	17.3	16.9	17.1	17.6	**18.1**
Slovakia	13.3	11.6	10.6	10.9	11.0	12.0	11.6
Slovenia	12.2	11.6	11.5	12.3	11.3	12.7	11.9
% of 18 – 24							
Region/Country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	29.5	29.5	28.5	28.3	27.7	28.8	28.7
Czech Republic	20.8	20.2	17.9	17.3	16.5	16.1	18.1
Hungary	33.2	33.3	34.8	35.8	36.3	36.2	34.9
Poland	50.4	46.1	39.4	35.0	30.5	30.9	**38.7**
Slovenia	18.0	14.9	15.4	17.1	13.9	15.9	**15.9**
Slovakia	34.3	26.6	21.6	21.6	21.1	22.8	24.7
% of 65+							
Region/Country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	24.6	23.7	23.4	22.3	21.0	19.1	22.4
Czech Republic	14.7	12.6	10.8	12.4	11.7	10.0	**12.0**
Hungary	23.9	23.9	21.1	17.5	17.5	16.8	20.1
Poland	39.6	32.6	27.4	26.8	26.2	24.8	**29.6**
Slovakia	28.8	25.6	21.8	21.9	19.8	16.6	22.4
Slovenia	23.8	22.6	22.4	24.1	23.1	22.5	23.1

Note: **Bold figures** – the extreme values. *Source*: Eurostat (2011) and authors.

The further analysis suggests that people in various socio-economic groups are vulnerable at various risky levels. Particularly harmful are the young people below 18 years and households of the elderly people over 65 years, Table 4. For young people, it is the highest for Poland, while for elderly for Slovenia. In both cases the rates are higher than for the EU-27 average.

T a b l e 5

At-risk-of Poverty Rate by Most Frequent Activity Status

% of employed persons							
Region/country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	8.2	8.1	8.5	8.5	8.4	8.4	8.4
Czech Republic	3.5	3.5	3.3	3.6	3.1	3.7	**3.5**
Hungary	8.7	6.8	5.8	5.8	6.2	5.3	6.4
Poland	13.8	12.8	11.7	11.5	11.0	11.4	**12.0**
Slovenia	4.6	4.8	4.7	5.1	4.8	5.3	4.9
Slovakia	8.9	6.3	4.9	5.8	5.2	5.6	6.1
% of retired persons							
Region/country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	15.9	16.0	16.7	16.1	15.4	13.8	15.7
Czech Republic	6.1	6.8	6.3	8.0	7.1	6.6	**6.8**
Hungary	10.0	11.7	8.1	6.8	4.0	4.0	7.4
Poland	10.5	6.8	6.4	9.6	12.3	12.8	9.7
Slovenia	16.8	16.8	16.5	17.9	17.4	18.3	**17.3**
Slovakia	6.9	8.1	8.0	9.7	8.9	8.7	8.4
% of not employed persons							
Region/country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	22.7	23.4	23.9	23.3	23.0	22.6	23.2
Czech Republic	14.9	13.7	13.5	13.5	12.9	12.7	**13.5**
Hungary	15.4	19.6	14.8	15.0	14.0	14.5	15.6
Poland	21.8	21.2	19.0	19.7	21.2	21.9	**20.8**
Slovenia	19.2	18.5	18.5	20.2	18.2	20.7	19.2
Slovakia	15.3	14.9	14.0	14.5	15.2	18.0	15.3
% of unemployed persons							
Region/country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	40.0	41.3	43.3	44.5	45.3	45.2	43.3
Czech Republic	51.1	43.3	48.6	47.8	46.9	40.6	46.4
Hungary	48.8	52.9	46.3	48.9	47.3	44.8	**48.2**
Poland	45.7	46.3	43.3	38.8	42.1	45.4	43.6
Slovenia	24.9	32.8	35.9	37.6	43.6	44.1	**36.5**
Slovakia	39.0	40.8	45.1	43.2	48.6	44.1	43.5

Note: **Bold figures** – the extreme values.

Source: Eurostat (2011) and authors.

Information in Table 5 on at-risk-of poverty rates according the most frequent activity status showed that the most jeopardized social group is category of unemployed people. The critical situation, however, is found for all studied countries. The rate of being at-risk-of poverty for unemployed people is extremely high at overreaching 40%. Keeping in mind the level of unemployment in these countries it has the strong disturbing impact on the total extend of the at-risk-of

poverty in these countries. The imperative call for creating new jobs in these countries is justified. This call could be supported also by data on the in-work at-risk-of poverty rates according which these levels are much reaching 3 – 6%. This is the most severe for Poland, where even 12% of people employed reported at-risk-of poverty situation.

For not employed persons, rates on jeopardized at-risk-of poverty population are the highest for Poland and Slovenia, while the lowest for the Czech Republic. They tend to decline a slightly over time and are lower than for the EU-27 average. For retired persons, these rates are the highest for Slovenia and tend to increase over time, which seems to be a reflection of real declines in pensions and increasing real living expenditures causing a decline in purchasing power parity of retired people. Interestingly, at-risk-of poverty rates for employed persons for Poland and in some single years for Slovakia in 2005 and for Hungary in 2009 are higher than for retired persons.

Significant information on impact of education level on income situation is presented in Table 6. The data shows that education plays an important role in assisting people to function successfully on the labour market. This finding is valid for all studied countries with some smaller variations across these countries with Poland's highest rate of at-risk-of poverty in case of graduates after the secondary education. At-risk-of poverty rate is the highest for low educated with pre-primary, primary and lower secondary education and the lowest for tertiary education. For the lowest educational group, except for 2008, the lowest at-risk--of poverty rate is for the Czech Republic, but has increased over the analyzed years. It is the highest for Poland, where tends to increase over time and for Slovenia, where oscillates by individual years. Around each fifth with pre-primary, primary and lower secondary education is at-risk-of poverty. With upper secondary and post-secondary non-tertiary education attained is considerable decline in at-risk-of poverty rates by each of the CEC-5. Except for 2005, the lowest rates are for the Czech Republic and the highest for Poland. With tertiary education, at-risk-of poverty rate further declines in range between 2 – 4%, but with variations by countries and by individual years. The empirical evidence clearly confirms the inverse, negative association between declining at-risk-of poverty rate and increasing levels of education attained. These results clearly confirmed premium to the highest levels of education in terms of education of the inverse relation with the at-risk-of poverty population according the education level achieved, which is consistent with the set H2.

The rates of at-risk-of poverty levels are complemented with additional information related to income inequalities: the Gini coefficients and the ratios of the top and bottom income quintiles. The Gini coefficients for these countries are

shown in Table 7. According to these aggregated data the highest income inequality is found for Poland with Gini coefficient over 32% during the whole analyzed period. On the opposite side is Slovenia, which reports relatively flat income distribution with Gini coefficient of concentration just over 23%. The other CEC report the similar data magnitude.

T a b l e 6

At-risk-of Poverty Rate by Level of Education Attained

% with tertiary education							
Region/country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	6.7	6.3	6.6	6.5	6.8	6.9	6.6
Czech Republic	2.1	1.8	2.0	3.2	2.7	2.5	**2.4**
Hungary	3.0	3.0	2.3	2.3	2.1	1.8	**2.4**
Poland	5.2	2.7	3.1	3.7	3.5	4.6	3.8
Slovenia	2.0	2.6	1.7	2.5	2.6	3.3	2.5
Slovakia	7.0	4.0	3.1	3.6	3.8	4.3	**4.3**
% with upper secondary and post-secondary education							
Region/country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	12.4	12.7	13.2	13.0	13.0	13.4	13.0
Czech Republic	8.0	7.4	7.0	6.9	6.2	6.9	**7.1**
Hungary	10.8	11.0	9.3	9.4	9.0	8.7	9.7
Poland	18.8	18.0	16.1	15.7	15.8	16.5	**16.8**
Slovenia	7.9	7.8	8.8	10.1	9.1	10.2	9.0
Slovakia	11.6	10.0	8.3	8.8	9.0	10.2	9.7
% with pre-primary, primary and lower secondary education							
Region/country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	22.7	23.1	23.7	23.4	23.2	22.0	23.0
Czech Republic	16.8	17.7	18.4	18.8	18.4	18.2	**18.1**
Hungary	17.1	24.5	18.4	18.5	19.2	19.9	19.6
Poland	24.8	24.7	22.7	24.4	26.9	28.2	**25.3**
Slovenia	23.4	22.6	24.2	25.1	22.9	27.0	24.2
Slovakia	18.0	18.1	19.7	20.2	22.2	20.2	19.7

Note: **Bold figures** – the extreme values.

Source: Eurostat (2011) and authors.

T a b l e 7

Gini Coefficient (%)

Region/country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	30.6	30.2	30.6	30.7	30.4	30.4	30.5
Czech Republic	26.0	25.3	25.3	24.7	25.1	24.9	25.2
Hungary	27.6	33.3	25.6	25.2	24.7	24.1	26.8
Poland	35.6	33.3	32.2	32.0	31.4	31.1	**32.6**
Slovenia	23.8	23.7	23.2	23.4	22.7	23.8	**23.4**
Slovakia	26.2	28.1	24.5	23.7	24.8	25.9	25.5

Note: **Bold figures** – the extreme average 2005 – 2010 values.

Source: Eurostat (2011) and authors.

Table 8 presents income inequalities related to top and bottom income clusters where up to now only data on income quintiles is available and respective ratios S80/S20. It should be underlined that measuring the income inequalities

through the quintiles ratio is very rough measure offering relatively low information value. Despite this, however, it is seen that the highest income inequality is observed for Poland, while the other CEC-4s are reporting almost equal the level of inequalities. Comparing with the EU-27 level, these CEC reports lower rates than the EU-27 as a whole.

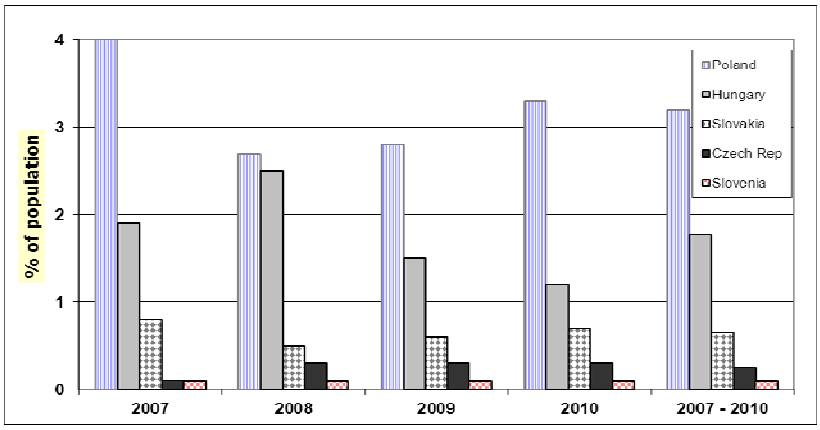
T a b l e 8
Top and Bottom Income Quintile Ratios

Ratio S80/S20							
Region/country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	5.0	4.9	4.9	5.0	4.9	5.1	5.0
Czech Republic	3.7	3.5	3.5	3.4	3.5	3.5	3.5
Hungary	4.0	5.5	3.7	3.6	3.5	3.4	4.0
Poland	6.6	5.6	5.3	5.1	5.0	5.2	**5.5**
Slovenia	3.4	3.4	3.3	3.4	3.2	3.4	**3.4**
Slovakia	3.9	4.1	3.5	3.4	3.6	3.8	3.7

Note: **Bold figures** – the extreme values.
Source: Eurostat (2011) and authors.

During the last two decades the CEC-5 have experienced a significant change in *the health policy*. Several rules for the provision of medical care were significantly modified. These changes in some CEC-5 substantially restrict access to this segment of the health services. Specific medical services provided by hospitals, which are charged have an impact on the extent of their availability. *Graph 2* presents the income level of the self reported unmet medical services. This data shows relatively high differences among the CEC-5. In the cases of Poland and Hungary the scope of the unmet medical services or treatments shows quite high level. Such findings should be considered in association with some other relevant factors in national health and public policies in CEC-5.

G r a p h 2
The Self-reported Unmet Medical Services



Source: Own calculations on the basis of the Eurostat (2011) data.

Material Deprivation

A comprehensive assessment of poverty is also evaluated by the extent of material conditions in which households live. For these purposes, the use of information on the impact of certain cost items on the material deprivation of the respondents is monitored. Therefore, the presented information on the income situation and income differentiation among the CEC-5 are further complemented with the positions of the households on questions related to the costs and quality of accommodation. The costs of accommodation (when higher than 40% of total household income) is felt as a problem by 20,8% of population over 65 years in the Slovakia, while in Slovenia this complain is reported only by 6.2% of households, Table 9. Such results require further analysis and study of the possible governmental supporting material deprivation and social schemes.

T a b l e 9

Housing Cost Overburden Rate – Seniors Over 65 (%)

Region/country	2005	2006	2007	2008	2009	2010	Average 2005 – 2010
EU-27	13.3	16.1	14.9	13.9	12.5	12.6	13.9
Czech Republic	11.9	14.4	14.8	16.4	13.6	13.1	14.0
Hungary	12.6	10.1	9.5	9.1	6.9	9.1	9.6
Poland	13.2	11.4	10.5	10.8	11.2	11.2	11.4
Slovenia	6.5	4.4	7.6	6.7	6.0	5.8	**6.2**
Slovakia	21.5	36.1	30.0	15.0	13.7	8.6	**20.8**

Note: **Bold figures** – the extreme values.

Source: Eurostat (2011) and authors.

The important reflection on quality of accommodation is presented also through the level of overcrowding answered by the age groups. This phenomenon is felt as an acute problem particularly by young people below age of 18 years. In Hungary and Poland more than 60% of this group respondent believes their accommodation is significantly negatively influenced by high overcrowding rate. In this line, the positions of the senior citizens are much more optimistic.

Table 10 presents the specific measure of living conditions, i.e., the rate of severely materially deprived population. This indicator reflects how people evaluate their own social position through the standardized set of questions on the quality of their daily life. The highest disappointment with the current situation in living conditions has been expressed by the Hungarian households by over 38%. This level is significantly higher when comparing with the other CEC, while the rapid decline over the studied period is seen for Poland. The Czech Republic and Slovenia are reporting situation closer to the EU averages over longer period.

T a b l e 10

Severely Materially Deprived Population

% of total population							
Region/country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	20.0	19.0	17.9	17.3	17.1	17.4	18.1
Czech Republic	22.7	19.7	16.4	16.2	15.6	15.1	17.6
Hungary	39.7	37.4	38.6	37.1	40.3	39.9	**38.8**
Poland	50.8	44.0	38.2	32.3	29.5	28.4	37.2
Slovenia	14.7	14.4	14.3	16.9	16.2	15.8	**15.4**
Slovakia	42.6	35.7	30.2	27.8	24.5	24.9	31.0
% 65 years or over							
Region/country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	18.0	17.2	16.4	15.4	14.3	14.2	15.9
Czech Republic	25.6	19.8	16.7	17.3	15.9	14.2	**18.3**
Hungary	40.7	36.4	37.0	35.4	35.2	33.0	36.3
Poland	54.3	47.1	40.6	38.6	33.8	33.9	**41.4**
Slovenia	18.4	18.4	18.4	20.5	18.1	18.2	18.7
Slovakia	49.0	44.1	41.7	37.0	30.0	30.2	38.7

Note: **Bold figures** – the extreme values.

Source: Eurostat (2011) and authors.

When analyzing these data, it is also found the high proportion of the severely materially deprived population in senior category in *Poland* (41.4%) and *Slovakia* (38.7%). This finding should be considered and compared with other at-risk-of poverty indicators and income inequality measures, particularly with the total proportion of jeopardized population and households (Tables 4, 5 and 6) in order to understand the complex picture of the income and social situation in these countries.

Comparison of GDP per capita and Expenditure on Social Protection and Pensions as % of GDP

Table 11 shows that average share of expenditures on social protection and pensions within EU-27 is significantly higher than those in the CEC-5 during and after economic recession period. Data on allocation of the GDP on social protection and pension programs requires more detailed analysis of the national schemes.

Particularly the level of GDP per capita and social protection policies should be considered. Among the CEC-5, Slovenia has the highest GDP per capita, while Poland with the lowest GDP per capita has catch-up with Hungary. The highest proportion of the GDP allocated for both social policies and pensions is recorded for Hungary, Slovenia and Poland. This evidence gives mixed results on the association between GDP per capita and expenditure on social protection and pensions. While for Slovenia the highest GDP per capita is associated also with the highest share of expenditure on social protection among the CEC-5, such proportions for other CEC-5 do not apply as standard. This is consistent with the H3.

T a b l e 11

Expenditure on Social Protection and Pensions as % of GDP

Social protection							
Region-country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	27.1	26.6	25.7	26.7	29.5	29.6	27.5
Czech Republic	18.4	18.0	18.0	18.0	20.4	20.5	18.9
Hungary	21.9	22.5	22.7	22.9	23.4	23.2	**22.8**
Poland	19.7	19.4	18.1	18.6	19.7	19.9	19.2
Slovakia	16.5	16.3	16.0	16.0	18.8	18.7	**17.1**
Slovenia	23.0	22.7	21.3	21.4	24.3	24.1	**22.8**
Pensions							
Region-country	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Average 2005 – 2010**
EU-27	12.15	11.93	11.66	12.04	13.01	12.99	12.30
Czech Republic	8.03	8.01	7.94	8.16	9.07	9.21	8.40
Hungary	9.80	10.03	10.53	11.01	11.19	10.96	10.59
Poland	12.68	12.55	11.59	11.61	11.88	11.88	**12.03**
Slovakia	7.48	7.35	7.27	7.17	8.48	8.43	**7.70**
Slovenia	10.33	10.26	9.74	9.64	10.85	11.22	10.34

Note: **Bold figures** – extreme data.

Source: Eurostat (2011) and authors.

Cluster and Discriminant Analyses

To answer the question on position of the group of the CEC-5 countries within EU-27 environment during economic growth and after the period of economic recession, the *cluster analysis* based on 26 selected social indicators was applied for the EU-27 with specific attention to the CEC-5 (Eurostat, 2008; 2009; 2010; 2011). The selected indicators are shown below:

T a b l e 12

The Selected Indicators for Evaluation the Social Aspects of the Life

List of selected indicators for evaluation the social aspects of the life		
1. Admin costs of social protection	11. Health care expend per capita	20. Maternal mortality ratio
2. At-risk-of poverty (AROP)	12. Health index	21. Serious work accidents
3. Crime reported	13. Healthy life years at 65 Males	22. Severely materially deprived
4. Curative beds	14. Healthy life years at Birth Males	23. Social benefits per capita
5. Death rate per 100 000 inhabitant	15. Inequality S80/S20	24. Under 5 mortality rate
6. Education index	16. Life expectancy index	25. Unmet medical services, seld report
7. Expenditure on social protection	17. Life expectation at 65	26. Very low level of housing
9. Government contrib on social prot	18. Lon term unemployment rate	
10. Health care expend as % GNI	19. Material deprivation	

Source: Authors.

Table 13 summaries the main findings. In addition to the EU-27 countries, Switzerland and Norway have been sorted according the above listed 26 social indicators in 2005 and 2010. The positions of the CEC-5 countries have not changed over the studied period. They are clustered at the same positions: the Czech

Republic and Slovenia with the highly developed old EU-member countries (OMC) such as Austria, Belgium, Finland, France and Germany. The rest of the CEC countries – namely Hungary, Poland and Slovakia – were classified in the group with Estonia and Lithuania. This finding is also consistent with hypothesis H1.

T a b l e 13

Cluster Positions of the CEC-5 within EU-27

Cluster	Type of the EU membership*	Countries included (26 indicators)	
		2005	2010
1	CEC-5	Czech republic, Slovenia	Czech republic, Slovenia
1	OMC	Austria, Belgium, Finland, France, Germany, Ireland, Luxembourg, Netherlands, Switzerland	Austria, Belgium, France, Germany, Luxembourg, Netherlands, Switzreland
2	CEC-5	Hungary, Poland, Slovakia	Hungary, Poland, Slovakia
2	NMC	Estonia, Lithuania	Estonia, Lithuania
3	OMC	Denmark, Iceland, Norway, Sweden, UK	Denmark, Finland, Iceland, Norway, Sweden
4	NMC	Cyprus, Malta	Cyprus, Malta
4	OMV	Greece, Italy, Portugal, Spain	Greece, EU-27, Ireland, Italy, Portugal, Spain
5	NMC	Bulgaria, Latvia, Romania	Bulgaria, Latvia, Romania

Note: OMC – old member countries; NMC – new member countries.

Source: Authors.

Additionally to the cluster classification, the in-depth search was performed by *discriminant analysis* with purpose to confirm, or to reject the cluster analysis classification of the studied countries into 5 groups.

The critical values *Class (i),* as defined by formula (1), are the direct products of the discriminant analysis (Everitt et al., 2011). Their concrete values at the group centroids for years 2005 and 2010 are presented in Table 14. Groups 1 – 5 represent the same groups which we created by cluster analysis approach.

T a b l e 14

Mahalanobis Distances among the Individual Clusters

2005					
Cluster	1	2	3	4	5
1	----	87.47	134.06	25.38	100.92
2		----	78.41	66.01	102.85
3			----	121.15	179.23
4				----	86.31
5					----
2010					
Cluster	1	2	3	4	5
1	----	38.66	24.71	23.62	115.55
2		----	36.46	47.46	81.64
3			----	37.17	108.36
4				----	113.86
5					----

Source: Authors.

An important finding of the discriminant analysis is represented by Mahalanobis distances between the groups of countries. Referring to the data in Tables 13 and 14, we can conclude that the second period of economic recovery *resulted into more homogeneous groups of countries* with lower mutual Mahalanobis distances for majority of subgroups. This applies also for the CEC-5 where *distances to the old EU-15 decreased,* while *distance to the "backward" countries (Bulgaria, Latvia, and Romania) has increased.*

Findings and Policy Implications

The empirical results confirmed four main important findings with policy implications. Regarding the set hypotheses from H1 to H3, the empirical results have confirmed the following findings with policy implications:

A first result of interest pertaining to H1 is that during each of the periods of relatively high rates of economic growth and during recession is pronounced similarities in economic and social situation of households among losers and gainers. This indicates that in a spite that the level of inequality has varied by individual years, it has remained rather constant or has a slightly declined over the two studied periods.

A second result of interest pertaining to H2 is that the main common characteristics between losers and between gainers have remained also rather constant. Among losers in a greater extent are typical the following economic, demographic and social situation characteristics: female by gender, young and older by age, unemployed and retired people by economic activity status and less educated by educational level. Among main gainers are those people with a greater education level. The latter finding is consistent with World Bank (2000) on an increase in income premium to education as one of the most important factors that drove the rise in wage and thus also income disparities. This also implies important policy implications in a favour of a greater focus on equal opportunities in access to education and on the labour market.

A third result of interest pertaining to H3 is that people in lower vulnerable socio-economic groups in the country with more equal income distribution (the Czech Republic and Slovenia) do not always face lower inequalities (e.g. at-risk--of poverty rate) than those in lower socio-economic groups in the country with more unequal income distribution (Poland). Among major outliers for Slovenia are unemployed and elderly, while in the Czech Republic also unemployed. Among retired people in Slovenia a critical group are more likely those with lower pensions or lower level of social transfers. Among unemployed in the Czech Republic and Slovenia are likely those without additional income sources

such as from work in informal economy in the Czech and Slovenian enabling environment, which requires higher minimum income level for survival than in other CEC. This implies the important role of different living conditions for survival as a reason that there are found different income levels that are necessary for survival. Both the income level and the minimum income for survival in Slovenia and the Czech Republic are higher than in any other of the CEC, except for the capitals and some other urban areas, where costs of living have also increased substantially.

Finally, economic growth and changes in income inequalities among socio-economic statuses of population are two different concepts. In between is income distribution, government transfers and overall living conditions with absolute minimum income levels necessary for survival. Even though the CEC-5 economies have grown strongly over the first post-EU accession years, the income inequalities among socio-economic statuses of population remained more constant or have a slightly declined with the important positive benefits from the higher and university levels of education. The government transfers through taxation and subsidization policies might play some short-term redistribution role from the most reach to the most poor, but access and better opportunities for the higher and university educational attainments and labour market inclusion need greater private and government attention.

Conclusion

The article has investigated economic growth, income and social situation of households, and associations between economic growth/recession, level of economic development and expenditure on social protection and pensions in the CEC-5 during the post EU accession years 2005 – 2010 in comparison with the EU-27 average using the EU-SILC data.

The findings are indicating that even positive dynamics of the economic growth is not sufficient precondition for preserving and protecting the social status of population. The gains from investments in education are unequally distributed among different clusters of population. Direct gains from education particularly belong to the highest educated. The size of indirect externalities on increased welfare in society through innovation, patents and some other channels is an uninvestigated issue. As showed by Stiglitz, Sen and Fittousi (2009) the economic theory in studying the economic dynamics should pay higher attention, additionally to the classical GDP issues also to broader aspects of the social situation of population, particularly the multidimensional phenomena of the quality of life as well as the environmental impacts of the economic growth.

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