Cohesion Policy, Convergence and Regional Disparities: the Case of the European Union

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Abstract: - The aim of this paper is to discuss development of EU Cohesion Policy and its efficiency. This policy has become the core policy among EU economic policies. Regional disparities have become a debated topic in the last decades and this paper also deals with the development of regional income disparities and the convergence process in selected EU Member States. Emphasis is placed on selected new Member States (Visegrad group). The first part of the paper offers a review of EU Cohesion Policy evolution, the second part deals with different approaches to measurement of regional disparities. Regional trends are mainly measured using a variety of approaches – the coefficient of variation, the Herfindahl index, the Geographic concentration index and the Theil index. The third part of the paper is based on empirical data and calculations of the indices or the coefficients. Using gross domestic product and gross domestic product per capita in purchasing power standard data, the paper examines trends in regional disparities at the NUTS 2 level during the period 1996-2007. The analysis shows a significant convergence process and a perceptible increase in regional disparities in the case of new Member States.

Key-Words: - Cohesion policy, Convergence, European Union, Regional disparities, Visegrad group.

1 Introduction

The European Union (EU) is a heterogeneous integration with significant economic and social differences among Member States and their regions. These differences were mainly caused by the uneven spatial distribution of economic activities, which reflect on varying levels of quality of life. Economic and social development of the EU has been determined by two complementary goals: competitiveness and cohesion. While competitiveness determines the EU's position in the global economy, existence of Cohesion Policy is triggered by disparities between countries, regions and social groups and an effort to reduce them. The size, structure and level of regional disparities, measured through selected macroeconomic indicators, can be a criterion of successful or unsuccessful Cohesion Policy.

The EU cohesion policy tries to support cohesion in the economic, territorial and social realm. Moreover, EU Cohesion Policy tries to support cohesion in the economic, territorial and social realm. Moreover, some of its measures are a part of other EU policies, such as common agricultural policy (CAP), research and development policy or transportation policy. The main component of Cohesion Policy is regional policy; through it, the EU transfers resources from affluent to poorer areas. The aim is to modernise backward regions so that they can catch up with the rest of the Union. EU Cohesion Policy is financed and designated at the European level, largely by Member States´ authorities and the European Commission [11].

One of the main principles of EU Cohesion Policy is additionality. This means that EU funds would not directly substitute national funds, but be somehow additional. In other words, it means that EU funds are only provided if Member States or other applicants also contribute their own funds to co-finance these projects.

As the main indicator of regional inequalities, we use gross domestic product (GDP), respectively GDP per capita in purchasing power standard (PPS).

The paper is divided into three major sections: (i) in the first part, the paper deals with the concept of EU Cohesion Policy; (ii) in the second part, we

discuss main approaches to measuring regional disparities; and (iii) the third part is in its nature an empirical one and we focus on the main trends of regional development in the European Union. We also apply measurement methods on data that were obtained from Eurostat's regional database.

2 Concept of EU Cohesion Policy

In this section, we focus on defining the concept of EU Cohesion Policy and the discussion about its effectiveness.

2.1 Evolution of EU Cohesion Policy

Already at the start of the European Economic Community (EEC) in 1958, Member States understood that differences in economic and social level between regions were undesirable. Although the Treaty of Rome from 1957 did not define Cohesion Policy explicitly, a number of different articles of this Treaty contained its main elements. However, we can find a very general statement in the Preamble of this Treaty: "anxious to strengthen the unity of their economies and to ensure their harmonious development by reducing the differences existing between the various regions and by mitigating the backwardness of the less favoured."

At this stage, it was not clear whether these disparities would be addressed through national or Community regional policies, or a combination of both [1]. In this context, it is necessary to emphasize that little attention was paid to Cohesion Policy and its main instruments. The reason was that the six original Member States reached a similar level of economic development at the end of the '50s and disparities between regions were not so remarkable compared with the situation of today (with the exception of Italy). In addition, national authorities believed that economic growth is a sufficient factor to solve regional problems. On the other hand, they assumed that regions with significant concentration of traditional industries might have problems due to severe market competition as the result of integration. Therefore, it was clear that common special financial assistance to these regions will be necessary. The first concept of Cohesion Policy was based on compensation of some negative effects (especially social), which were caused by the establishment of the Community. For this purpose, the European Investment Bank (EIB) was established and its aim was to grant loans and guarantees on a non-profit-making basis and to facilitate the financing of the following projects in all sectors of the economy (see Article 130): (i) projects for developing less developed regions; (ii) projects for modernising or converting enterprises or for creating new activities that are called for by the progressive establishment of the Common Market, where such projects by their size or nature cannot be entirely financed by the various means available in each of the Member States; and (iii) projects of common interest to several Member States that, by their size or nature, cannot be entirely financed by the various means available in each of the Member States. Another instrument of Cohesion Policy was the European Social Fund (ESF) whose scope of intervention changed over time. We can also find some aspects of Cohesion Policy in measures financed by the European Agricultural Guidance and Guarantee Fund (EAGGF).

Since the '70s, importance of this specific policy grew. It is associated both with the deepening imbalances between regions within Member States and by the first enlargement of the Community, which, moreover, began to deepen the differences in economic levels among the Member States themselves. In 1973, the Thompson Report was adopted and the European Commission stated that although the objective of continuous expansion set in the Treaty had been achieved, its balanced and harmonious nature has not. The Report identified the reasons for the existence of regional policy and legal instruments (directives) in this field. It also contained concrete measures to alleviate regional disparities. The Report also identified a close link between the implementation of the Economic and Monetary Union and regional and structural disparities that could affect actual realization of the EMU. There were concerns in the sense that introduction of the single currency could lead to a deepening of the existing imbalances between regions. One of the proposals mentioned in the Report was the establishment of the European Regional Development Fund (ERDF). The ERDF was set up in 1975 for a three-year period with a budget of €1,300 million with the objective of correcting regional imbalances due to predominance of agriculture, industrial change and structural unemployment. After this historical moment, EU Cohesion Policy has constantly expanded both in terms of money and content [18].

The institutionalization of a genuine 'European' cohesion policy was given impetus in the late 1980s in the context of the accession of poorer Mediterranean countries – Greece (1982), Spain and Portugal (1986) – and an ambitious drive to adopt the single market programme [2]. In 1986, the Single European Act (SEA) laid the basis for a genuine cohesion policy designed to offset the

burden of the single market for the less-favoured regions of the Community. Moreover, we can find an explicit definition of economic and social cohesion in this treaty in the article 130a: "In order to promote its overall harmonious development, the Community shall develop and pursue its actions leading to the strengthening of its economic and social cohesion. In particular the Community shall aim at reducing disparities between the various regions and the backwardness of the least-favoured regions." The policy had become shared policy based on division of competence between Member States and the Community. It also introduced the four core principles of EU Cohesion Policy, which are still valid today: concentration, programming, additionality and partnership.

In 1988, the Council adopted the first regulation integrating the Structural Funds under the umbrella of Cohesion Policy. This involved not only a complete overhaul of the administration and implementation of the funds, but also a significant increase in budget allocations [23]. In other words, it means that multi-annual planning documents and budgets, specific financial instruments and shared responsibilities between supra-national, national and sub-national level were introduced [18]. It was also decided that regional policy with social and a part of common agricultural policy should be integrated into Cohesion Policy. This landmark reform introduced key principles such as focusing on the poorest and most backward regions, multi-annual programming, strategic orientation of investments and the involvement of regional and local partners. The reform also contained a change from the system of ad hoc projects to a more systematic system of programming – five main objectives were established in the new 1989-1993 period.

The Treaty on the European Union and the revised Treaty on the European Communities (TEC) entered into force on 1 November 1993. With respect to Cohesion and Regional Policy, the TEC established a new instrument, the Cohesion Fund, and a new institution, the Committee of the Regions, as well as the introduction of the subsidiarity principle.

A move towards simplification of Cohesion Policy's design and procedures in parallel with preparation for enlargement, these were the two major themes of the 2000-2006 period. 'Agenda 2000' had been in preparation since the second half of the 1990s and it paved the way for the biggest ever enlargement of the EU, with 10 new Member States joining in May 2004 and other two countries in 2007. Agenda 2000 also proposed a pre-accession strategy for all candidate countries, including aid for agricultural development (SAPARD) and structural aid for infrastructure and institutional adaptation (ISPA) [3].

Due to the enlargement, it has emerged that a new set of convergence regions in the new Member States are clearly all (except regions of the capital city) at a distance from the EU mean [13]. Against the background of eastward enlargement, the Commission has tried to keep the priority on lagging regions with a per capita GDP less than 75 per cent in comparison with the EU average [18]. This means the highest concentration ever of resources on the poorest Member States and regions, the inclusion of all regions, and a shift in priorities set to boost growth, jobs and innovation. These are in a nutshell the major changes of EU Cohesion Policy during the current 2007-2013 period.

Some changes were made in financing: the European Agriculture Rural Development Fund (EARDF or Rural fund) and the European Fisheries Fund (EFF or Fisheries fund), which financed interventions for these two fields of action, were moved out of the realm of Cohesion Policy and included under "agricultural policy" and "fisheries policy" respectively, although most of their interventions are inspired by principles similar to those of Cohesion Policy.

2.2 Evaluation of EU Cohesion Policy

The latest economic trends, from the 1980s to the present, show that the disparities in economic levels of development measured in GDP, have been significantly reduced between the EU-15 Member States and the former 'cohesion countries' (Greece, Spain, Portugal and Ireland) have experienced a substantial 'catch-up' effect [8].

If we look at purposes of the existence of EU Cohesion Policy we can find some arguments [23]: (i) EU Cohesion Policy can improve the efficiency of national regional policy by ensuring that spending is concentrated in places where it is most needed; (ii) EU co-ordination of Member states´ regional policies, again through competition policy, can reduce the scope for costly and inefficient competitive outbidding for mobile investments between nations and regions; (iii) there is a common interest argument that depressed regions benefit nobody and that major disparities in income and unemployment are unacceptable on social equity grounds; and (iv) there is dynamic argument that regional disparities may be a barrier to further integration.

The main question is how effective is aid from the Structural Funds and the Cohesion Fund. Officially, the principle of partnership was

introduced by the 1988 reforms to enhance efficiency of regional policy by involving sub-national actors in the planning, decision-making and implementation of Structural Funds [18].

According to [7], whose study is based on standard neoclassical growth framework, EU Cohesion Policy as such did not improve countries´ growth performance. Moreover, one important factor of the effectiveness was institutional quality. This finding seems to be very important in the case of the new Member States and the candidate countries which have problems with the reform of institutional framework. Insufficient institutional quality may lead to incapacity to draw EU financial support. Bradley and Untiedt [5] conclude that if EU Cohesion Policy had been designed and implemented purely at the regional level within Member States, with rapid moves towards regional equity as a goal, then it has not been a success. Rich, poor and middling regions coexist with each other, in the past, today, and probably in the future.

Another author who asked the question if the EU interventions are efficient is Moelle [13]. He assumes that EU Cohesion Policy suffers from a lack of efficiency. One of the main problems is the high organizational and administrative costs of operating the system that have two aspects: the first, general aspect is that the EU provides specific-purpose grants instead of general-purpose grants. However, this is a costly system in terms of administration, monitoring and evaluation. Total costs consist of the inputs of many actors such as various DGs, national authorities, non-governmental parties and intermediate organizations. The second, specific factor is based on fact that the EU spends in absolute terms large amounts of aid in the rich Member States. The pumping around of money between Member States and the EU is inefficient and entails a welfare loss. This also leads to financing projects that are eligible for EU funding, but these countries would often not have financed if they had followed their own national priorities. A solution of this problem lies in the better management of inflows and outflows from the EU budget – rich Member States would pay less and would get no support from the EU funds.

3 Methodology

The first approach can further be subdivided into (i) a single-criteria comparison of a chosen indicator (e.g. comparison of the minimum and maximum values, the coefficient of variation, the Herfindahl and Gini index); or (ii) a multi-criteria comparison of a chosen indicator (e.g. the weighted coefficient of variation, the Geographical concentration index

or the Theil index). In this paper, we focus on the static concept of measuring regional disparities [21]. We calculated various indices for time series 1996 – 2007 and so we tried to eliminate possible distortions (see the empirical section of the paper).

The easiest way to evaluate the regional development in the country is simply to compare the values of selected indicators and their subsequent ranking from highest to lowest value or vice versa. Another related method similar to this approach involves the comparison of the lowest and the highest value reached for selected indicators. If the share of these two values is close to 1, then e.g. the GDP per capita is similar in all regions and regional disparities are not significant. This method has its weaknesses, especially in the case of GDP, which tends to be several times higher in the capital regions of countries. For this reason, this approach is not appropriate to apply for the GDP per capita.

The first statistical method that is often used for the calculation of regional disparities is the coefficient of variation, which represents the ratio between the weighted standard deviation of regional GDP per capita and national GDP per capita. Since the coefficient of variation (CV) is not dependent on measured values of input parameters, it is therefore a more appropriate instrument for comparison than solely the standard deviation, which we encounter in the studies on regional disparities [12]. The standard deviation is a measure of variability, respectively variance of random variable values around the mean (GDP per capita in this case). Mathematical notation of the standard deviation is as follows:

$$\sigma = \sqrt{\frac{\sum_{i=1}^{N}(y_i - y_n)^2}{N}} \qquad (1)$$

where y_i is regional GDP per capita of i-region, y_n is national mean of GDP per capita and N is the number of regions in the country.

The coefficient of variation (CV) is defined as the ratio of the standard deviation to the mean (national GDP per capita):

$$CV = \frac{\sigma}{y_n} \qquad (2)$$

To receive a percentage value we must multiply this coefficient by 100. If the GDP per capita is the same in all regions, the variance is zero. Large differences in levels of GDP per capita between regions in the country represent a fairly wide dispersion of this parameter.

However, calculation of regional disparities on the basis of the coefficient of variation is insufficient for detailed analysis. We cannot derive the necessary quantity of inputs (e.g. labour force) needed to produce it. The incorrect interpretation may also be due to failing to take into account the territorial size of individual regions. To this end, we can modify the coefficient of variation into the so-called weighted coefficient of variation (CVW), which represents the relative measurement of dispersion standardized by the mean value of the variable. Deviations from this value are weighted by the proportion of the population in the region to the country's total population. This factor is independent of variable size, and therefore, it is usually used to measure imbalances over time. CVW is defined as follows [15]:

$$WCV = \frac{1}{y_n}\left\{\sum_{i=1}^{N}\left[(y_i - y_n)^2\left(\frac{p_i}{P}\right)\right]\right\}^{\frac{1}{2}} \qquad (3)$$

where $y_{i,j}$ is the variable y in the region j of the country i; $\overline{y_i}$ is the average value of the variable in the country, and $p_{i,j}$ and p_i represent the population in the region j of the country i.

The Herfindahl index represents another approach by which we can determine the degree of concentration. The Herfindahl index is defined as follows:

$$H = \sum_{i=1}^{N} y_i^2 \qquad (4)$$

where y_i is the proportion of the region in the production of the total GDP in the country and N represents the number of regions in the country. The index value ranges between $1/N$, which would provide the same amount of GDP generated in all regions and therefore no geographical concentration, and 1, which would mean the total concentration of GDP generated in one region, i.e. maximum concentration.

In order to create a standardized interpretation the so-called normalized Herfindahl index was introduced and is defined as:

$$H^* = \frac{(H - 1/N)}{1 - 1/N} \qquad (5)$$

where N is the number of regions in the country and H is the value of the Herfindahl index. The value of the normalized version of the Herfindahl index ranges from 0 (no concentration of GDP) to 1 (maximum concentration).

In general, however, regions have in most countries different areas so that a correct measure of geographic concentration must compare the unemployed labour force share of each region with its share in the national territory. One suggestion on how to incorporate this idea into some formula is to adjust the Herfindahl index by these variables. But this approach is not suitable for an international comparison because it is very sensitive to the level of aggregation of regional data. This feature is due to the fact that the differences between the unemployed labour force share and relative area of each region are squared. In this context it is appropriate to use the Geographic concentration index (GCI) which is defined in [14]:

$$GCI = \sum_{i=1}^{N} \frac{|u_i - a_i|}{2} \qquad (6)$$

where a_i is the area of region i as a share of the country area and $|\,|$ indicates the absolute value. The index can be multiplied by 100. Then the index lies between 0 (no concentration) and 100 (maximum concentration) in all countries and it is suitable for international comparison of geographic concentration. The GCI offers a picture of the spatial distribution of unemployment within the country or group of countries, as it compares unemployment weight and the area share over all the regions in a given country or group of countries.

Another possible way to measure regional disparities that we used is the Theil index of non-compliance by which it is possible to assess the level of GDP disparities between regions. Mathematically, the index can be written as follows [9]:

$$T = \sum_{r=1}^{N}\left(y_r \cdot \log\frac{y_r}{x_r}\right) \qquad (7)$$

where y_i is the GDP of the i-th region, x_i is the region's share of the total population in the country and N represents the number of regions.

According to [22], the Theil index is an indicator of inequality, based on the concept of entropy and thus, it deals with deviations from perfect equality. Unlike the Gini index, the Theil index has consistently given a range of values. It takes values from 0 to log N, whichever is the higher value, the more uneven distribution of the variables exists. This index is used as a tool for analysing the spatial distribution and the reason for its frequent use is the weighting system and its decomposition. These features are particularly useful for the analysis of regional imbalances in heterogeneous regional

arrangements, such as is the NUTS system of regional classification used by Eurostat.

The Theil index is also possible to decompose if we want to segregate regions into several subgroups. Within this paper, a number of subgroups are equal to a number of selected Member States. Overall, the Theil index can be decomposed into two components: (i) a component expressing inequality between GDP levels among Member States (Theil between countries); and (ii) a component showing the sum of inequalities between regions within Member States (Theil within countries). While the first index captures the inequality due to the variability of GDP across groups of countries, the second of these indices reflects the variability of GDP in each group [22]. The Theil index can then decompose according to [20] as follows:

$$T = T_{bc} + T_{wc} \qquad (8)$$

$$T_{bc} = \sum_{i=1}^{N} \left(Y_i \log \frac{Y_i}{X_i} \right) \qquad (9)$$

$$T_{wc} = \sum_{i=1}^{N} Y_i \left[\sum_{r=1}^{N} (y_r/Y_i) \cdot \log(y_r/Y_i/x_r/X_i) \right] \qquad (10)$$

where T is total inequality, T_{bc} is between-country inequality, T_{wc} is within-country inequality, y_r and x_r are regional shares of European GDP, and Y_i and X_i are the same shares for countries.

4 Empirical results

In this study we used GDP data (GDP at current market prices at the NUTS 2 level in purchasing power standard - PPS) from the Eurostat Regional accounts database within the time period of 1996 to 2007. Regions are divided based on Eurostat´s NUTS methodology into three territorial levels: (i) NUTS 1 territorial unit as major regional countries; (ii) NUTS 2 usually corresponding to the level of lower level of the administrative division and (iii) NUTS 3 generally corresponding to the lowest administrative level. We used data at the NUTS 2 level as this level is a key administrative unit for EU Cohesion Policy. It means that we used data for 191 NUTS 2 regions (overseas France regions were excluded). Two groups of selected EU Member States (EU-14) are included in the analysis: (i) ten "original" EU Member States that are also the Eurozone members (excluding Ireland and

Luxembourg which consist only of one or two regions); and (ii) four new EU Member States (Czech Republic, Hungary, Poland and Slovakia – so-called Visegrad Group countries). We focused on several levels of regional disparities: (i) group of countries level and (ii) all selected EU Member States level (EU-14).

Figure 1 shows a decreasing Eurozone - new Member States disparity in terms of weighted per capita GDP in purchasing power standard (PPS). Both groups of countries experienced steady growth during the observed period. If we look at the data in more detail, we can see that real GDP per capita increased for both groups. New Member States, however, grew faster. The proportion of NMS and the Eurozone per capita GDP (expressed in %) increased from 44% to 55%. We can argue, based on these calculations that NMS regions were converging during the observed period. But the question that must be answered is if the convergence process takes place with equal intensity in all regions.
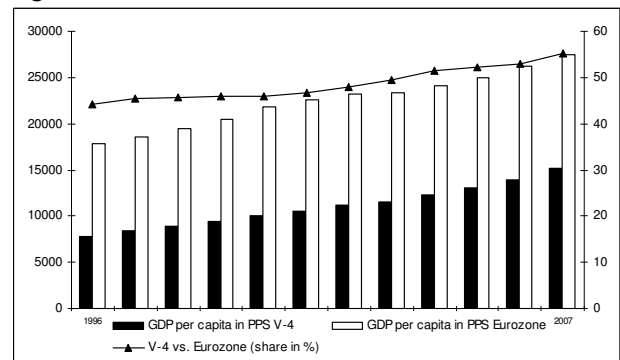

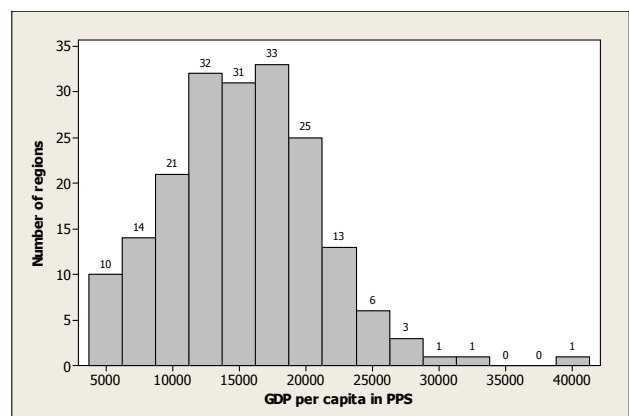Fig. 1 GDP per capita in PPS
Source: Eurostat

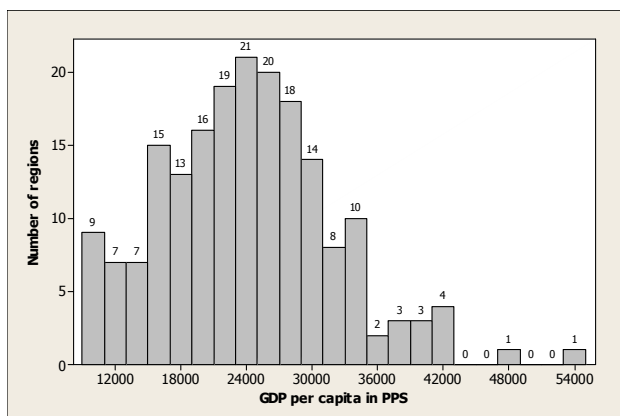Fig. 2 Regional output according to groups, 1996
Source: Eurostat

Fig. 3 Regional output according to groups, 2007
Source: Eurostat

Fig. 4 Minimum and maximum range of regional
GDP per capita in PPS (NUTS 2 level), year 1996
Source: Eurostat

Figure 2 and 3 show distribution of regional GDP per capita according to level groups in 1996 and 2007. As is seen from these figures, most regions were located around the average. In 1996 (see figure 2), most regions (33) were situated in a group defined by the value of GDP per capita between 16 250 to 18 750 PPS, which was slightly above the average value. The second highest frequency (32) was detected for the group with GDP per capita between 11 250 to 13 750 PPS, which was slightly below the average value. The third largest number of regions (31) contained the group with average EU-27 GDP per capita (15 613 PPS). The range of this group was between 13 750 to 16 250 PPS. With an increasing or decreasing value of GDP per capita, the number of regions has declined in these groups.

As shown in Figure 3, the distribution of regions into groups according to level of GDP per capita has not been as concentrated as in the previous case (year 1996) and regions can be divided into more groups. Most regions were placed in groups that were close to the average – this is same with the previous figure, but individual groups are not so numerous. In addition, the number of regions increased in groups on the left side from the group with the average value. From this we can conclude that the gap between high-income and low-income regions has widened.
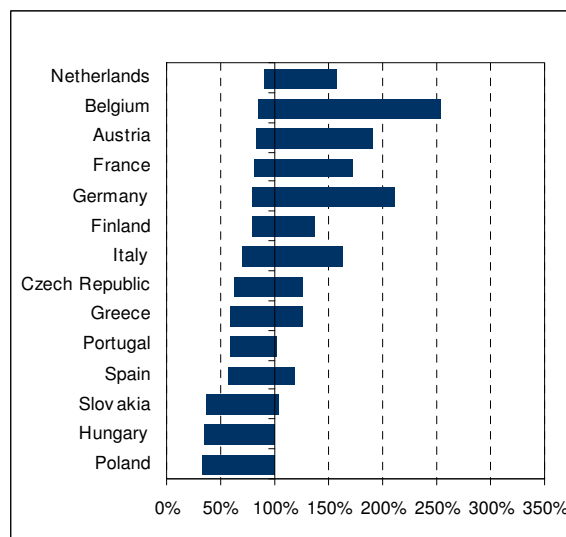
Figure 4 shows the range of minimum and maximum values of regional GDP per capita in selected EU countries to the EU-27 average value of GDP per capita in 1996. As seen from the figure and as was expected, the weakest regions are located in V-4 countries (excluding the Czech Republic). Compared to the remaining countries, the maximum value was only close to the European average, while in the remaining countries (except Portugal), the maximum value was significantly above the European average. In principle, this high-income region was the region of the capital city. Belgium, Austria, Germany and Italy were among the countries with the largest differences between the minimum and maximum values. On the contrary, Netherlands, Finland, Portugal and the Czech Republic were among the group of countries with the smallest differences.

Figure 5 shows the same relationship in 2007. It is evident in comparison with 1996 that the situation did not improve and backward regions were still below 50% of the European average in some V-4 countries. In the case of the Czech Republic and Slovakia, we can also see a rise in minimum-maximum range, which was mainly caused by significant GDP growth in the regions with capital cities (Prague and Bratislava). Compared with two remaining V-4 countries, these regions were high above the average European value and are comparable with the most advanced regions of the original EU-15. According to an OECD study (2009b) metropolitan regions are the most dynamically growing and a result of this development may be the fact that regional

disparities tend to increase and diverge in these countries while in the original EU-15 countries the levels of regional GDP tend to converge. For other countries, the situation remained basically maintained, except that the minimum slightly shifted to the right (see figure 5).
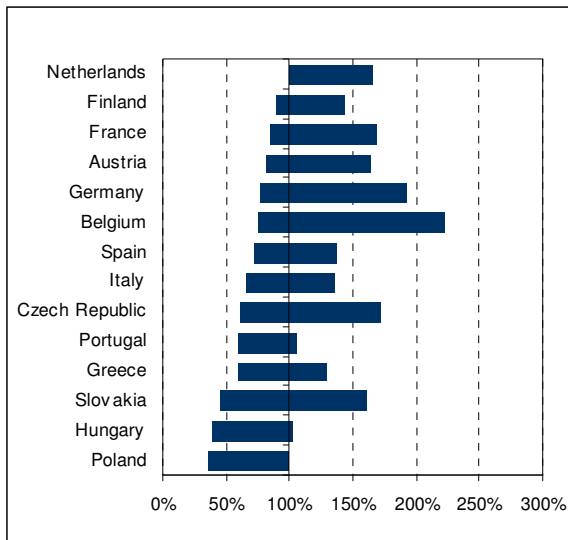

Fig. 5 Minimum and maximum range of regional GDP per capita in PPS (NUTS 2 level), year 2007
Source: Eurostat

Figure 6 shows the development of GDP per capita over time (between the year 1996 and the year 2007). In most regions an increase of this indicator was recorded, but the intensity of this growth has been different. In most regions we can observe a slight increase in GDP per capita (see an area with the densest number of points). It is evident that in some regions has been reached a remarkable increase in GDP per capita, and these regions are located further from the diagonal.
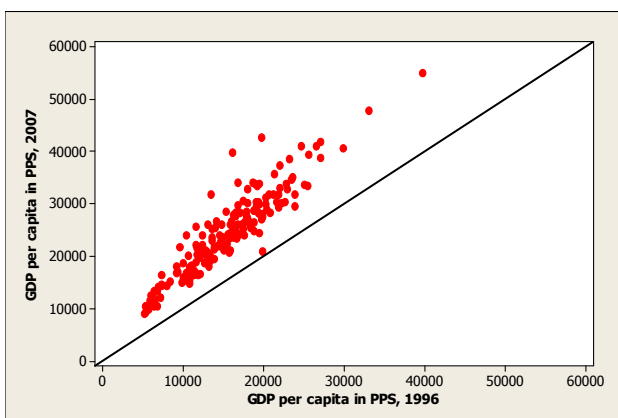
Fig. 6 Evolution of regional GDP per capita in PPS (NUTS 2 level) during time, year 1996 and 2007
Source: Eurostat

When analysing the process of real convergence, according to [10], a few questions can arise: (i) whether convergence at the national level automatically includes convergence at the regional level; or (ii) if regional convergence is a spontaneous process. It is also important, among other issues, to find any factors which can decelerate the process of real convergence. The data shows that while most regions in the V-4 countries converge to the Eurozone level of GDP per capita, we can find regions that were diverging or even stagnating in the Czech Republic and Hungary. Converging regions in these countries can therefore be divided into those who managed to gradually approach the level of the Euro area: (i) significantly - this group includes metropolitan regions; and (ii) slightly - this group includes the rest of the converging regions in the countries. In this context, there is a certain parallel with Portugal and Spain, which underwent similar experiences in the 80s and 90s [4]. An exceptional position of the capital cities in these countries is influenced mainly by increasing the concentration of management functions, i.e. headquarters of national and multinational companies, banks, etc. This phenomenon is also the result of the growing importance of cities in the global economy [16].

To measure regional disparities, we can use the measure of coefficient of variation (2) or weighted coefficient of variation (3), both widely used measures for evaluating regional imbalances. Both CV and WCV decreased at the EU-14 level in the observed period (see Figure 7). We found a downward trend for both indices also in the case of the Eurozone countries. But in the case of NMS, we can see an upward trend in both indices. This finding means that regional disparities in NMS increased during the 1996-2007 period.
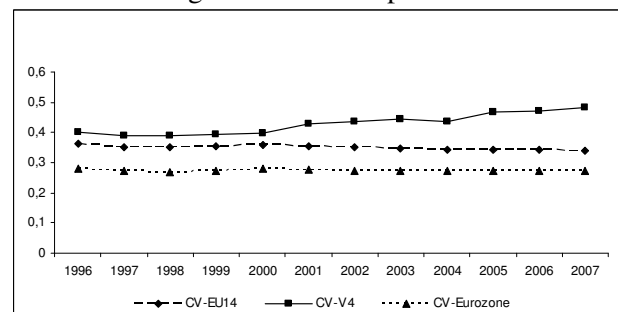

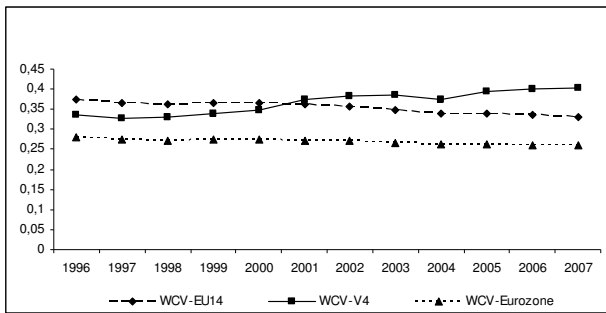Fig. 7 Coefficient of variation
Source: Eurostat

Fig. 8 Weighted coefficient of variation
Source: Eurostat

Another way how to measure regional inequalities is concentration indices, especially the Normalized Herfindahl index or the Geographic concentration index (GCI). Income concentration in EU-14 seems to be low if we compute the Normalised Herfindahl index. On the contrary, GDP in EU-14 seems fairly concentrated with GCI equal to 44.5% in 1996 and 43.1% in 2007, respectively. However, there appear to be significant differences in the degree of geographic concentration, with the index going from 26% for the average of NMS to 44.5% for the average of the Eurozone. Moreover, GCI slightly increased for the average of NMS, respectively decreased in the case of the Eurozone (see Figure 8, 9 and 10).
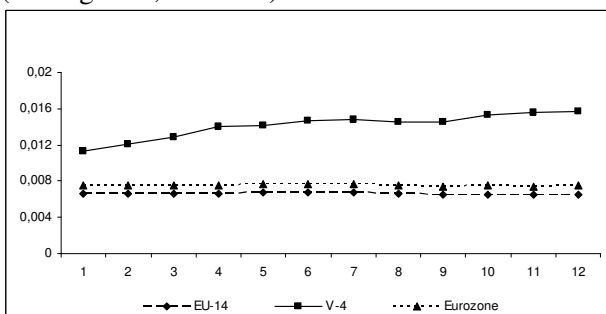

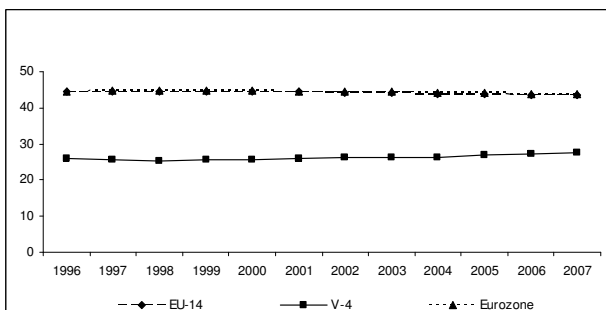Fig. 9 Normalised Herfindahl Index
Source: Eurostat

Fig. 10 GCI Index
Source: Eurostat

Figures 11, 12, 13 and 14 show the values of the Theil index for three different sets of data corresponding to the creation of a single currency

area and EU's fifth enlargement. According to decomposition which is mentioned in the theoretical part, we computed the total Theil index and also contribution of between-country and within-country components to total inequality. As it is written above, we divided selected EU Member States (EU-14) into two groups: (i) the Eurozone countries (excluding Ireland and Luxembourg) and (ii) NMS or the so-called Visegrad Group states. If we look at EU-14 data we can see that the total Theil index decreased over the observed period from 0.32 in 1996 to 0.24 in 2007. The figure proves that the role of between-country inequality was not as important in 2007 as it used to be in 1996 – its contribution to total inequality was almost 69% in 1996 compared with 43% in 2007. On the contrary, a within-countries inequality role was much more important in 2007 compared with 1996. This development is consistent with the GDP per capita development (see Figure 1) and it proves the convergence process in NMS. Moreover, Terassi [20] detected the existence of a trade-off between national convergence and regional convergence. This is an aspect that recent literature has not emphasized, but it can be very important in view of the new enlargement of the EU to some transition countries.
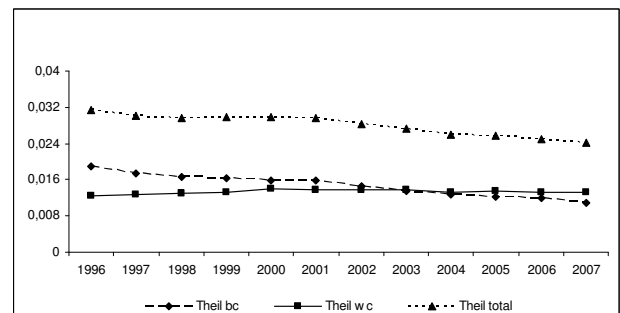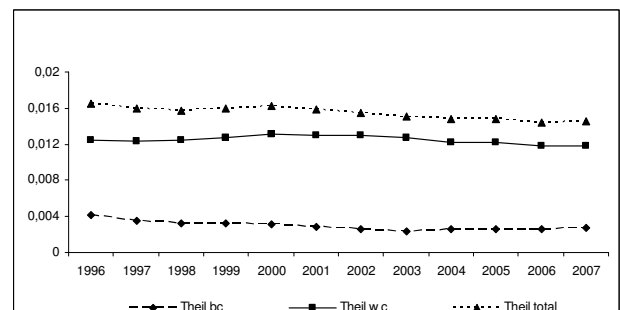

Fig. 11 Theil index (EU-14)
Source: Eurostat

Fig. 12 Theil index (Eurozone)
Source: Eurostat

This trend can be seen if we compute the Theil index at NMS level. The total Theil index of this group of countries increased in the period 1996-

2007. The role of within-country inequality seems to be much more important: its contribution to total inequality was almost 85% in 2007 compared with 58% in 1996. On contrary according to figure regional inequality at the Eurozone level remained practically constant during the observed period.
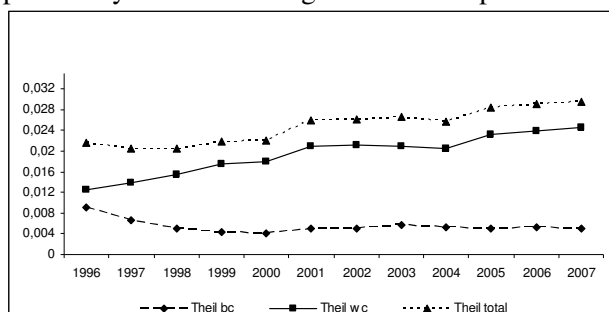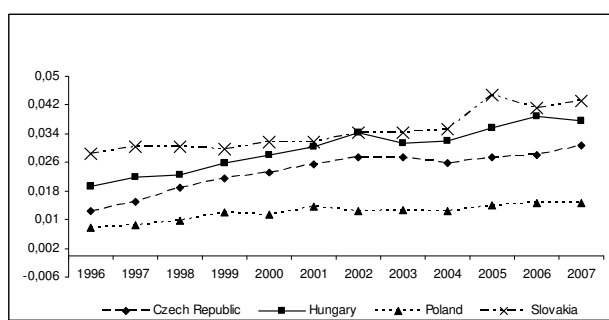

Fig. 13 Theil index (V-4)
Source: Eurostat

Fig. 14 Theil index (V-4 countries)
Source: Eurostat

4 Conclusion

In this paper, we discuss the evolution of EU Cohesion Policy and we also examined regional disparities in selected EU Member States between the years 1996 and 2007. EU Cohesion Policy has contributed significantly to growth within the Union´s regions and to reduction of the economic, social and territorial disparities. The fifth report on the economic, social and territorial cohesion shows that this policy has created new jobs, increased human capital, built critical infrastructure and improved environmental protection, particularly in less developed regions. One can assume that without EU Cohesion Policy, the differences would certainly be higher. Persistent social effects of the crisis, the demand for innovations arising from the increased problems of global importance and a need of efficiency, however, require an ambitious policy reform. In the empirical part, we chose traditional tools of spatial economics, which are mostly based on well-known indices, for measurement. We used GDP and GDP per capita, respectively, as key indicators of income. The main conclusion is that regions in new Member States converged to the European average in the observed period, while the existing regional disparities widened. The analysis also confirmed the link between the rapid catch-up process and rise of regional disparities in the case of selected new Member States. Moreover, the same trend had been noted previously in the case of Portugal and Spain. On the contrary, regional disparities in the Eurozone stayed quite stable with one exception – the only indices which were decreasing during the period were the coefficient of variation and weighted coefficient of variation. Calculations on the EU-14 level proved the fact that regional disparities stayed stable at this level.

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