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EASTERN VERSUS SOUTHERN PERIPHERALITY IN THE EU: THE STUDY FROM THE PERSPECTIVE OF CENTRE-PERIPHERY MODEL

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ABSTRACT. ***In this article we want to analyse the determination relationships created between the economic and spatial peripherality (GDP/inhabitant, level of specialisation, accessibility potential, degree of business concentration and employment rate), of the 81 development regions at the NUTS 2 level, within the countries situated at the EU southern border (Spain, Portugal, Greece) and at the eastern one (Romania, Bulgaria, Hungary, Poland, Slovenia, Latvia, Lithuania, Estonia). Our approach aims at answering the following questions: Does spatial position influence the development degree? Can regions which divide similar institutional and geographic factors converge rapidly? Will the least developed regions from the east be able to experience a more accentuated economic increase and catch-up with the most developed ones from the EU economic centre? How did the centre-periphery model evolve in the European Union through the extension towards the East? Are there any similarities or differences between the southern and the eastern peripherality? Can the southern peripherality be a model for the eastern one? Based on the results obtained, we shall try to trace, in the conclusions, a few guiding lines that may lead to the reduction of regional disparities, in order to ensure the convergence of these regions and a better perspective of the economic competitiveness with the regions from Western Europe.***

KEYWORDS: eastern peripherality versus southern peripherality, regional disparities, centre-periphery model, agglomeration process, EU.

JEL classification: O18, R11, R12.

Introduction

The regional disparities between countries have become a major problem at the European level, especially after the extensions towards East from 2004 and 2007. These discrepancies have been accentuated and obviously led to serious challenges for the cohesion process because, together with the integration, the EU is no longer able to provide the new members with the same high levels of structural benefits and to implement, with the same efficiency, the regional governance models it has available, without rethinking its action strategies and programmes. It is obvious that, under such circumstances, the regional inequality map will be reconsidered.

At present, the recovery of the development disparities is absolutely necessary especially in the EU cohesion countries because the statistics concerning the convergence indicators emphasize the fact that the implemented measures are most of the time incomplete, they are not produced in accordance with the social-economical and institutional environment of each country and, of course, there is no intensification of the synergy effects between all the community policies. In other words, basic development strategies are adopted, without a strong cooperation between the regional, national and community level, resulting thus in an increase in disparities especially in areas from the eastern part of the Union, area which displays peripheral features (Teló, 2001, Keating, 2003, Hughes et al, 2004). This makes those preoccupied with the economic and social cohesion issues become more interested for the latest period of time in the possibility to quantify and outline discrepancies between the development levels of the countries.

In order to measure the proportions of the development disparities within the regions from East and South of the EU, we started to analyse in our study variables defining concentration, specialisation, employment and accessibility, considering it necessary not only to include indicators that refer to the economic problems, but also those which refer to the spatial structure (highway density, railway density).

1. Literature review

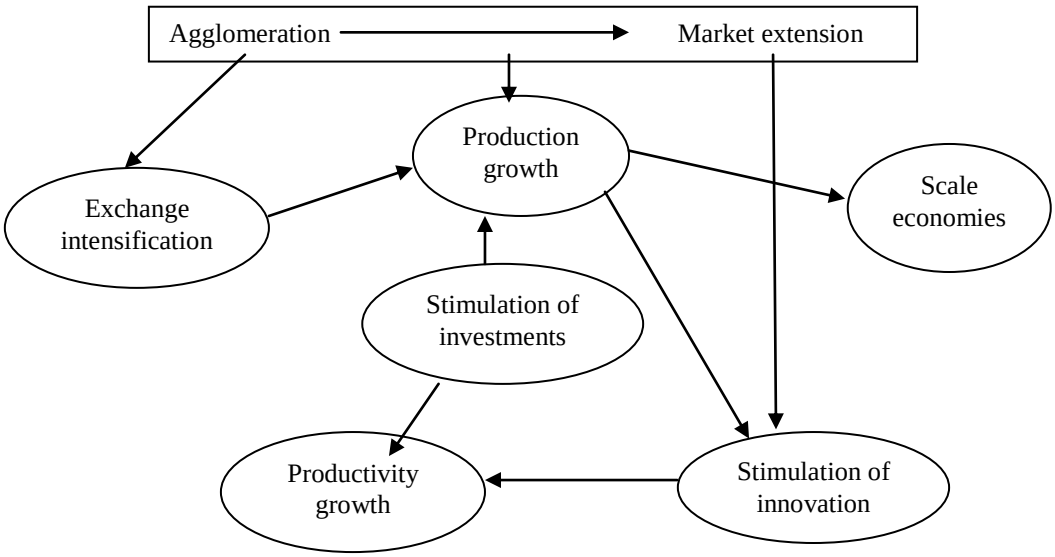
At the level of the '90s, the main instrument of analysis to outline the disparities between different regions was the centre-periphery model (the model of the spatial development and differentiation), shaped by Friedman, being an extended version of the cumulative causality (Kaldor, Dixon, Thirlwall) (Constantin, 2006).

There were many authors who analysed peripherality in their works, seen from a double perspective: from the spatial and economic point of view (Krugman, 1991a, 1991b, Fujita and Thisse, 2002, Baldwin et al, 2003, Chromy and Janů, 2003, Vaishar, 2006). Such a bidimensional approach led to the economic geography theory. The most significant contribution in this respect was that of P. Krugman who began to develop the theory in an article entitled "Increasing returns and economic geography" (Krugman, 1991b). The author analyses the role of scale economies (internal and external), the freights, the inter-regional migration phenomena, the degree of concentration and dispersion, infrastructure, the distribution of the public capital, the regional redistributive policies, the degree of gathering knowledge in generating the increase direction.

It is very interesting to see if regional disparities increase or decrease in time. Moreover, when these discrepancies change, then what are the main reasons why there is a disparity or convergence, following the case? To answer this question, we must take into consideration the complex problems of the possible interactions between the spatial and temporal decisions. The geographical position is an important factor in making decisions, especially those related to the freights. Interesting analyses on this subject were made in the specialty literature by Faludi (2007), who think that, if the freights are low, then this would lead to a centre-periphery structure where the region receiving firms (the centre) will go through an average increase in the real salaries, while the other region (the periphery) will go through a desindustrialisation, witnessing a decrease in the purchasing power (small market size and import of different goods and services).

Another aspect to be mentioned in connection with the centre-periphery relationship refers to labour mobility, that can concentrate the economic activity in one region on condition that the taste for product variety and the salary expenses be high enough and the freights rather low (Mossay, 2006). These ideas come to confirm the fact that the relationship between scale economies and freights can lead either to concentration/agglomeration or to decentralisation /dispersion of communities. When the freights decrease concentration and urbanisation are favoured. Ottaviano and Puga (1998), Baldwin and Martin (2004) and others have tried to find as many interactions as possible between the economic growth and agglomeration, focusing mainly on real capital mobility and forgetting that human capital has become more and more mobile, which leads to greater concentration of skilled workers in a few fields. Thus, if a region benefits from competitiveness advantages, it is there that ,,self-accomplishments of expectations" meet (Oyama, 2009), which make the labour force concentrate in that region and generate added value. So, it has become clear that economic disparities between the most developed regions and the less developed ones have increased in time instead of being reduced (the theory of the centre-periphery dependence) (Baldwin and Forslid, 1999). And then, we wonder, is periphery doomed to continuous decrease or does it really have chances to rehabilitate? A possible answer can be given due to the intensification of the economic development process which can generate the periphery development, but we think that this does not necessarily lead to reducing its disparities from the more developed regions because, for example, free trade on the internal market will be more intense only if there are appropriate conditions for its development (infrastructure, the

attractiveness of the business environment, direct foreign investment, safe formal institutions etc). For these reasons, the dispersion versus concentration becomes one of the most intensely discussed issues in regional policies (Mereuţă et. al. 2010; Baun and Marek, 2008; Meyer, 2008, Corvers and Nijkamp, 2004). The agglomeration of economic activities in certain areas, usually central, extended, where the effect of multiplication can be easily observed and dispersion and inequality concerning the level of development have intensified in the peripheral areas. As a consequence, the centre favours the tendency to locate the economic activities, while the periphery favours the tendency to relocation. In *Figure 1* we show the implications of the agglomeration process.



Source: the authors' representation

Figure 1. **Implications of the agglomeration process**

By analysing *Figure* 1, we see that if we appeal to an efficient resource allotment and there is fair competition on the market, the commercial exchanges will implicitly increase, investments and innovation will be stimulated, resulting in scale economies and production growth. Most economic activities are usually concentrated in the regions which are in this situation. Agglomerations will engage technological, informational and financial flows, but also labour force and capital flows. The existence of growing scale efficiency, reduction of transaction costs, as well as the technological externalities in the more developed regions are able to generate a centre-periphery structure. We must underline that while the industrialised regions seem to have got a great development potential, many of them under development don't seem to have finished it, sometimes despite the fairly consistent resources (Olson, 1996, Chong and Calderon, 2000).

Starting from these aspects, we considered it important to analyse how the level of development of certain regions is determined by the peripherality effect and its implications. Thus, we made a comparative empirical analysis following the example of countries from the eastern and southern EU border.

2. Empirical analysis on the peripherality effect of countries from the south-eastern of European Union and its economic consequences

2.1. Methodology and data

Most studies on peripherality in the intra-community area focus on the macroeconomic dimension at the national level trying, in most cases, to correlate the

spatial dimension with series of indices such as population size, GDP/capita, accessibility (mainly by taking into account the density of the transport networks), employment, unemployment (for example, see Schürmann and Talaat (2000) or Erkut and Ozgen (2003)). The development of such studies is certainly necessary within the new context of emphasizing the complexity of peripherality phenomena and the centre-periphery relationships generated by the expansion towards Central and Eastern Europe.

In this study we considered that placing the analysis at the regional level may reflect more obviously the diversity of situations which the southern and eastern economies are facing, on the one hand, to understand the way in which the „new eastern peripherality" of the European Union relates to the „old southern peripherality" and, on the other hand, to get relevant results for decisions/measures within the regional development policies from the point of view of the economic, social and territorial cohesion objectives inside the European Union.

Consequently, we made an empirical analysis of the development discrepancies, taken from the economic and spatial perspective, between the 81 regions at the NUTS 2 level, which are at the European Union southern border, within Spain (ES), Portugal (PT) and Greece (GR) and those at the eastern border, Romania (RO), Bulgaria (BG), Hungary (HU), Slovenia (SI), Poland (PL), Lithuania (LT), Latvia (LV), Estonia (EE), based on which we tried to establish the determination relations created between regional development, cohesion and peripherality, by using a selective set of regional synthetic indices: GDP/inhabitant (expressed in PPS), the degree of concentrating business, the specialization level, the accessibility potential and the degree of employment. We add that we resort to an analysis which should take into account more indicators as the evaluation of territorial inequalities is frequently limited to the information content of a nominal variable and a numerical variable, but different indicators provide complex perspectives, sometimes in opposition with the results obtained by analysing only one numerical variable. One of the problems was also determined by the lack of a composite index of peripherality, the special studies usually making the correlation between a spatiality indicator and a single economic indicator (for example, the market potential, employment or GDP). As a consequence, our option for the correlations within the analysis was to use regional synthetic indicators which allow the emphasis of several economic and social, quantitative and qualitative correlations of regional development, shown through a mainly cross-comparative approach. We also add that we have chosen to analyse the regions belonging to the countries having defined the European Union southern expansion, and the eastern one respectively, just to see if the process of integration can be considered potential for the economic development. The geographical position of these regions is different as concerns the proximity to the EU centre, that is why we would like to analyse whether spatiality has a meaningful role or not in accelerating cohesion, specialisation, production structure, employment rate etc. Considering that the moment when the above-mentioned countries acceded to the EU was different, we think that a dynamical analysis would have been unimportant as Romania and Bulgaria entered the Community in 2007 and thus, the time was rather short and, as we know, the integration effects usually outline on the medium and long term. Moreover, it is difficult to make even the data on indicators and time because all the official sources which provided us with the data end the statistics in 2008. Furthermore, by choosing to make the analysis at the NUTS 2 level, a dynamic evolution would have been endangered also by the fact that, as a rule, the methodological framework of dividing the regions has undergone changes.

Briefly, the aim of our measure is to identify, by comparison and extrapolation, the elements which constituted themselves as stimulating factors for the economic performance in the regions which experience relatively similar growing rates and how

they can be implemented at the less developed regions level in order to talk about a real cohesion process.

Although there is a great number of statistical methods to measure the territorial concentration of the economic variables, in order to achieve our aims we appealed to the Gini inequality index, the Lorenz Curve, Pearson, Kendall, Spearman correlation coefficients, calculated by using single and multiple statistical methods and we oriented our analysis towards the following correlations: a) regional development – economic concentration/agglomeration phenomena – disparities/convergence; b) regional development – specialisation– disparities/convergence; c) regional development – employment – disparities/convergence; d) regional development – accessibility – disparities/convergence.

The data necessary for the analysis were collected from statistics, official reports, belonging to Eurostat and Espon Databases.

2.2. Main results and findings

A general synthetic perspective on the south-eastern regional disparities

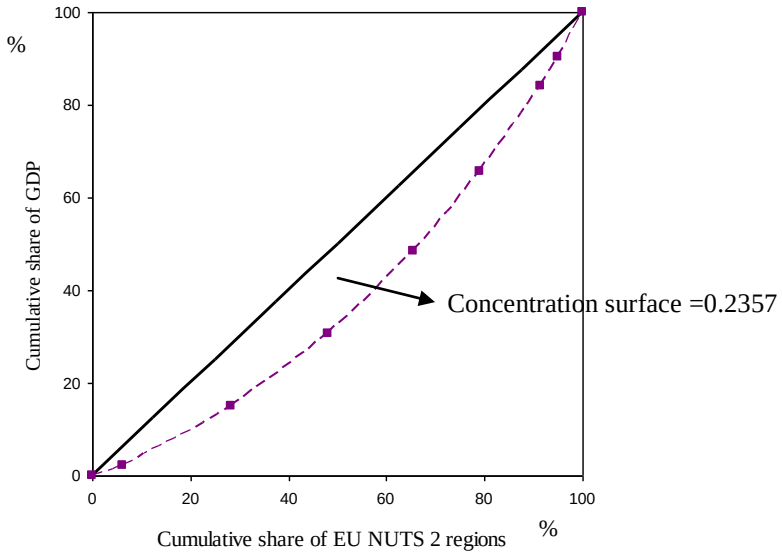
By calculating the Gini inequality index for GDP/inhabitant (expressed in PPS), for the 81 regions, we got a value of GI=1-0.7643=0.2357, meaning that the discrepancies in the development level deviate, on the average, by 23.57% (table 1).

Table 1. Gini coefficient (inequality index) – the trapeze method

n_i	N_i	p_i	x_i	$x_i * n_i$	L_i	q_i	f_i	$(q(i-1) + q_i) * f_i$
5	5	0.062	24	120	120	0.021	0.062	0.0013
18	23	0.284	40	720	840	0.149	0.222	0.0377
16	39	0.481	56	896	1736	0.307	0.198	0.0900
14	53	0.654	72	1008	2744	0.485	0.173	0.1369
11	64	0.790	88	968	3712	0.656	0.136	0.1550
10	74	0.914	104	1040	4752	0.840	0.123	0.1847
3	77	0.951	120	360	5112	0.904	0.037	0.0646
4	81	1	136	544	5656	1	0.049	0.0940
81				**5656**			**1**	**0.7643**

Source: the authors' calculations based on the Eurostat data

For the graphical drawing of GI we will trace Lorentz-Gini concentration curve, based on the coordinate points (pi; qi), through the trapeze area sums (figure 2).



Source: own representation

Figure 2. **Lorentz-Gini concentration curve**

We can see that the concentration curve is under the first bisectrix (the diagonal of the Gini square) because pi>qi, deviating from the square diagonal by 23.57%, meaning that the degree of concentration of the GDP/inhabitant within the regions is relatively small (diversification is strong – 76.43%). This is emphasized by the fact that among the 81 regions, 68 have a GDP/inhabitant expressed in PPS under the average of the EU 27=100, the lower limits being occupied by regions like Severozapaden (BG: 25.58), North-East (RO: 26.64), Severen tsentralen (BG: 26.66), Yuzhen tsentralen (BG: 27.16) Yugoiztochen (BG: 30.69) Severoiztochen (BG: 32.40) South-West Oltenia (RO: 32.70) South-East (RO: 33.78) South-Muntenia (RO: 34.17) while at the other end, with a GDP over the EU average, we find the regions Sterea Ellada (GR: 136.85), Thessalia (GR: 136.84) Ipeiros (GR: 132.22), Región de Murcia (ES:128.10), Notio Aigaio (GR: 123.25), Dytiki Ellada (GR: 114.36), Galicia (ES: 113.83), Ionia Nisia (GR: 111.96), Zahodna Slovenija (SI: 106.72), Dytiki Makedonia (GR: 105.38), Lisboa (PT: 104.68), Latvija (LV: 102.95) Peloponnisos (GR: 101.40). So, we notice that the lowest development levels can be found in the states which entered the EU on the last accession wave, in 2007, while at the opposite end we find mainly the regions from Greece and Spain. In these countries tourism is their main competitive advantage, a sector which they know how to get the most of it, but they fully benefitted from the driving effects of participating to the internal market (agglomeration phenomena, specialisation processes, scale economies etc), as well as the positive impact of the cohesion policy on the regional development and convergence.

a). The correlation regional development – concentration phenomena /economic agglomeration – disparities/convergence

Under such circumstances, we were interested in analysing how the degree of concentration of the economic activities, namely the business concentration in certain regions (the independent variable) influenced the development level, measured by the GDP/inhabitant in that area (the dependant variable) and if such option in the regional policies from the new eastern periphery of the EU could be a solution to stimulate development and reduce disparities.

In order to do this we calculated the correlation indices between these variables and, based on the results, we set the most appropriate regression patterns (table 2).

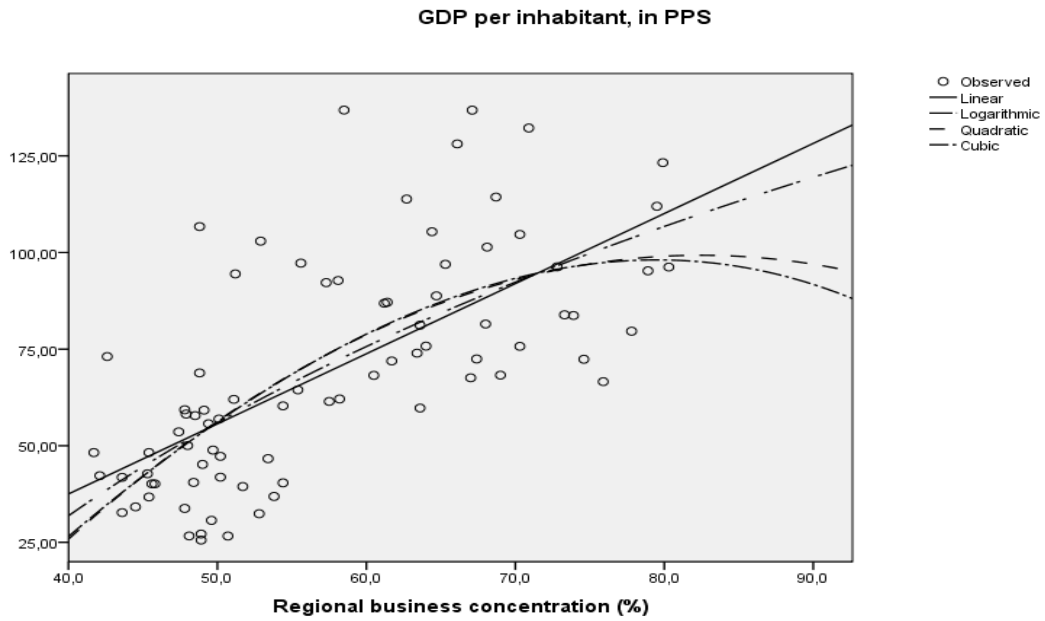
Table 2. Regression parameters

Regression patterns		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
Linear	Regional business concentration (%)	1.814	.223	.676	8.147	.000
R=0.676 $R^2 = 0.457$	(Constant)	-35.049	13.045		-2.687	.009
Quadratic	Regional business concentration (%)	6.721	2.702	2.503	2.487	.015
R=0.692 $R^2 = 0.479$	Regional business concentration (%) ** 2	-.041	.022	-1.834	-1.822	.072
	(Constant)	-177.792	79.396		-2.239	.028
Cubic	Regional business concentration (%)	4.370	1.367	1.628	3.197	.002
R=0.693 $R^2 = 0.481$	Regional business concentration (%) ** 3	.000	.000	-.965	-1.894	.062
	(Constant)	-133.538	53.551		-2.494	.015
Logarithmic	ln(Regional business concentration (%))	108.032	12.952	.684	8.341	.000
R=0.684 $R^2 = 0.468$	(Constant)	-366.652	52.335		-7.006	.000

Source: the authors' calculations

By analyzing the data in the table 2, but valorising the graphical drawing as well (figure3), we can see that, out of the four regression patterns we determined, the one to describe the best the relation between the representative variables is the linear one because it meets the conditions at the same time:

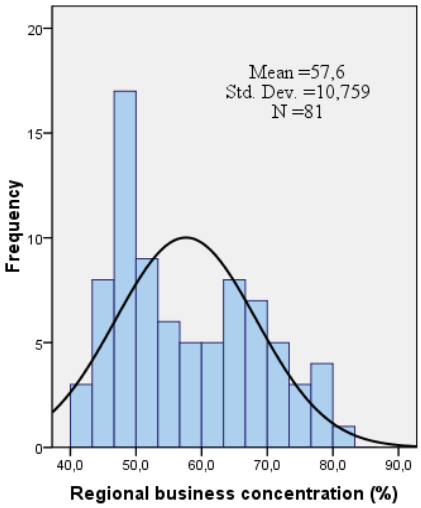
1) the correlation ratio R=0.676 goes towards 1, which means that the business concentration in a certain region influences the values of the GDP/inhabitant for 67.6%;
2) the significance level *Sig. t*, is smaller than 0.05 in the case of the regression linear pattern, which means that the regression parameters differ from zero, so the patterns explains the connection between variables with a probability of 95%. Thus, the regression equation appears like: Y=-35.049+1.814*X, namely: *GDP/inhabitant=1.814*The concentration of regional business-35.049*, which denotes that for an increase by 1% in the degree of business concentration, the GDP/inhabitant will increase by about 1.82 PPS points.

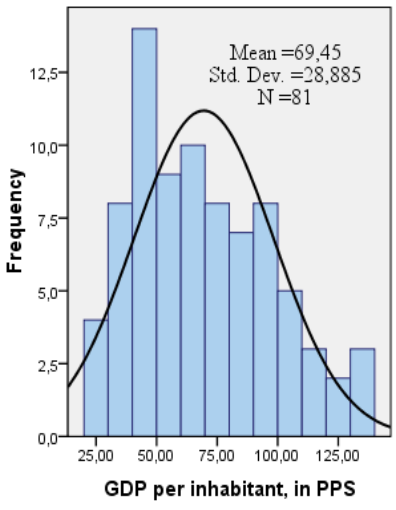


Source: the authors' representation based on the Eurostat data

Figure 3. **The types of regressions**

If we make a comparison between the maximum and minimum values of the GDP/inhabitant and the degree of business concentration, we discover that our hypothesis meant to show the interdependency between the two variables through testing was confirmed to us as the intensity of connection is over 65%. In the regions where entrepreneurs choose to concentrate their economic activities, the GDP undergoes positive changes (the regions from Greece and Spain confirm these statements). The distribution of interval frequencies of the two indicators is shown in the histograms from figure 4 and figure 5).





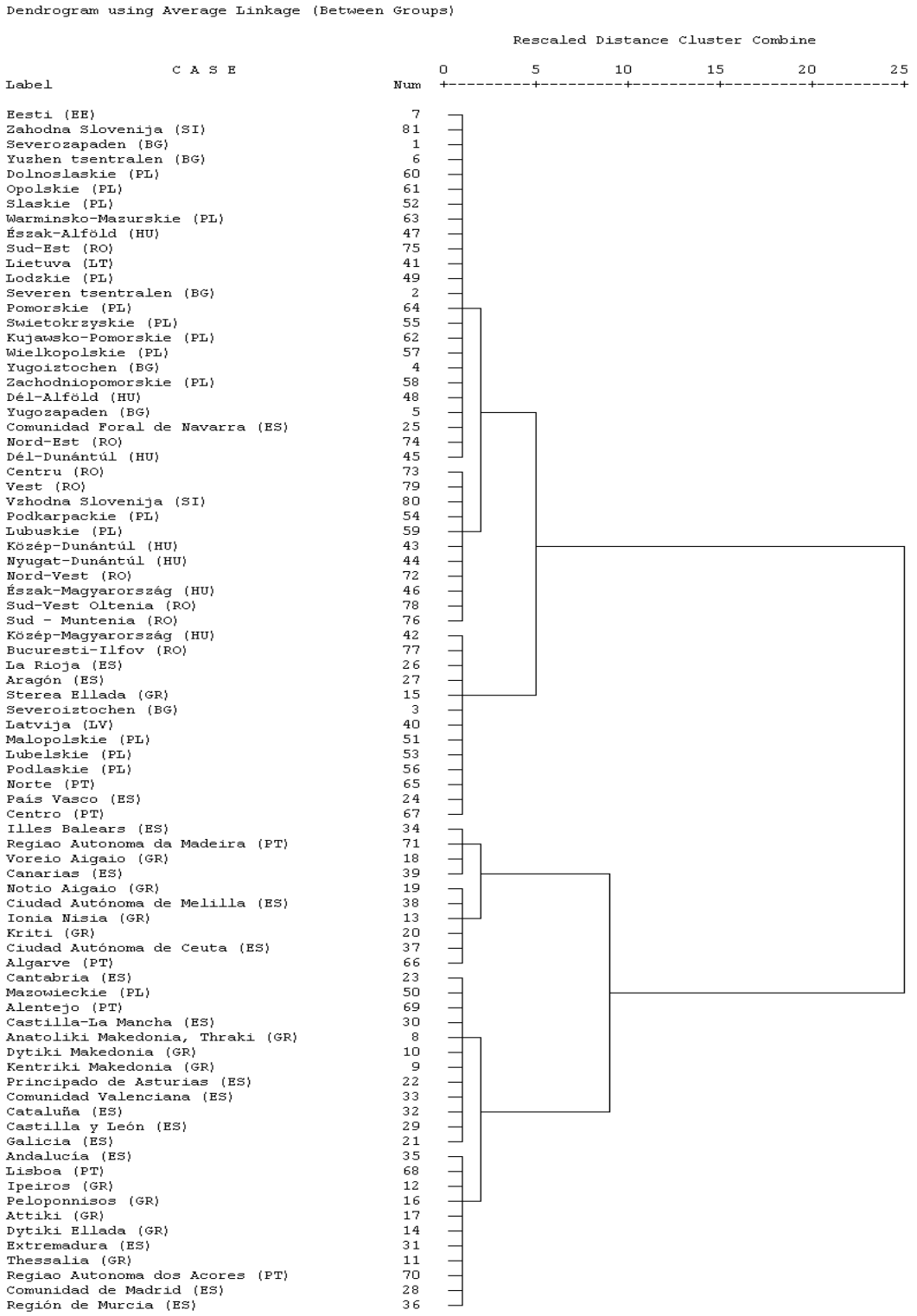
Source: the authors' representations based on the Eurostat data

Figure 4. **The histogram** *Figure 5.* **The histogram**

Thus, if we analyze the first histogram (figure 4), we note that there are significant discrepancies in the region distribution by the degree of business concentration because most regions (27) fall within the margin of 40-50%, 20 regions within 50-60%, the same number of regions in the next interval and afterwards their number diminishes obviously.

Consequently, 13 regions have a concentration degree over 70% and only 1 region has 80%. It goes without saying that, since the analysed variables are mutually interconditioning, the histogram in figure 5 is relatively similar as concerns the region distribution by GDP. If in the case of the 25-50 PPS limits most regions are situated, namely 26, we see that their number goes down gradually, once the limit moves towards higher values of the GDP. Thus, we have 24 regions in the interval 50-75 PPS, 18 regions in the following (75-100 PPS) and 13 regions over the EU average. As it is natural, the last ones include those agglomeration economies, having mutual features: they are mainly urban regions, with increase poles and competitive advantages attracting investors and they usually keep their economic position over time, the economic risks being not so great. The benefits of the agglomeration processes in these regions make people concentrate here because jobs are numerous and better paid, the firms tend to be located where there are large commodity markets and where the scale economies can be reached.

In order to have a clearer view on the 81 analysed regions concerning the degree of concentration of the economic activities, we created hierarchical clusters that make up among them (figure 6).

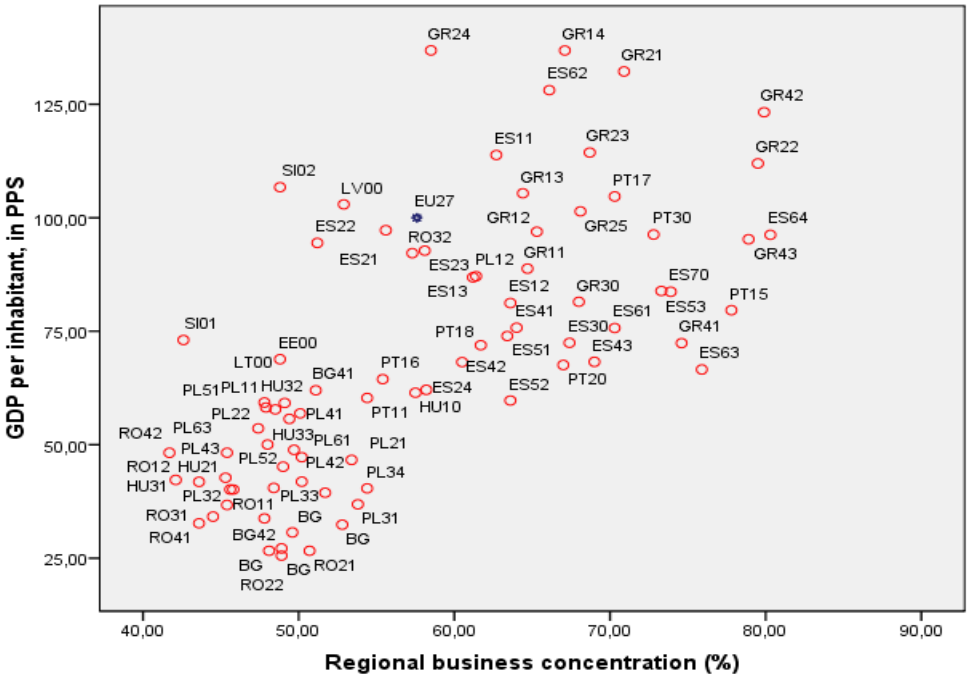


Source: the authors' representation based on the Eurostat data

Figure 6. **Hierarchical cluster analysis – the concentration rate of the economic activities**

As it can be seen, the region grouping took place in conformity with the local specificity, taking into account the elements describing the economic and spatial peripheriсity, getting 7 clusters. By analysing them, we see that most of the southern regions (Greece, Spain and Portugal) choose to concentrate their economic activities between themselves, the geographical proximity being probably the main reason why they make such a decision and the regions in the east of the EU. The deviations from this rule

are relatively small. Such an objective determination of the clustering processes (the peripheral position plays an essential role correlated with the relatively low accessibility) has a series of negative effects on the increase and regional convergence processes: low capacity to benefit from the dynamic of the competitional processes of the internal market; low mobility of the production factors with high stimulating effect (for example, of the performant capital, innovating technology from the centre); limited potential of generating industrial agglomeration processes; more reduced scale economies and learning processes. Under such circumstances, the periphery has no real chance of reducing differences, with important risks of malfunctionality of the European integration systems (especially of the internal market and Monetary Union). The problem is if the internal market would stimulate clustering with central regions and implicitly convergence processes through investments to increase attractiveness and accessibility of the peripheral regions. In this respect, a useful analysis concerns the region dispersion from the EU average of 27=100 (GDP/inhabitant in PPS) and from the business concentration level (EU 27=57.6%), under a scatterplot representation (figure 7).



Source: the authors' representation based on the Eurostat data

Figure 7. **Scatterplot representation**

We see that most regions from the southern EU, belonging to the three countries which have a long experience as EU members, exceed the EU average, while other regions, belonging to the same states, tend to catch-up with the development discrepancies. Thus, the regions with the highest business concentration are: Ciudad Autónoma de Melilla (ES64: 80.3%); Notio Aigaio (GR42: 79.9); Ionia Nisia (GR22: 79.5%); Kriti (GR43: 78.9%); Algarve (PT15: 77.8%); Ciudad Autónoma de Ceuta (ES63: 75.9%); Voreio Aigaio (GR41: 74.6%); Canarias (ES70: 73.9%); Illes Balears (ES53: 73.3%); Região Autónoma da Madeira (PT30: 72.8%); Ipeiros (GR21: 70.9%); Andalucía (ES61: 70.3%); Lisboa (PT17: 70.3%); Extremadura (ES43: 69%).

As concerns the regions belonging to the EU eastern countries, we note that most of them are under the EU average, both as development level and as business concentration. We must notice however that Bucharest-Ilfov region (RO32) could catch up with, in the next period of time, the slight difference from the EU average concerning the

above-mentioned indicators because, from the point of view of the business concentration in the eastern regions, it is exceeded only by Közép-Magyarország region (HU10: 57.5%), with a share of 57.3%, while the GDP/inhabitant is 92.20 PPS. The regions Lubelskie (PL31: 53.8%), Małopolskie (PL21: 53.4%), Latvija (LV00: 52.9%), Severoiztochen (BG33: 52.8%), Dél-Dunántúl (HU23: 51.7%) are under the same circumstances.

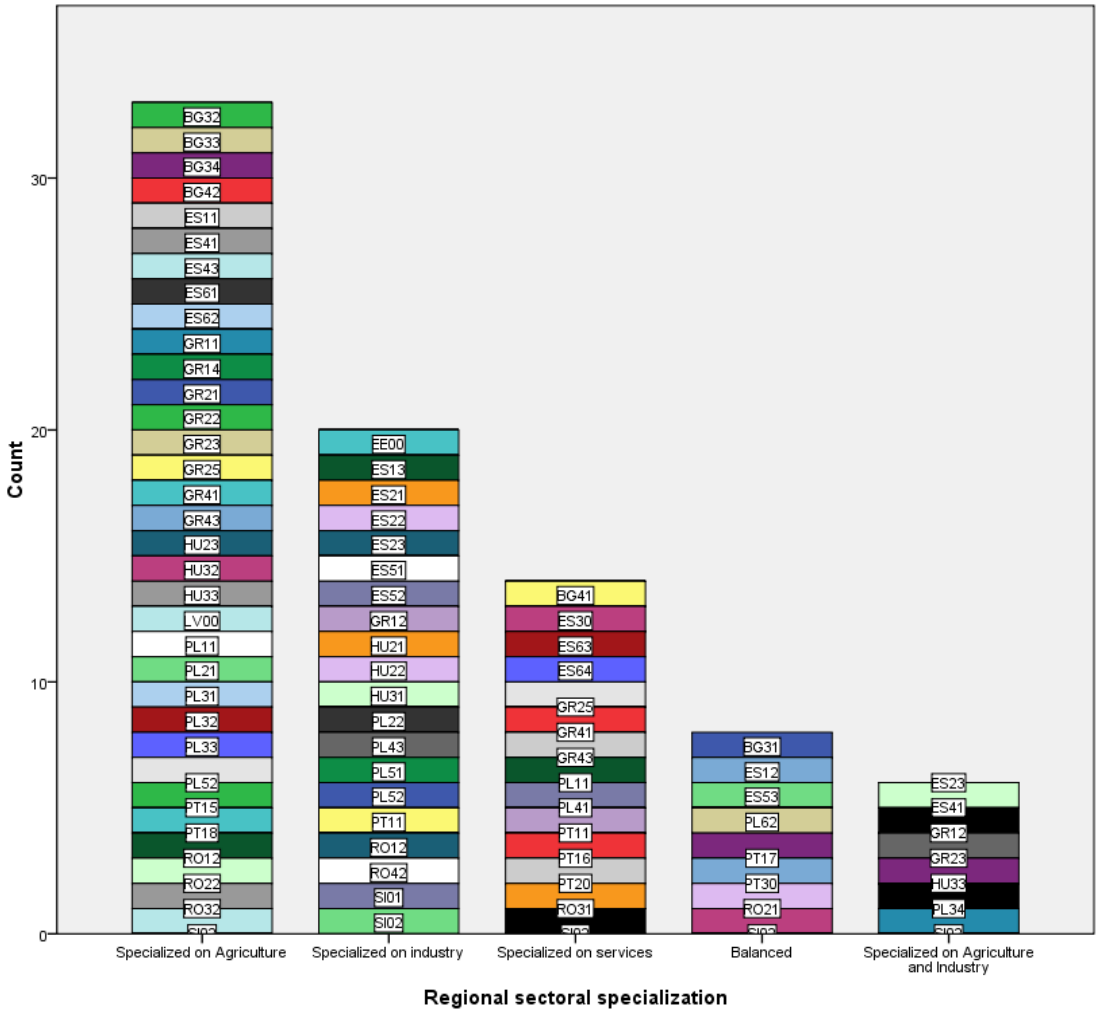
The north-east region (RO21), occupying the penultimate place concerning the GDP/inhabitant (26.64 PPS), has a degree of business concentration of 50.7%. A small step was taken after Romania met some of the structural advantages of the EU integration, so that the direct foreign investments, which were not necessarily extraordinary, led to surpassing the last stage at the NUTS 2 level. Under this region level there are: Eesti (EE00: 48.8%); Zahodna Slovenija (SI02: 48.8%); South-East (RO22: 47.8%); North-West (RO: 45.6%); South-Muntenia (RO31: 44.5%); South-West Oltenia (RO41: 43.6). Unfortunately, the last two positions of the 81 are taken by the Central (RO12: 42.1%) and Western (RO42: 41.7%) regions.

Consequently, we can appreciate that the internal market specific processes, based on investments supported by the European cohesion policy as well to increase attractiveness and stimulate endogenous increase in the peripheral regions, can contribute to the stimulation of the industrial agglomeration/concentration processes and to reducing disparities.

The concentrations of the economic activities is not necessarily and automatically the guarantee for stimulating the endogenous increase and reducing discrepancies. Convergence is mainly conditioned by factors such as: factor mobility, technology and innovation, spatial dissemination, specialisation patterns, interregional trade flows, the quality of the public policies etc. The dynamic of the European integration process confirms a concentration of the innovating industries (high and medium tech), dynamical in the developed regions (core regions), mainly generating intra-industrial specialisations, while the periphery attracts concentrations in the primary sectors (labour intensive) and in industries with low added value (low and medium tech), with low dynamics, with mainly intra-industrial specialisations. Convergence takes place rather between "strong clubs", comparable as development level and similar as production structures and specialisation patterns. It thus follows that, in evaluating the increase and convergence potential of the agglomeration processes, it is necessary to go deep into the analysis and also take into account the GDP structure and the industrial specialisation typology.

b). The correlation regional development – specialisation – disparities/convergence

In order to establish the interdependencies between the increase potential and the specialisation typology, we grouped the regions depending on the specialisation sector (figure 8):

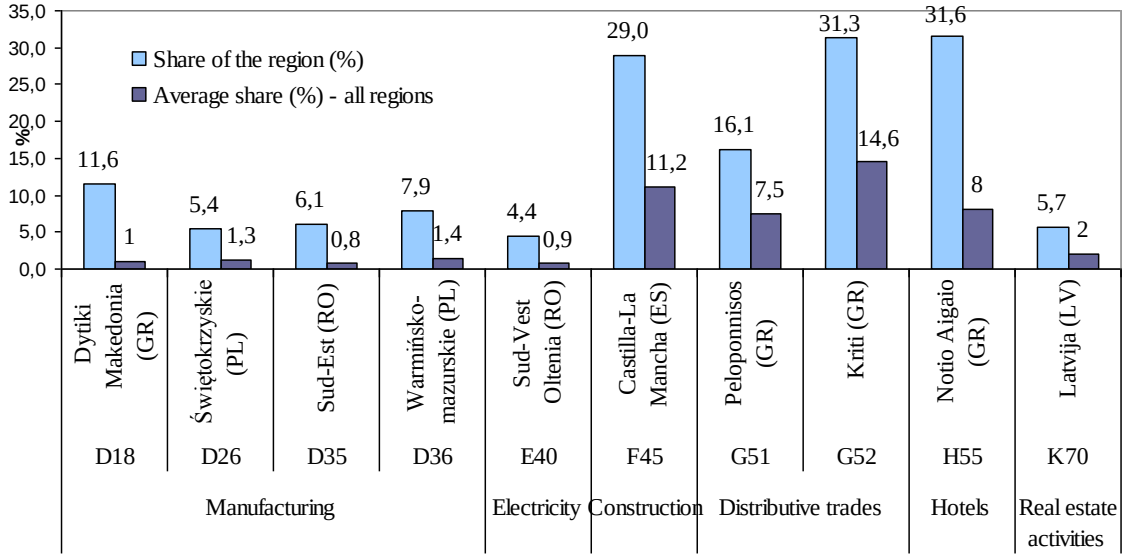


Source: the authors' representation based on the Eurostat data

Figure 8. **Specialisation on activity fields**

It can be seen that most analyzed regions are specialized in agriculture: 33 regions (40.7%), then the industry is the field activity where 20 regions hold competitive advantages (24.7%); 14 regions service specialized (17.3%); 8 regions do service and industry based activities (9.9%) and 6 regions carry out activities mainly based on agriculture and industry (7.4%). On a careful analysis of the figure 8 we see that there is some strong correlation between the GDP/inhabitant and the region degree of specialization. Consequently, in the agricultural field, which does not produce such a high added value in economy like the secondary and tertiary sectors, there are specialized regions which have very low development levels (Severen tsentralen (BG32), Severoiztochen (BG33), Yugoiztochen (BG34), Yuzhen tsentralen (BG42), Galicia (ES11), Castilla y León (ES41), Extremadura (ES43), Anatoliki Makedonia Thraki (GR11), Thessalia (GR14), Latvija (LV00), Łódzkie (PL11), Małopolskie (PL21), Lubelskie (PL31), Podkarpackie (PL32), Alentejo (PT18), Centru (RO12), Sud-Est (RO22). Among the industry specialized regions there are: Eesti (EE00) Cantabria (ES13), Kentriki Makedonia (GR12), Közép-Dunántúl (HU21), Śląskie (PL22) Norte (PT11), West (RO42), Vzhodna Slovenija (SI01), while those service specialized are: Yugozapaden (BG41), Comunidad de Madrid (ES30), Peloponnisos (GR25), Łódzkie (PL11), Norte (PT11), South - Muntenia (RO31).

The GDP structural analysis also reveals the specialization of some regions on certain activity fields (NACE). Figure 9 shows that the most specialized regions in the manufacture area, with a significant share in the region GDP, are: Dytiki Makedonia (GR) - Wearing apparel; fur (NACE code D18), Świętokrzyskie (PL) - other non-metallic mineral products (NACE code D26), South-East (RO) - other transport equipment (NACE code D35), Warmińsko-mazurskie (PL) - furniture and other manufacturing (NACE code D36).

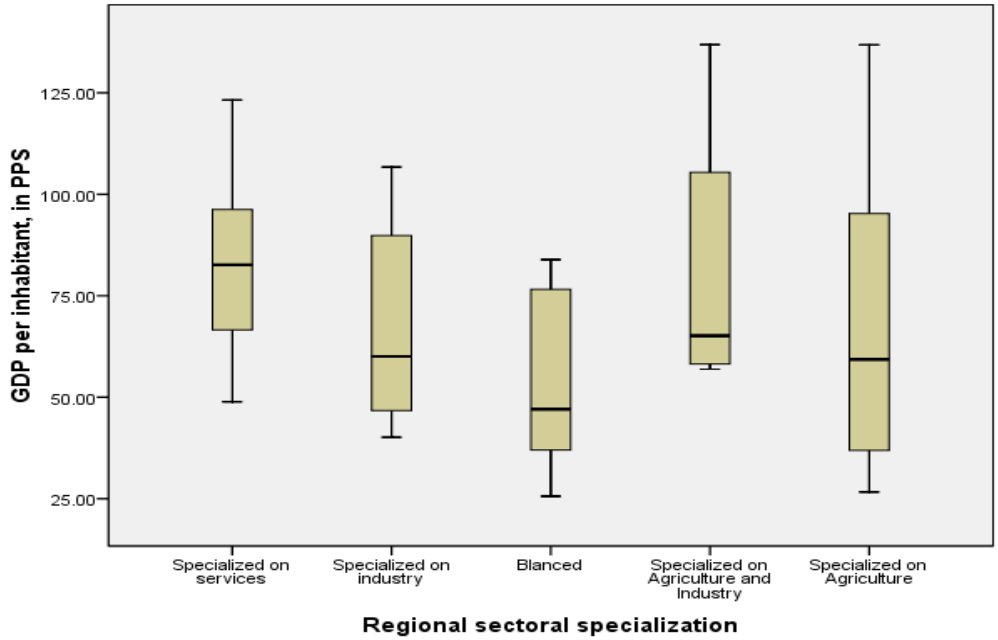


Source: the authors' representation based on Eurostat data, 2011

Figure 9. **Most specialized regions in different fields of activity**

Other regions among the most specialized: South-West Oltenia (RO) - Electricity, gas and hot water supply (NACE code E40), Castilla-La Mancha (ES) – construction (NACE code F45), Peloponnisos (GR) - Wholesale trade (NACE code G51), Kriti (GR) - Retail trade and repair (NACE code G52), Notio Aigaio (GR) - Hotels and restaurants (NACE code H 55), Latvija (LV) - Real estate activities (NACE code K70).

By synthesizing the relationship between the GDP/inhabitant and the specialization degree of business from the analyzed regions is shown in the next boxplot (figure 10).



Source: the authors' representation based on the Eurostat data
Figure 10. **The boxplot**

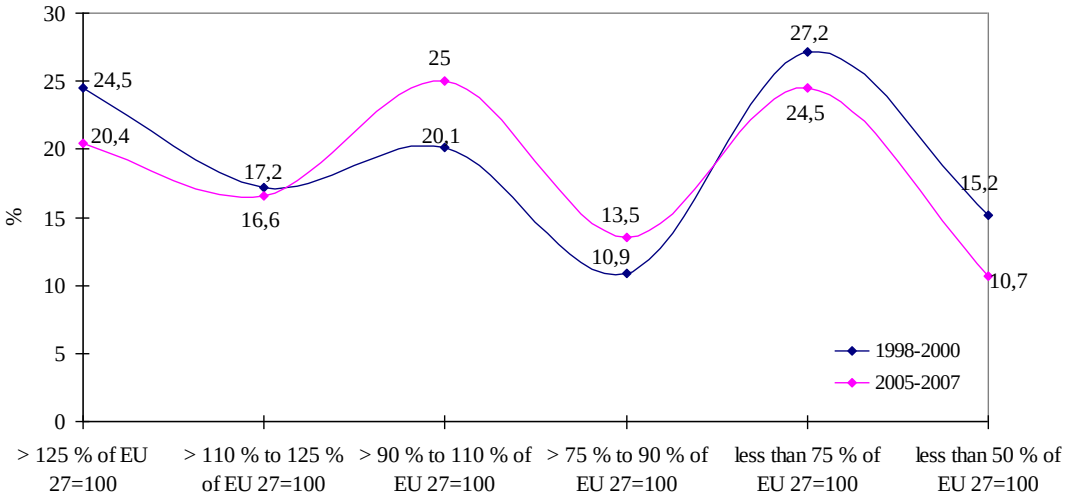
We notice that, at the level of the median (quartile 2), there is the service specialization, which means that this field contributes significantly to the GDP. We also note that there is no outlier, namely no region of those analyzed deviates from normality as concerns the specialization in a certain field.

The experience of the EU expansion towards the south in the 80s shows that the integration system stimulates a catching-up process, Spain, Portugal and Greece becoming more diversified, with an increase in specializations within the industry, similar to the central economies (the European trade is mainly intra-industry). The eastern peripheral economies are mainly specialized in low-tech and labour-intensive industries, the perspective generated by the integration process being different. The Central European economies tend to follow a "Spanish model" based on catching-up, industrial diversification and intra-industry trade, while Eastern countries tend to maintain their inter-industry specializations, with a low level of diversification in low-tech and labour-intensive industries (Dupuch et al, 2004).

c). The correlation regional development – employment – disparities/convergence

One of the most important potential indicators considered in the calculus of the economic and spatial peripherality analyses is the degree of employment. In the peripheral regions, especially where spatial peripherality is correlated with a low level of development, a high concentration of people and a lower level of employment stand out.

The dynamical analysis of the population concentration levels depending on the region GDP shows a relatively steady maintenance throughout time, the greatest concentration being in the regions with a smaller GDP than 75% of the EU average (figure 11).



Source: the authors' representation based on Eurostat data, 2011

Figure 11. **Concentration of population in regions with a GDP per inhabitant of…**

A more obvious connection results from the type of the occupational specialisations, meaning a more powerful role of the human capital in the regional increase. For example, if we analyse the degree of employment of the highly educated people from the studied regions, we note that the role of the labour factor is more relevant in explaining the level of development (figure 12).

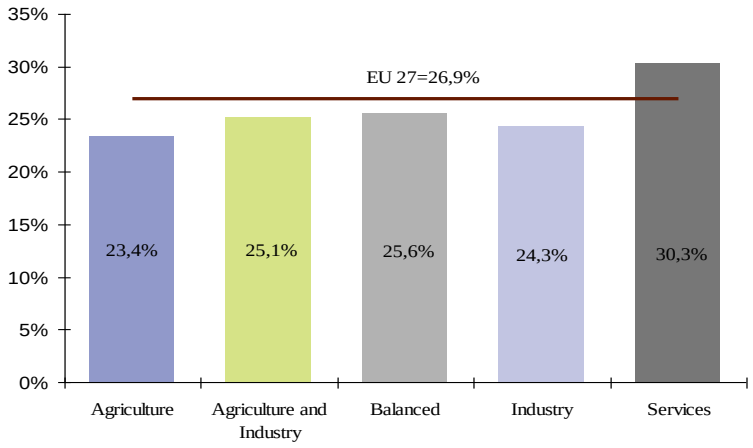


Figure 12. **Employed people with higher education, as a percentage of total employment**
Source: the authors' representation based on the Eurostat data, 2011

Thus, at the level of the 81 regions, most people are employed in the service field (30.3%), services and industry (balanced) 25.6%, agriculture and industry (25.1%), industry (24.3%) and agriculture (23.4%). Consequently, the service and industry specialized regions, with a higher GDP/inhabitant level, usually concentrate a greater share of performing human capital, hence the convergent supporting role for the processes of increasing the specialized labour force.

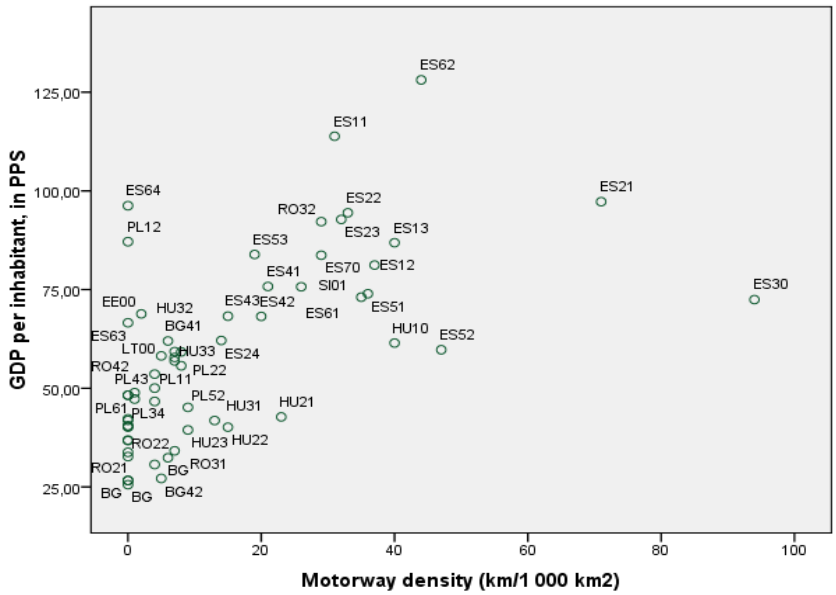
In the centre-periphery-like patterns, as it is the EU case, the periphery attracts and concentrates low-skilled intensive industries, while the centre keeps the high-skilled intensive activities. The income differences tend to be greater, the periphery being dependent on the centre and unable to generate catching-up processes.

d). The correlation regional development – accessibility – disparities/convergence

The decision to delocate the production towards large commodity markets, especially concentration, is always accompanied by the cost-benefit analysis. Just because of this, the accessibility degree and the transport costs are taken into account. They may accentuate if, for example, the distance (measured in km) to the commodity market is great or if the highway or railway density is low. The analyses taking into account the accessibility potential were made by Keeble et al (1982; 1988), who studied the ,,centrality" of the so-called European economic centres. The authors' results emphasized two European central areas, with a high degree of accessibility: one in London and northern Italy and one between Paris and Berlin. The accessibility theme was largely debated by Spiekermann and Wegener (1994, 1996), Schürmann and Talaat (2000), Spiekermann et. al (2002).

Measuring accessibility towards a region does not take place only in terms of types of transport or traffic density, but also the traffic junctions created on the transport routes (airports, harbours, stations and transport points), being difficult to establish an efficient way of accessibility for goods and people. At the EU level, ESPON research network (European Spatial Planning Observation Network) has made studies as concerns territoriality in the European area, emphasizing the fact that: accessibility on roads is the best in the European central parts (the centre-periphery pattern); railway accessibility is the best in towns which are fast transport network junctions in Europe; air accessibility is the best in regions which have big international airports. Consequently, in order to have a higher accessibility degree, some multimodal accessibility is obviously necessary, through which it can easily reach /from the centre of a region by different transport means and ways (roadways, railways, naval and air transport infrastructure). It is obvious that, the more a region has transport facilities, the more the economic activity in the area intensifies itself, the transaction costs decrease and the economic development is faster.

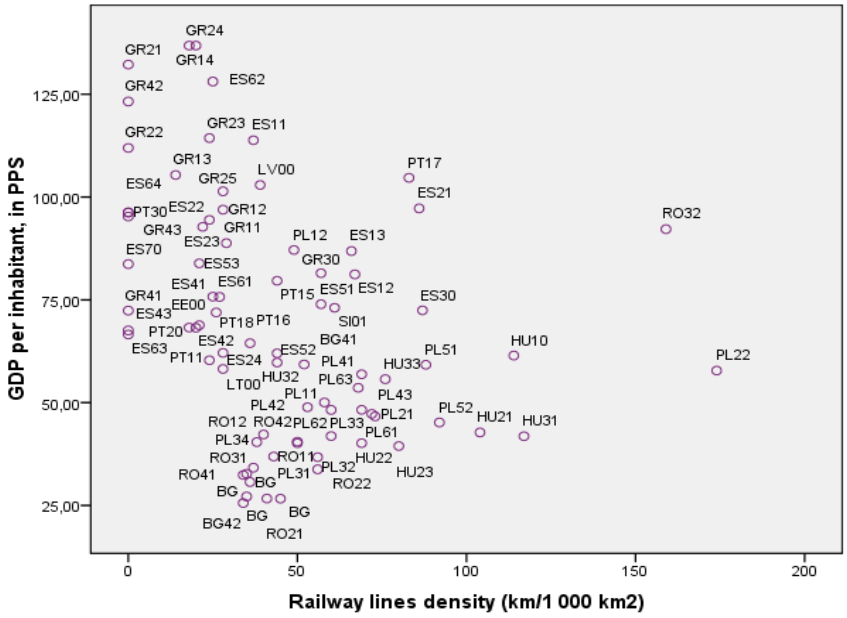
The correlation between the highway, railway density and GDP/inhabitant is represented in figures 13 and figure 14.



Source: the authors' representation based on Espon Database
Figure 13. **Scatterplot representation**

Thus, we can see that the greatest highway density is in the Spain regions Comunidad de Madrid (ES30), with $94km/1000km^2$, País Vasco (ES21) with $71km/1000km^2$, Comunidad Valenciana (ES52), with $47km/1000km^2$. From the

countries integrated in 2004, Közép-Magyarország (HU10) region stands out, with $40km/1000km^2$ and Vzhodna Slovenija (SI01) region with $35km/1000km^2$. We can also notice that the regions from Bulgaria and Romania are concentrated towards the intersection point of the Ox and Oy axes, which emphasizes a weak highway density. The greatest density can be found in Bucharest-Ilfov (RO32) region with $29km/1000km^2$. The situation is much better as concerns the railway density.



Source: the authors' representation based on Espon Database
Figure 14. **Scatterplot representation**

In this category we include: Śląskie (PL22) with $174km/1000km^2$, Bucharest-Ilfov (RO32) with $159km/1000km^2$, Észak-Magyarország (HU31) with $117km/1000km^2$.

So, we note that there is a direct link between the degree of regional development and the degree of accessibility. The more organised the transport infrastructure is, the more stimulating effects are created in the area, especially as a consequence of the international trade and the specialisation degree increases. The importance of accessibility is much greater as spatial peripherality is associated with the economic peripherality (the case of the new eastern peripherality). The European cohesion policy, complementary to the regional development policies from the new periphery countries will be obliged to maintain for the new financial prospects 2014-2020 a significant orientation towards transport networks which should ensure connectivity to the spatial and economic EU centre, the deficit being very high in relation with the southern peripherality.

The above analysed correlations are obviously selective, many other aspects being taken into consideration, especially from the dynamic analyses point of view. At the level of the analysis we undertook in this study, finding out the correlation coefficients Pearson (P_{coef}), Kendall (K_{coef}) and Spearman (S_{coef}) reveals the intensity of connections between the indicators used in explaining the economic and spatial peripherality (table 3).

Table 3. The correlation indices

	Coef	GDP_{PPS}	$Rbus_{conc\%}$	Act.	$Pop_{d(i/km^2)}$	$Empl_{\%}$	Rs_{sp}	$M_{d(km/1000km^2)}$	$R_{d(km/1000km^2)}$
GDP_{PPS}	P_{coef}	1.000	.676**	.707**	.116	.323**	-.107	.605**	-.336**
	K_{coef}	1.000	.492**	.552**	.046	.246**	-.157	.489**	-.273**
	S_{coef}	1.000	.708**	.724**	.024	.404**	-.191	.635**	-.431**
$Rbus_{conc\%}$	P_{coef}	.676**	1.000	.955**	.344**	.167	-.078	.426**	-.508**
	K_{coef}	.492**	1.000	.876**	.060	.166*	-.036	.314**	-.417**
	S_{coef}	.708**	1.000	.965**	.084	.257*	-.065	.444**	-.569**
Act.	P_{coef}	.707**	.955**	1.000	.261*	.230*	-.055	.549**	-.461**
	K_{coef}	.552**	.876**	1.000	.082	.209*	-.044	.373**	-.415**
	S_{coef}	.724**	.965**	1.000	.109	.278*	-.057	.482**	-.536**
$Pop_{d(i/km^2}$	P_{coef}	.116	.344**	.261*	1.000	-.271*	-.344**	-.036	-.067
	K_{coef}	.046	.060	.082	1.000	.019	-.343**	.158	.321**
	S_{coef}	.024	.084	.109	1.000	.037	-.454**	.226	.417**
$Empl_{\%}$	P_{coef}	.323**	.167	.230*	-.271*	1.000	-.141	.510**	-.135
	K_{coef}	.246**	.166*	.209*	.019	1.000	-.114	.359**	-.103
	S_{coef}	.404**	.257*	.278*	.037	1.000	-.159	.509**	-.143
Rs_{sp}	P_{coef}	-.107	-.078	-.055	-.344**	-.141	1.000	-.307*	-.286*
	K_{coef}	-.157	-.036	-.044	-.343**	-.114	1.000	-.169	-.166
	S_{coef}	-.191	-.065	-.057	-.454**	-.159	1.000	-.215	-.219
$M_{d(km/1000km^2}$	P_{coef}	.605**	.426**	.549**	-.036	.510**	-.307*	1.000	.169
	K_{coef}	.489**	.314**	.373**	.158	.359**	-.169	1.000	.100
	S_{coef}	.635**	.444**	.482**	.226	.509**	-.215	1.000	.131
$R_{d(km/1000km^2)}$	P_{coef}	-.336**	-.508**	-.461**	-.067	-.135	-.286*	.169	1.000
	K_{coef}	-.273**	-.417**	-.415**	.321**	-.103	-.166	.100	1.000
	S_{coef}	-.431**	-.569**	-.536**	.417**	-.143	-.219	.131	1.000

**. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed).

Note: GDP_{PPS} =GDP per inhabitant, in PPS; $Rbus_{conc\%}$ = Regional business concentration (%); Act. =Fields of activity; $Pop_{d(i/km^2)}$ =Population density (inhabitants per km^2); $Empl_{\%}$ =Employment rate (%); Rsc_{sp} =Regional sectorial specialization; $M_{d(km/1000km^2)}$ = Motorway density $(km/1000km^2)$; $R_{d(km/1000km^2)}$ =Railway lines density $(km/1000km^2)$.

Source: the authors' calculations based on Eurostat and Espon Database

The most conclusive results (synthesized in table 3) emphasize the fact that there is a direct connection between the GDP/inhabitant and the degree of business concentration, conditionality being 70.8% ($S_{coef} = 0.708$). Furthermore, the degree of concentrating the economic activities depends on the region specificity and the sectors which show competitive advantages (perfect connection, of 95.5%; $P_{coef} = 0.955$). We note that when there are economic agglomeration situation, the population density tends to overcome the average by 34.4% ($P_{coef} = 0.344$). If we take into account aspects related to accessibility in a certain region, we see that the connections created between the independent variable *highway density* and the dependant variables *GDP/inhabitant*, *activity field in which people invest* and *the employment degree* are direct, the values of the coefficients obtained being over 50% dependency ($S_{coef} = 0.635$, $P_{coef} 0.549$, $P_{coef} = 0.510$).

It is clear that, along with the developments in the specialty literature to obtain a composite index of peripherality which should associate the spatial dimension with the economic one, by taking into account the most important determining factors for the increase and regional convergence, the analyses made will become more efficient instruments in accounting for and suggesting measures of regional and cohesion policies.

Conclusions

The results of our study highlighted the fact that the regions with a GDP per inhabitant under the EU average, but located near the development centres and the growth poles, have a different potential of real convergence by relating to the regions located at the territorial and economic periphery of the EU. As we have noticed throughout this article, the accessibility potential underlines the development discrepancies between border regions and intra-territorial regions. Such an example is provided by the North-East region and the Centre region from Romania. The first is at the EU eastern border, neighbouring the Republic of Moldova and Ukraine, while the second is in the centre of Romania, which helps the latter have greater access to the commodity markets of the other regions of the country, more reduced transaction costs, the negative externalities generated by the position are significantly diminished, attracting investors, generating agglomeration phenomena, stimulating effects, specialisation, suitable for the dynamization of the convergence processes. By extrapolating, the same situation is reflected in the other regions as well at the level of the analysed countries. Consequently, we consider that the success or failure of a region resides in the capacity to establish a high accessibility potential, as the results of our study pointed out, so as to leave free access for the investors to concentrate their business and thus increase the degree of employment etc. It is desirable, in the dendogram we made, to observe the clusters making up in relation with the business concentration (figure 6), the situation gets reversed so that there shouldn't be connections (with a few exceptions) only between the regions belonging to the same geographical proximity – the southern (Greece, Spain, Portugal) and eastern (Bulgaria, Romania, Hungary, Poland, Latvia, Lithuania, Slovenia, Estonia), but they should be inter-correlated. In this respect, the peripheral regions should follow the so-called „big push theory": they can escape the poverty trap by investing in industries which provide great added value, support economic and social development, territorial and sustainable balanced, corresponding to their specific needs and resources by concentrating on the increase urban poles; improving the infrastructural conditions and the business environment. The recovery of disparities depends essentially upon the steady efforts in this respect, but also upon the coherence and rationality of the implemented policies.

Consequently, it is necessary to take into account the specificity situation of these regions in the European policies and in the national strategic frameworks, by taking into account, for example, certain compensation indices and increase respectively in allotting structural funds and certain performance indices in analysing the regional development policies of the member states. Thus, if the peripherality character were reduced, at least economically, for the regions from this category, they should go to the definition and framing stipulated within the European methodological framework similar to the competitive regions by introducing specific indicators in the structural indicator system defining the degree of territorial convergence and intra-community cohesion. In this way there will be a clearer shaping of the elements leading to regional disparities, namely those referring to access on markets, transport facilities, production possibilities, decentralization of the decision processes, available natural resources, human resources, environment issues, access to public services, demography etc.

The vulnerability of poorer regions makes the reduction of the peripherality effect more difficult to be reached, the more these areas are less diversified, mainly based on agriculture, light industry, only a few regions having a high degree of specialisation. That is why we consider that what can be done to improve the peripheral region economic situation mainly aims at decision factors. That is why it is compulsory to: pay increased importance to gathering as much detailed information as we can about every region (depending on the analysis scale) for diagnosis and prognosis; study thoroughly and update surveys for the correct information of the decision factors and based on data which are as actual as possible; rationalise public expenses, laying emphasis on investments in the human capital; allot funds more precisely towards those who really need them; consolidate the business environment; get transparency of public administration and applied policies; stimulate the rural economy.

Given the results of our study, the authorities from the poorly developed regions must aim, in the first turn, at creating conditions to meet the necessity for active and alternative measures to support the regions, which should ensure the diminishing of regional economic discrepancies, by laying emphasis on: accelerating the economic development by increasing the capital flow; creating high quality goods and services also having high added value, competitive on the external markets; creating new jobs and new professions in accordance with the evolutions on the national and international markets; consolidation of infrastructure; economies in the region (accumulation); adjusting salaries to labour productivity; developing the potential for innovation, research and development etc.

We conclude that, although the regions from the eastern EU have a slower development rate than those in the south, the effects of the economic reorganisation policies being different, they will find their good place at the economic and social level, only depending on the efforts they will make and the strategies used for a good management of the existing resources, based on an efficient economic policy, which contributes to reducing the competitiveness discrepancies. We believe that the way in which people will know how to apply the best measures to ensure real convergence will make the difference between regions/states and will lead to rehierarchies on the scale of competitiveness and benefits of participating to the integration process. An essential role will be played by improving accessibility in order to increase attractiveness for the business environment and generating agglomeration/concentration processes in innovating industries, prioritary through the contribution of the FDI flows.

The experience of the southern peripherality shows that the economies making up the EU expansion towards the south have succeeded in reducing discrepancies and getting to a convergence process of the developing patterns with the economies from the centre of

Europe. The problem now for the eastern peripherality is the measure in which the states from this region can valorise and send back experience towards the countries from the south.

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