IS THE REGIONAL DIVERGENCE A PRICE FOR THE INTERNATIONAL CONVERGENCE? THE CASE OF THE VISEGRAD GROUP

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Abstract

The main goal of this article is to verify whether the Visegrad Group countries are achieving social convergence at national level at the expense of internal divergence. For this purpose, the existence of social beta-, sigma- and gamma-convergence at national and regional level was tested. The author of this article decided to tackle the convergence problem since there is a high risk that countries are trying to catch up at international level even at the expense of increasing internal differences. This trade off could be framed as undesirable from a cohesion policy point of view. Achieving convergence is not only important for inhabitants' standard of living but for regions' and countries' competitiveness as well. In today's turbulent and globalised world, regions must become more resilient and competitive, and this cannot be done without adequate human capital. Dealing with present unsustainable trends of many kinds, regions are forced to create the best living conditions in order to avoid the brain drain. In this article, a spatial taxonomy measure of development (Pietrzak, 2016) was used to compare the Visegrad Group countries performance with respect to their internal cohesion in the period of 2004-2014. It seems that the inclusion of spatial relationships is justified because nowadays, no region develops in isolation. Therefore, the situation in each region is influenced by neighbourhood.

Keywords: composite indicator, social convergence, international comparison, regional analysis, cohesion, Visegrad Group
JEL Classification: C43, C38, O1.

1. INTRODUCTION

The Cohesion Policy and convergence issues are still being discussed on political (e.g. 7th Cohesion Forum that was held on 26-27 June 2017 in Brussels, European Commission 2017a; 2017b; 2017c; 2017d; 2017e) and scientific fields (Baddeley, 2006; Anagnostou, Kalliora, Kollias, 2015; Balcerzak, Rogalska, 2016; Próchniak, Witkowski, 2016; Cosci, Mirra, 2017; Furkova, Chocholata, 2017; Horridge, Rokicki, 2017; Scheurer, Haase, 2017; Pietrzak, Balcerzak, 2017; Stanickova, 2017). This should not be surprising as Cohesion Policy is a binder that holds Europe together. What is needed for Europe is less division and more cohesion, especially now when European Union is struggling with the migrants' crisis. Cohesion policy does not expire as European Union commissioners are currently preparing post-2020 Cohesion Policy with an overall consensus tackling inequalities, which is a major priority for the European Union. It is assumed that a new proposal should be announced in May 2018. Moreover, the European Pillar of Social Rights was set up this year and its main goal is to foster a renewed process of convergence towards better working and living conditions across Europe (European Commission, 2017f).

One of the problems with convergence analysis is that they often focus on the country level only omitting regional or individual data. Such approach may lead to distorted results by not taking into account the internal diversity of countries. It is important to be aware of the fact that European Union Member States are not internally homogeneous and in fact, some of them have firmly regionally unbalanced economy (e.g. United Kingdom, Portugal, Poland). The main goal of this article it to investigate whether the Visegrad Group countries are paying the price of social regional divergence to obtain the social international convergence. To achieve this goal, the existence of beta-, sigma- and gamma- convergence was tested for both national and regional level. The data taken from Eurostat and national statistical offices were the basis for computing the composite indicator that quantifies countries and regions performance in social dimension. The analysis covers the period of 2004-2014. The Visegrad Group countries (i.e. Czech Republic, Hungary, Slovakia and Poland) were chosen intentionally due to their geographical neighbourhood, joint cooperation and similar transformation path.

2. THEORETICAL BACKGROUND

The concept of social convergence is being discussed in this article, however, it is worth introducing that conception briefly (Rajnoha & Lesníková, 2016). In short, the term 'social convergence' reflects the idea of decreasing inequalities in inhabitants' well-being (standard of living or quality of life). Well-being (and related categories) is a complex phenomenon that cannot be quantified by a single variable, especially by GDP per capita (Pietrzak & Balcerzak, 2016a; 2016b; Cyrek, 2017; Simionescu et al., 2017) since the economic performance itself does not fully explain the social progress. In literature, we can find two main approaches to measure social convergence: considering separately a set of variables (Neumayer, 2003; Puss, Viies, Maldre, 2003; Otoiu, Titan, 2015) or combining them in one aggregated index (Lopez-Tamayo, Ramos, Surinach, 2012; Kuc, 2014). In fact, social convergence is not as clear concept as economic convergence. Therefore, there is no generally accepted indicator to measure it. A more detailed review of social cohesion theories and definitions can be found in Jenson (2010), Vlien (2010) or Norton & Haan (2013). Methodological approaches that can be applied to investigate the existence of social convergence will be presented in the following section of this article.

Cohesion Policy and convergence processes are not only important by contributing to improving the quality (or standard) of living of European citizens. They are also important from the competitiveness point of view. During last couple of years, a focus on competitiveness can be observed. From that point of view, regional competitiveness is perceived as a key factor for lasting convergence. In today's turbulent and globalised world, regions must find ways to become more resilient and competitive, and this cannot be done without adequate human capital (Judrupa, Senfelde, 2011; Bielig et al, 2013; Huggins, Izushi, Thompson, 2013; Bánociová & Martinková, 2017). Regions are therefore forced to create the best living conditions in order to avoid the brain drain. That could entail major risk, notably in terms of widening the internal inequalities within countries. The paper on harnessing globalisation (European Commission, 2017g) stressed that disproportions in competitiveness and innovation levels among some advanced European Union regions and those weaker ones are enlarging. It is important to mention that the Cohesion Policy lays the foundations for positive changes in socio-economic development of EU countries

but we cannot evaluate its results looking only at national level or high potential regions (Otoiu, Titan, 2015). The additional focus should also be on low-density and cross-border territories. On the one hand, European Union strives to foster regions' competitiveness by boosting innovations, reinforcing local strengths, implementing smart specialization in each region and facilitating synergies between EU policies and instruments. On the other hand, European Union is trying to achieve upward convergence.

So, is it possible for regions to be more competitive and more coherent at the same time? Or may governments be focusing on improving living conditions in capital (well-prospering or high-potential) regions that are inadvertently leading to the country divergence and backwardness of peripheries? A certain premise to this statement is the fact that public funds are allocated increasingly through the project selection and less through the allocation formulas. This leads to a situation when local governments with large budgets receive more funds and at the same time, local governments with high unemployment receive funds less often and in lower quantities (Dubois, Fattore, 2011).

3. RESEARCH OBJECTIVE AND METHODOLOGY

3.1. Composite indicators

As it was mentioned in the previous section, social convergence is a complex phenomenon that cannot be directly measured using just one indicator. It seems reasonable to investigate the existence of social convergence based on a set of different variables describing different pillars of standard of living. As discussed in Becker et al. (2017), human well-being and progress are one of the areas where composite indicators are very popular. The composite indicators are very convenient tools as they: (i) summarise multidimensional realities, (ii) are easier to interpret than a set of many separate indicators, (iii) reduce the visible size of a set of indicators without dropping the underlying information base, (iv) enable users to compare complex dimensions effectively (OECD JRC, 2008; Santos, Santos, 2014). Thus a growing interest in composite indicators should not be surprising as they may be applied in many different fields: innovation (Żelazny, Pietrucha, 2017; Balcerzak, Pietrzak, 2017a), health care system performance (Łyszczarz, 2016), real estate markets analysis (Małkowska, Głuszak, 2016) countries' competitiveness (Kruk, Waśniewska, 2017), socioeconomic development (Bartkowiak-Bakun, 2017), quality of institutions (Balcerzak, Pietrzak, 2017b), sustainable development (Balcerzak, Pietrzak, 2016; 2017c), standard of living (Kuc, 2017) and many others. However, one has to be aware of the fact that they are not free of defects: (i) may be disused to support a desired policy, (ii) may disguise serious falling in some dimensions if a construction process is not transparent, (iii) are sensitive to normalization, aggregation and weighting methods, (iv) a selection of indicators and their weights may be subjective (OECD JRC, 2008; Ravallion, 2010, Paroulo, Saisana, Saltelli, 2013; Santos, Santos, 2014). The author's intention is not to discredit synthetic measures, but to draw attention to some obstacles in their construction procedure.

In this article, countries' and regions' performance in social dimension are quantified using Pietrzak's (2016) spatial taxonomic measure of development, which is calculated as follows:

- Testing the presence of spatial autocorrelation using Moran's I statistics:

$$I = \frac{n}{\sum_i \sum_j w_{ij}} \cdot \frac{\sum_{i=1}^{n} \sum_{j=1}^{n} w_{ij}(x_i - \bar{x})(x_j - \bar{x})}{\sum_{i=1}^{n}(x_i - \bar{x})^2} \qquad (i = 1, \dots, n; j = 1, \dots, n) \qquad (1)$$

where: I - the value of Moran's I statistics; n - number of observations; w_{ij} - spatial weight matrix; x_i, x_j - the value of analysed variable in i and j objects; and the mean average of analysed variable.

The variables for which the value of Moran's I statistics is statistically significant are included in the group of 'spatial' variables and otherwise - in the group of variables having no spatial character ('non-spatial' variables). In this research, spatial contiguity weight matrix was used, since it is a matrix that appears most frequently in the studies, taking into account the spatial relationship. These weights basically indicate whether regions share a common boundary or not.

$$w_{ij} = \begin{cases} 1, & bnd(i) \cap bnd(j) \neq \emptyset \\ 0, & bnd(i) \cap bnd(j) = \emptyset \\ 0, & i = j \end{cases} \qquad (2)$$

1 refers to the situation in which regions i and j have a common boundary; 0, if not. Diagonal elements in matrix W have value equal to 0 as an object cannot be a neighbour to itself. Spatial weight matrix was row standardised.

- Estimating the SAR model for each variable from 'spatial' group of variables (LeSage, 1999):

$$X_j = \varrho W X_j + \varepsilon \qquad (3)$$

where: X_j - the vector of analysed j variable; ϱ - the spatial autoregression parameter;

W - the spatial weight matrix; ε - the spatially correlated residuals.

- Preparing the set of diagnostic variables:

Adjusting the values of variables from 'spatial' group according to formula:

$$S_j = (I - \varrho W)^{-1} X_j \qquad (4)$$

where: S_j - the vector of spatially adjusted j variable; I - identity matrix; ϱ - the spatial autoregression parameter, W - the spatial weight matrix.

- Remaining unchained the values of variables from 'non-spatial' group.

Standardizing variables:

$$z_{ij} = \frac{x_{ij} - \bar{x}_j}{s_j} \qquad (i = 1, \dots, n; j = 1, \dots, m) \qquad (5)$$

where: z_{ij} - standardised value of j variable in i object; x_{ij} - the value of j variable in i object; the mean x_j - the mean average of j variable; s_j - the standard deviation of j variable.

- Calculating the distance between the i object and 'ideal' object:

$$d_i = \sqrt{\sum_{j=1}^{m}\left(z_{ij} - \varphi_j\right)^2} \quad (i = 1, \ldots, n; j = 1, \ldots, m) \qquad (6)$$

where: z_{ij} - standardised value of j variable in i object; φ_j - value of j variable in the 'ideal' object.

- Calculating the spatial taxonomy measure of development (sTMD) according to formula (Pietrzak, 2016):

$$sTMD_i = 1 - \frac{d_i}{d_{i-}} \quad (i = 1, \ldots, n) \qquad (7)$$

where:

$$d_{i-} = \bar{d} + 2s_d \quad (1 = 1, \ldots, n) \qquad (8)$$

$_sTMD_i$ - the taxonomy spatial measure of development for the county i; d_i - the distance between object i and 'ideal' object; d (average) - the average value of d vector; s_d - the standard deviation of d vector.

The higher the value of $_sTMD_i$ the better from the point of view of the phenomena analysed. Calculated values of the composite indicator were the basis for testing the existence of beta-, sigma- and gamma- social convergence.

3.2. Convergence analysis

Beta convergence is a process in which countries with a lower performance are improving faster than those with a higher one. It is worth mentioning that β-convergence is necessary but not a sufficient condition for σ-convergence. It is a necessary condition because without catching up the spread between countries cannot shrink. It is not a sufficient condition because it is possible (at least theoretically) that countries with a lower performance can overtake those with a higher standard of living, so this may increase the disproportion (Sala-i- Martin, 1996). To examine the existence of beta-convergence, the following growth model was estimated:

$$g_i = a + b\ log\ (sTMD_{i,0}) + \varepsilon_i \qquad (9)$$

Where: $_sTMD_{i,0}$ – the spatial taxonomy measure of development calculated for a country i, g – the average change of the indicator over the analysed period, calculated as:

$$g_i = \frac{1}{T} log\left(\frac{sTMD_{i,T}}{sTMD_{i,0}}\right) \qquad (10)$$

In the beta-convergence analysis, the following set of hypothesis is tested:

H0: b=0 no beta convergence or divergence,

H1: b≠0 the existence of beta convergence (if b is negative) or divergence (if b is positive).

The speed of convergence can be calculated according to formula (Barro, Sala-i-Martin, 2003):

$$\beta = -(\ln(1+b))/T \quad (11)$$

where: β - speed of convergence, b - the estimated value of b parameter from equation (9).

If the beta convergence occurs, it is reasonable to investigate the existence of sigma convergence. The sigma convergence refers to a situation in which the disparities among the analysed objects are reducing. In this research, the following trend model was estimated to investigate the existence of sigma convergence:

$$V_W = a_0 + a_1 t + \varepsilon_t \quad (12)$$

where: V_W - weighted coefficient of variation adopted after Williamson (1965), calculated as:

$$V_W = \frac{\sqrt{\sum_{i=1}^{n}(sTMD_i - \overline{sTMD_t})^2 \frac{l_i}{L}}}{\overline{sTMD_t}} \quad (13)$$

where: $_sTMD_i$ - the value of taxonomic spatial measure of development in object i, ($_sTMD_i$) average - the average value of taxonomic spatial measure of development, l_i - population of object i, L - total population in all analyzed objects.

The following set of hypothesis is tested:

H0: $V_{W1} = V_{W2} = V_W$ no sigma convergence or divergence,

H1: $V_{W1} > V_{W2}$ the existence of sigma convergence,

H1a: $V_{W1} < V_{W2}$ the existence of sigma divergence.

In the situation when the beta convergence occurs and the null hypothesis about the sigma convergence cannot be rejected, it is possible that gamma convergence process was noted. According to Boyle and McCarthey (1997), the gamma convergence describes a leapfrogging phenomenon, i.e. regions less developed reached such a high rate of development that they have eventually outgrown regions that initially had a higher development level. In fact, differences among objects did not shrink. To investigate the existence of gamma convergence, usually the Kendall tau correlation coefficient is calculated and the following set of hypothesis is tested (Kusidel, 2013):

H0: $\tau = 0$ the existence of gamma convergence,

H0: $\tau > 0$ no gamma convergence.

If the Kendall tau correlation coefficient is statistically significant, it is a sufficient condition for claiming that the gamma convergence exists (Kusidel, 2013).

4. RESULTS

In this research, the Visegrad Group countries (V4) are used as an example to investigate countries' performance with respect to their internal cohesion. At the first stage of the analysis, the spatial taxonomy measure of development was calculated for 27 European Union countries in the time period of 2004-2014 (Luxemburg was excluded due to the lack of data). The following data set was used to quantify social performance for each country. The data set consists of varia-

bles for which data are also available at the regional level: x_1 - unemployment rate, x_2 - percentage of young people neither in employment nor in education and training, x_3 - participation rate in education and training (last 4 weeks, people of age 25-64), x_4 - households income at purchasing power standard based on a final consumption per inhabitant, x_5 - crude death rate for tuberculosis per 100 000 inhabitants, x_6 - crude death rate for neoplasms per 100 000 inhabitants. It describes labour market conditions, education and lifelong learning conditions, household's material status and it also provides information about inhabitants' health care (neoplasms as the disease of well-being, tuberculosis as the disease of poverty). OLS estimation of equation (9) for European Union countries is presented in Table 1.

Tab. 1 – OLS estimation of beta-convergence equation for 27 European Union countries.
Source: Author's own investigation.

	coefficient	p-value
a	-0.0027	0.3848
b	-0.0179	0.0653
$R^2 = 0.34$		

From the analysed data included in Table 1, it can be seen that b parameter is negative and statistically significant at significance level of α=0.1. Thus the null hypothesis about the lack of beta convergence can be rejected. It means that the EU countries with an initially lower performance level are developing faster than those with an initially higher performance level in the social sphere. A disturbing figure may be the speed of convergence, which according to formula (11) is only 0,16% per year. The existence of beta convergence allows conducting the investigation of sigma and gamma convergence. According to formula (13), the weighted coefficient of variation of the spatial taxonomy measure of development was calculated. Based on V_W value, a trend model (12) was estimated using the OLS method. The results of this investigation are presented in Table 2.

Tab. 2 – OLS estimation of sigma-convergence equation for 27 European Union countries.
Source: Author's own investigation.

	coefficient	p-value
a_0	0.2104	0.0000
a_1	-0.0019	0.2351
R^2=0.39		

From the analysed data presented in Table 2, it can be seen that α_1 parameter is negative but statically insignificant. Thus the null hypothesis about the lack of sigma convergence cannot be rejected.

It means that inequalities among Member States are decreasing, however, but the speed of this reduction is too slow to claim that the social sigma convergence exists. To fully present the picture of the social situation in the EU, the existence of gamma-convergence was also investigated.

For this purpose, the Kendall tau correlation coefficient was calculated. The result of the analysis is: τ=0.6638 (p-value=0.0001). In this case, the null hypothesis about the existence of the gamma convergence should be rejected. So, countries with an initially weaker performance in social dimension did not overtake those with an initially better performance. To sum up, based on the data set prepared, we can say that among EU Member States, the social beta convergence can be observed in the period of 2004-2014. However, those do not imply reducing disproportions among EU countries (lack of sigma convergence).

The analyses at national level were just the background for investigation of the situation inside the Visegrad Group Countries. Firstly, the investigation will be provided for NUTS-2 regions of V4 countries. Then, the situation within each country will be investigated. Finally, the distance between the capital region in each of four analysed countries and other regions will be discussed.

At the beginning of the main analysis, a situation among the Visegrad Group NUTS-2 regions will be investigated. Taking into account common historical roots and close geographical neighbourhood, a stronger convergence can be expected than in the case of whole European Union. As in case of the national analysis, the spatial taxonomy measure of development according to formula (7) was calculated for all 35 V4 NUTS-2 regions. The calculated values were the basis for OLS estimation of equation (9). Table 3 presents the results of this investigation.

Tab. 3 – OLS estimation of beta-convergence equation for 35 Visegrad Group countries NUTS-2 regions. Source: Author's own investigation.

	coefficient	p-value
a	0.0144	0.0002
b	0.0129	0.1743
R^2=0.45		

From the analysed data presented in Table 3, it can be seen that b parameter is positive and statistically insignificant. So, the null hypothesis about the lack of beta convergence cannot be rejected. In case of the Visegrad NUTS-2 region, catching up weaker regions cannot be observed. Thus, it is not justified to investigate the existence of sigma and gamma convergence, as without catching up those two types of convergence, these do not occur.

At this stage of the analysis, 35 regions were divided into four groups using k-means algorithm. The results for the years 2004 and 2014 are presented in Figure 1. In Figure 1, it can be seen that both in 2004 and 2014, 3 out of 4 capital regions were grouped together. In 2004, this group consists of the following regions: Praha, Kozep-Magyarorszag and Bratislava region; and in 2014: Praha, Mazowieckie, Bratislava region. The taxonomic similarity of those objects may confirm the earlier presumption that capital regions are developing much faster than other regions. It is very interesting that in 2004, almost all Czech Republic regions (except Praha) were grouped into one cluster. This situation changed during the analysed period and nowadays, it is similar (in taxonomic sense) to the following regions: Kozep-Magyarorszag, Lodzkie, Slaskie, Wielkopolskie, Dolnoslaskie, Pomorskie, West Slovakia and Central Slovakia. It is worth noticing that

in 2004, 'eastern' regions were grouped together, and 10 years later, it seems that regions with the lowest performance in social dimension are as follows: Polish Podkarpackie region and Hungarian: Del-Dunanul, Eszak-Magyarorszag, Eszak-Alfrod and Del-Alfrod (see Figure 1).

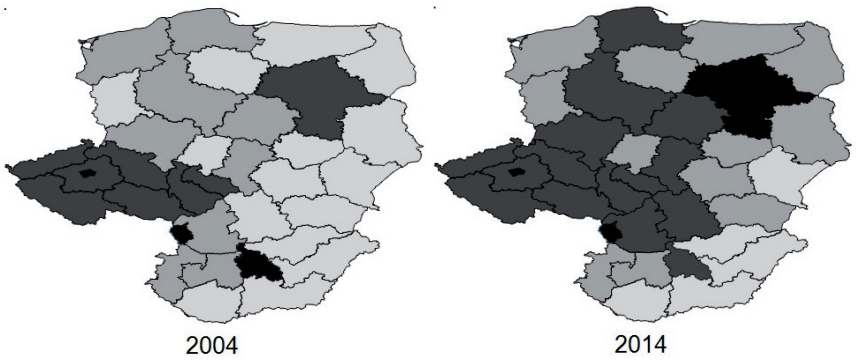

Fig. 1 – K-means grouping of the Visegrad Countries NUTS-2 regions in 2004 and 2014. Source: Author's own investigation.

Nevertheless, the most important part of this research is to investigate within country convergence processes occurring in each of the Visegrad Group countries. In order to do so, the existence of beta convergence (according to equation 9) was tested. In all cases, b parameter was statistically insignificant so the null hypothesis regarding lack of beta convergence cannot be rejected. Thus, as this necessary condition is not fulfilled and without any further research, we know that sigma convergence will not occur either. However, model 12 was estimated for every V4 country to check the existence of social divergence. The results of this analysis are presented in Table 4.

Tab. 4 – OLS estimation of sigma-convergence equation for each Visegrad Group country
Source: Author's own investigation.

country		coefficient	p-value
CZ	a_0	0.1741	0.0000
	a_1	0.0005	0.8603
	R^2 =0.30		
HU	a_0	0.4495	0.0000
	a_1	-0.0029	0.1155
	R^2 =0.49		
PL	a_0	0.8304	0.0000
	a_1	0.0040	0.0018
	R^2 =0.68		
SK	a_0	0.2532	0.0000
	a_1	-0.0023	0.5461
	R^2 =0.41		

From the analysed data presented in Table 4, it can be seen that in cases of the Czech Republic, Hungary and Slovakia, the social divergence does not exists (α_1 parameter is not positive or/and statistically insignificant). In Poland, unlike other V4 countries, the social sigma divergence can be observed. It means that during the analysed period, regional inequalities in Poland increased. Figure 2 presents how the weighted coefficient of variation values varied over the analysed period. As can be seen, Poland is a country with the highest number of inequalities. Internal inequalities in Poland are almost four times higher than those at national level in European Union or at regional level within the Visegrad Group countries. Rather high disproportions among regions were also observed in the Czech Republic. Among the V4 countries, the one with the lowest number of disproportions is Hungary. Looking at the weighted coefficient of variation dynamic, it can be seen that regional disproportions in Poland and the Czech Republic are rather stable over the analysed time period. Some fluctuations can be observed in Slovakia, Hungary and V4 Group as a whole.

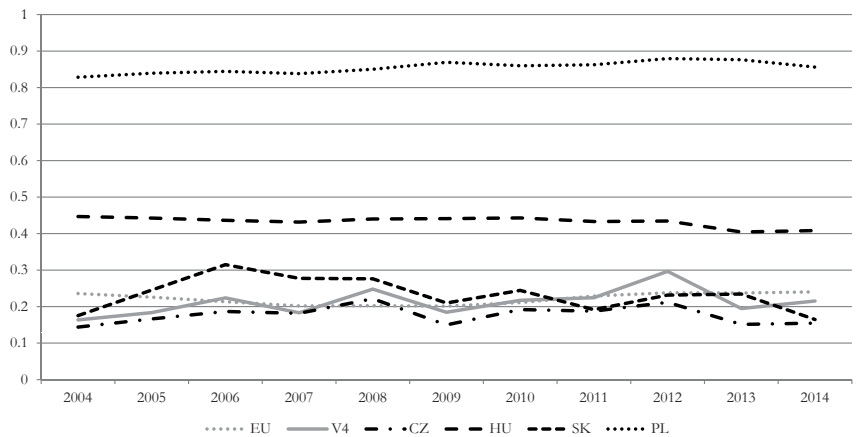

Fig. 2 – Weighted coefficient of variation values over the period of 2004-2014. Source: Author's own investigation.

It also seems interesting to investigate how the distance between the capital region and other regions developed over the analysed period. To carry out this analysis, the Euclidean distance was calculated between each region and the capital one. The average Euclidean distance between Praha and other Czech regions increased from 0.94 in 2004 to 1.5 in 2014. The inequalities increase was also observed between Mazowieckie and other Polish regions – the distance increased from 0.28 in 2004 to 1.30 in 2014. Similarly, the Euclidean distance between Kozep-Magyarorszag and other Hungarian regions increased from 0.92 in 2004 to 1.16 in 2014. Significant fluctuations can be observed in Slovakia. The Euclidean distance between Bratislava region and other Slovak regions varying from 1.47 in 2004 to 5.56 in 2008, and finally, to 2.62 in 2014. The results are presented in Figure 3.

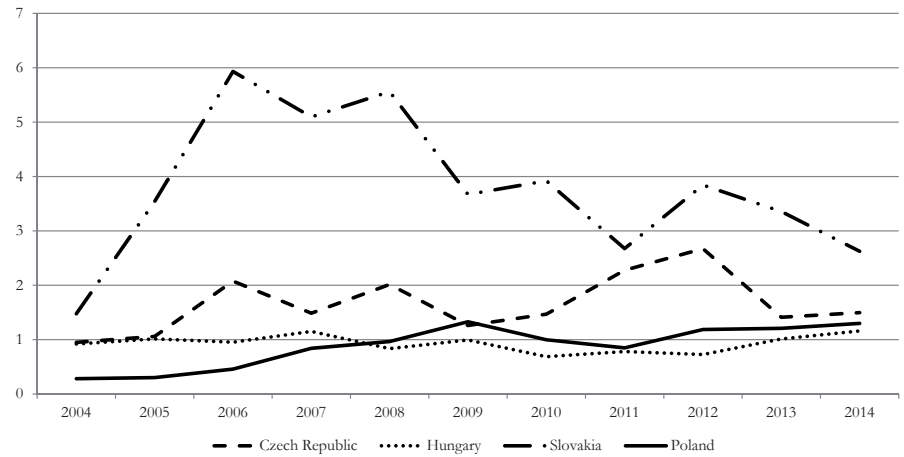

Fig. 3 – The average Euclidean distance between the capital region and other regions over the period of 2004-2014. Source: Author's own investigation.

5. CONCLUSION

The Visegrad Group countries performance in social dimension was investigated in this research in respect to countries' internal inequalities. To quantify social performance, the spatial taxonomy measure of development was used. As a background to the internal situation in V4 countries, the author of this research investigated the existence of beta, sigma and gamma convergence at national level among European Union Member States. The conducted analysis indicated that only the beta-convergence can be observed among EU countries. So, the countries with a lower performance are developing faster than those with a higher performance. However, the speed of this development is not fast enough to achieve social sigma convergence. That should not be surprising as European Union after the crisis is not so -called 'convergence machine' anymore. A return to this state is expected to be achieved by implementing post-2020 Cohesion Policy, European Pillar of Social Rights and European Semester.

More disturbing is the fact that the Visegrad Countries not only do not achieve an internal cohesion, but in Poland, a social divergence was observed. It needs to be highlighted that in all V4 countries, an increasing distance between the capital region and other regions has been discovered. That was also suspected as most of the cohesion funds are addressed to richer regions, which contributes to their faster development at the expense of already peripheral regions. Positive but not statistically significant α_1 parameter from equation (12) was also obtained in the Czech Republic. So, the differences among regions are slowly enlarging.

To conclude, it can be said that Poland is paying the price of regional social sigma divergence to achieve international beta convergence among European Union. Taking into account increasing disproportions among capital regions and other regions, it is a risk that situation may, in the near future, occur in other Visegrad countries as well. It should be emphasized that well-being, competitiveness or economic growth cannot be achieved in chosen regions only (capitals, well

developed, high potential) at the price of deepening backwardness of other regions, especially peripheries. European Union which is coherent must be sustainable. The freedom of movement of people and capital or turbulent environment are factors forcing the regions to fight for well-educated human capital. To avoid brain drain, decent living conditions must be assured, not only in the sense of material well-being but also in health care, education, culture and natural environment aspects. Without well-coordinated cohesion policy at regional level, countries will be struggling with deepening their disproportions regarding concentration of human capital in chosen regions and depopulation of others.

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