REGIONAL DISPARITIES AND ECONOMIC TRENDS IN ROMANIA: A SPATIAL ECONOMETRIC ANALYSIS

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Abstract:
A key aspect of economic growth analysis today is the introduction of spatial distribution of economic activity as a determinant of the growth process. This research highlights the main contributions of the New Economic Geography towards identifying the factors that influence economic development and explains the existing disparities among the regions of Romania. Furthermore, in addition to the economic characteristics, administrative and political aspects were taken into account as they aim to determine an increase in competitiveness and to reduce interregional disparities. The empirical analysis carried out both at the regional and county level, revealed that between 2005 and 2012, developments in territorial economic growth, productivity and employment rate recorded large fluctuations, the gaps being larger among the smaller regions (counties). During this period, regional disparities either stayed at the same level or deepened.

INTRODUCTION

The spatial distribution of economic activities is based on the model proposed by Krugman (1991) in his book, *Geography and Trade*, which explains differences in national economic growth starting from regional differences across the world. In this model, international specialization, as the basis of global trade, is seen as an evolved form of local specialization and, according to Krugman (1991), the most obvious example of this is the existence of urban (or metropolitan) areas. Consequently, cities are characterized by increasing returns to scale (due to the positive influence that the demand of an economic entity has on other companies within the same region) and the existence of positive externalities (Krugman, *Increasing returns and Economic Geography*, 1991). This leads to an increase in the spatial economic concentration phenomenon, whose benefits (economies of scale, technological and educational externalities, increasing returns) may cause an uneven development among regions. Polese (1981) defines disparities as significant differences between different geographical regions in terms of income per capita, wages and/or unemployment rate.

The New Economic Geography *core-periphery* model explains how some areas, around cities or covering larger geographical areas, evolved over time and became centers of economic activity or growth poles. Meanwhile, other regions have confirmed their *"periphery"* status, displaying decreasing population density, sparse economic activity and a low standard of living compared to regions that have earned the status as "*core*".

Factors contributing to the uneven development of regions are diverse and include: availability of natural resources and high skilled labor force (especially in the

R&D sector), costs (wages, raw materials etc.), the existence of infrastructure and other communication networks, legislative framework, climate and topographic conditions (e.g. for tourism), as well as the proximity to markets and their size (Eurostat, Structural business statistics at regional level, 2013).

There are also drawbacks of the economic concentration or the so-called "dispersion forces", like: negative externalities, immobility of certain production factors, increased competitiveness (due to the increasing numbers of companies) and thus reduced profits.

Among the negative consequences of industrial agglomerations, we should consider the increasing land prices in those areas. Combes et al. (2012) argue, recalling existing data for French cities, that apparently there is a close connection between the number of inhabitants of a particular city and the land (housing) price in that area. Therefore, certain policies seek to limit the increase in the number of inhabitants in a city, trying to ensure reasonable living costs for those who are already residents. French researchers' findings show, however, that there is a weak correlation between the living cost of a city and its size and a deviation from the optimal size does not imply a proportional increase in the price of land or other additional costs. Ponzetto (2012) considers that amid the negative effects of industrial concentration we should include the rising transport costs within the district and other disadvantages created by overcrowding and increased density of individuals and companies (congestion). These costs may be, however, offset by increasing workers' wages and improving the productivity of the firms.

SPATIAL ANALYSIS UNITS

The analysis performed in this study is based on the current administrative setup of Romania, consisting of 41 counties plus Bucharest, as territorial units with legal personality. A parallel analysis, conducted on a larger scale, on the 8 regions that have no administrative competencies, aims at strengthening the previous results or to identify new influences in terms of the same structural determinants of agglomeration and economic development, with the literature describing different effects on the basis of geographical aggregation.

Focusing research on counties is primarily due to the availability of harmonized statistics both at national and county level and, secondly, in order to take into account their very heterogeneous socio-economic characteristics as administrative-territorial units. Also, given the absence of statistically integrated labor markets, counties can be considered a better approximation for the labor markets' own structure, which contributes to the multiplication of externality effects and to the increase of the relevance and consistency of the results. At the same time, geographically disaggregated data may reduce estimation errors, by better capturing the particular characteristics of integrated areas.

Table No.1
Spatial Units in Romania

NUTS 1	NUTS 2 Development Regions	NUTS 3 Counties
Macroregion 1	North - West	Bihor, Bistrița-Năsăud, Cluj, Maramureș, Satu-Mare, Sălaj
	Center	Alba, Brașov, Covasna, Harghita, Mureș, Sibiu
Macroregion 2	North - East	Botoșani, Neamț, Iași, Bacău, Suceava, Vaslui
	South - East	Brăila, Buzău, Galați, Tulcea, Constanța, Vrancea
Macroregion 3	București- Ilfov	București, Ilfov
	South	Argeș, Călărași, Dâmbovița, Giurgiu, Ialomița, Prahova, Teleorman
Macroregion 4	South - West	Dolj, Gorj, Mehedinți, Olt, Vâlcea
	West	Arad, Caraș -Severin, Hunedoara, Timiș

Source: Ministry of Regional Development and Public Administration

ECONOMIC INEQUALITIES IN ROMANIA

Considering the factors that determine the concentration and uneven development of regions, on one side there is the point of view that these phenomena are the result of autonomous (independent) elements such as the *centripetal force*, which determines the agglomeration and the centrifugal force, which causes the dispersion of economic activities. On the other side, it is considered that the existence and development of geographic and economic regions is the result of human activity. This activity, characterized by intelligent behavior, self-organization and strategic policies can influence current and future characteristics of these entities (Nijkamp, 2013).

Beginning with the second opinion, according to which the actions of individuals and administrative institutions have an important role in the regional economic development, we consider that the determination of the optimal economic policy must have as a basis an analysis of current conditions. Consequentially, the following table contains descriptive statistics for several variables used in the cross section and panel data models at country, regional and county level, in the period between 2005 and 2012 (for the employed population data covers the period 2008 – 2011).

Table No.2

Dispersion of the growth rates of GDP, GDP / capita, productivity, unemployment, nominal wage and employment in Romania, 2005-2012

		Empl. pop. '000 pers.	real GDP, %	GDP per Capita, €	GDP/worker (productivity), '000. lei/worker	Unemploy. rate, %	Gross nominal wage
RO	Average	8249,35	2,61	5787,7	56,16	5,64	1634,5
	Standard dev.	251,86	13,78	994,98	13,78	1,26	411,6
	Min	8037,60	-6,6	3869,25	32,88	4,0	968,0
	Max	8585,70	7,9	6838,88	69,08	7,8	2077,0
	Gap	548,10	14,5	2969,63	36,2	3,8	1109,0
Reg.	Average	1031,17	2,34	5787,70	55,68	5,67	1573,22
	Standard dev.	150,50	5,32	3021,77	21,64	2,15	461,75
	Min	768,10	-11,10	2458,00	26,28	1,60	853,00
	Max	1220,70	18,20	16206,00	128,63	10,5	3006,00
	Gap	452,6	31,30	13748,00	102,35	8,90	2153,00
Co.	Average	196,07	1,87	4814,95	52,03	6,22	1460,50
	Standard dev.	144,90	7,11	2131,07	40,64	2,47	395,01
	Min	78,20	-20,20	1665,00	18,93	1,40	732,00
	Max	1069,90	27,70	16904,00	134,20	13,90	3045,00
	Gap	991,70	47,90	15239,00	115,70	12,50	2313,00

Source: own calculation based on data from National Institute of Statistics, 2009-2012

Between 2008 and 2011 the annual average number of civilian employed population was 8.249.000 nationally, 1.031.000 at regional level and 196.000 people at the county level (INS, 2012). However, the differences in sectorial employment are extremely large among counties, which indicates a certain space grouping in some of the activities. Thus, at county level, on average, the largest sectors in terms of employment were: agriculture (57.51 thousand individuals), commercial services (54.22 thousand individuals) and industry (41.65 thousand individuals). Inter-county differences are extremely large, illustrating a concentration in: commercial services in Bucharest, Timis and Cluj counties; agriculture in Dolj (with an annual average of 107 950 agricultural workers, representing 41.1% of its total employed labor force), Suceava ((106 300, 46% of total), Neamt (44,1%) and Vaslui (49.3%). Large differences exist in the public service sector and industry likewise. When considering the regions of development, the differences are smaller (especially if we make an exception for the Bucharest-Ilfov region), revealing a more balanced development and showing that spatial clustering is not a trend.

Between 2005 and 2012, the average annual real GDP growth rate was 2.61% at country level, 2.34% in the regions of development and 1.87% in the counties. Extreme levels of performance parameters oscillation involve a multiple gap in the indicators' value. Inter-regional minimum of the GDP growth rate was -11.1% in 2009 in Bucharest-Ilfov region, the same region that that previously had the most pronounced GDP dynamic (maximum 18.2% in 2008). The gap of 31.3% from one year to another highlights the fragility of the market economy when it faces strong shocks like the economic crisis that affected Romania's economy as a whole. At county level, the average GDP growth rate was 1.87%, with a minimum of -20.2%, registered in Giurgiu County in 2005 and a maximum of 27.7% recorded in the same county in 2010 the difference being 47.9% for the entire period. As we can see, the gap is greater in the counties and the amplitude of the oscillations is more significant on smaller geographic areas.

Regarding the GDP per capita, regional annual average for the period between 2005 and 2012 was EUR 5787.7, with a minimum of 2.458 euro in the North-East region, in 2005, and a maximum of 16.206 euro in Bucharest-Ilfov region, in 2008. Regional spread of 13.748 euro was 5.6 times higher than the minimum value of GDP per capita, highlighting major disparities between the richest region (Bucharest-Ilfov) and the poorest one (North-East). If we look at counties, the differences in GDP per capita are even higher with a minimum of 1.665 euro recorded in Vaslui County in 2005 and a maximum of 16.904 euro registered in Bucharest in 2008. The 15.239 euro inter-county gap is thus higher than at the regional level.
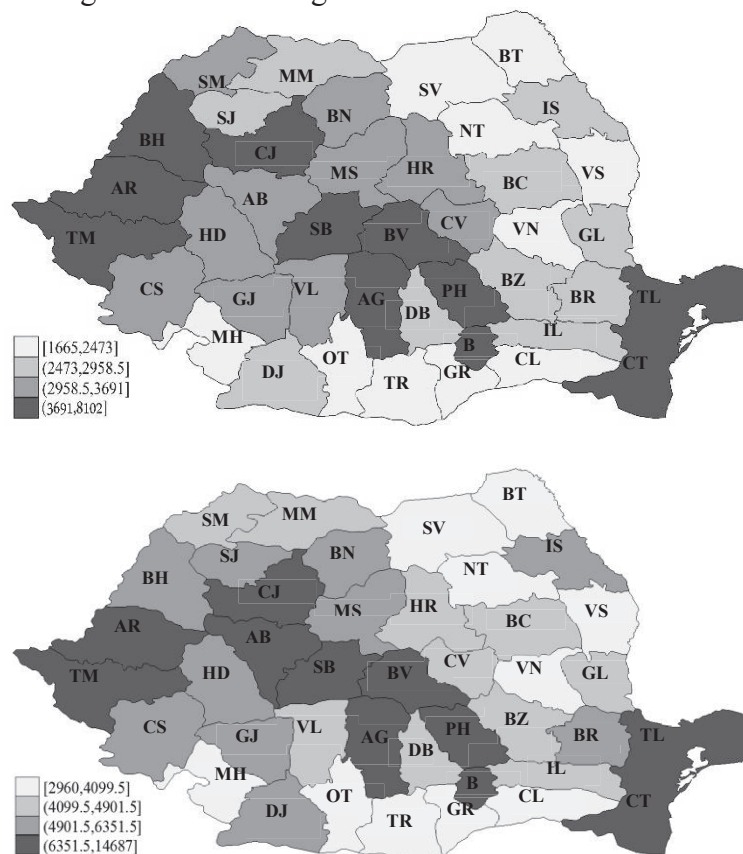

Figure No. 1 Territorial distribution of GDP / capita (EUR) in 2005 and 2012
Source: National Commission for Prognosis: *Projection of main social and economic indicators until 2016*, June 2013

The previous maps illustrate the spatial distribution of aggregate activity among the counties of Romania. The first map presents the level of GDP / capita in 2005 (data from the National Institute of Statistics) and reveals a certain level of polarization of the counties as in a core-periphery model: counties with a low GDP/capita are located in the

East and extreme South of Romania (with the exception of Constanta County) and two relatively compact groups consisting of a few wealthier counties are located in the Centre-South and West.

Analyzing the map of GDP distribution in 2012, a core-periphery configuration is perhaps more visible, the arrangement having the form of a curved (central) diagonal starting from Cluj County and ending in Bucharest. We can also observe that the wealthier West area is narrowing in order to incorporate Alba County as well. These developments confirm that regional disparities in terms of GDP/capita as discrepancies between the richest and the poorest counties, have increased over time. Thus, in 2006, the discrepancies between Romanian regions and other NUTS 2 EU regions were considerable: Bucharest-Ilfov region reached 83.80% of the EU average GDP/capita, while the poorest region (North-East) only reached 24.70% (Goschin et al., 2010). Even larger disparities between counties, as pointed by Goschin et al. (2010) have been exacerbated by the economic and financial crisis at the end of the last decade. We also note that the Tulcea County is not plotted separately by Constanţa, respectively Ilfov County from Bucharest, thus appropriating their characteristics and presenting no particular location values.

Romania has a relatively low unemployment rate, these varying from 7.8% in 2009 and a minimum of 4% in 2007, however, there are large regional differences. Bucharest-Ilfov region has the fewest unemployed individuals (a rate of 1.6% in 2008), but in the South West region the unemployment rate was 10.5% in 2009, the difference between them being 8.9%. At the county level, the situation is even more polarized: in the Ilfov County the unemployment rate was only 1.4% (2008) compared to 13.9% (2009) in Mehedinti County, the gap being 12.5%.
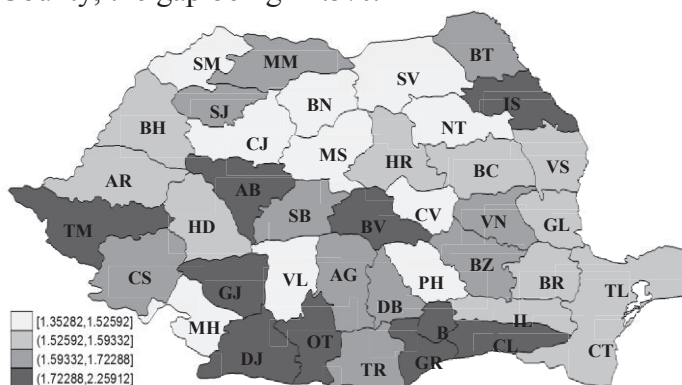

Figure No. 2 Productivity level in 2005
Source: National Commission for Prognosis: *Projection of main social and economic indicators until 2016*, June 2013
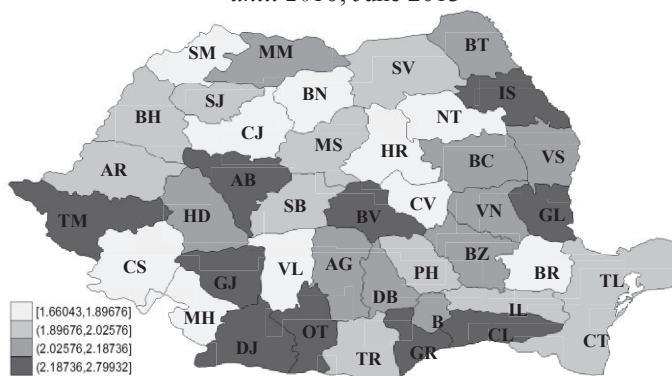

Figure No. 3 Productivity growth rate 2005-2012
Source: National Commission for Prognosis: *Projection of main social and economic indicators until 2016*, June 2013

Regarding the productivity, the national annual average productivity was 56.160 lei per worker oscillating between 32.880 lei per worker in 2005 and 69.080 lei per worker in 2012. The regional average was 55.680 lei per worker, with a minimum of 26.280 lei per worker in 2005 (in the North-East region) and a maximum of 128.630 lei per worker (value recorded in 2012 in Bucharest-Ilfov region), the spread bringing to 102 350 lei per worker. As it was seen previously, there were even larger differences at the county level: the annual average during the period 2005 and 2012, was 52.030 lei per worker, but the minimum level was 18.930 lei per worker registered in Vaslui County in 2005 and the maximum was 134.200 lei per worker, registered in Bucharest in 2012. In this case the gap was 115.700 lei per worker.
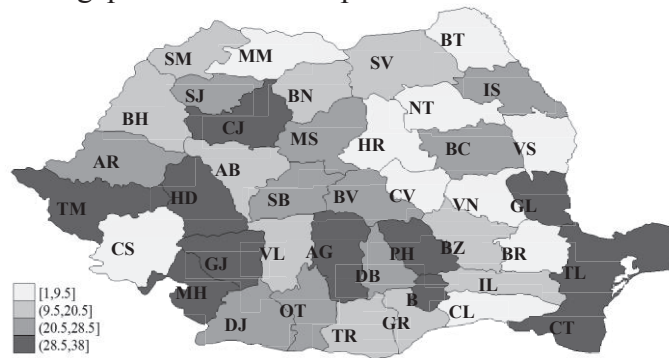

Figure No. 4 Wage differences in 2005
Source: National Commission for Prognosis: *Projection of main social and economic indicators until 2016*, June 2013

Wage spreads are of the same order: minimum wage was recorded in the North-East region (853 lei in 2005), respectively in Covasna County (732 lei in 2005). Maximum salary of 3.006 lei was obtained in the Bucharest-Ilfov region in 2012, respectively 3045 lei in Bucharest (2012).
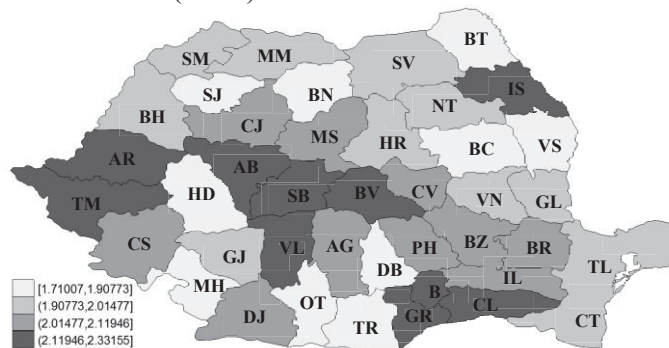

Figure No. 5 Wage growth between 2005 and 2012
Source: National Commission for Prognosis: *Projection of main social and economic indicators until 2016*, June 2013

What we can notice in the map above is that during this period (2005 – 2012) the wage growth rate was very uneven across Romania's counties, but a few counties with lower initial wages increased faster than others (Alba, Vâlcea, Iași). This is due to the local development of industrial parks (Alba County) or to other investments in the area.

The map of differences in GDP per capita in 2012, compared to 2005 shows the maintaining of a low income in the counties in Eastern and (extreme) Southern parts of Romania's territory. GDP/capita indicator is used to compare the level of economic development among regions even if it does not consider the incomes per family.
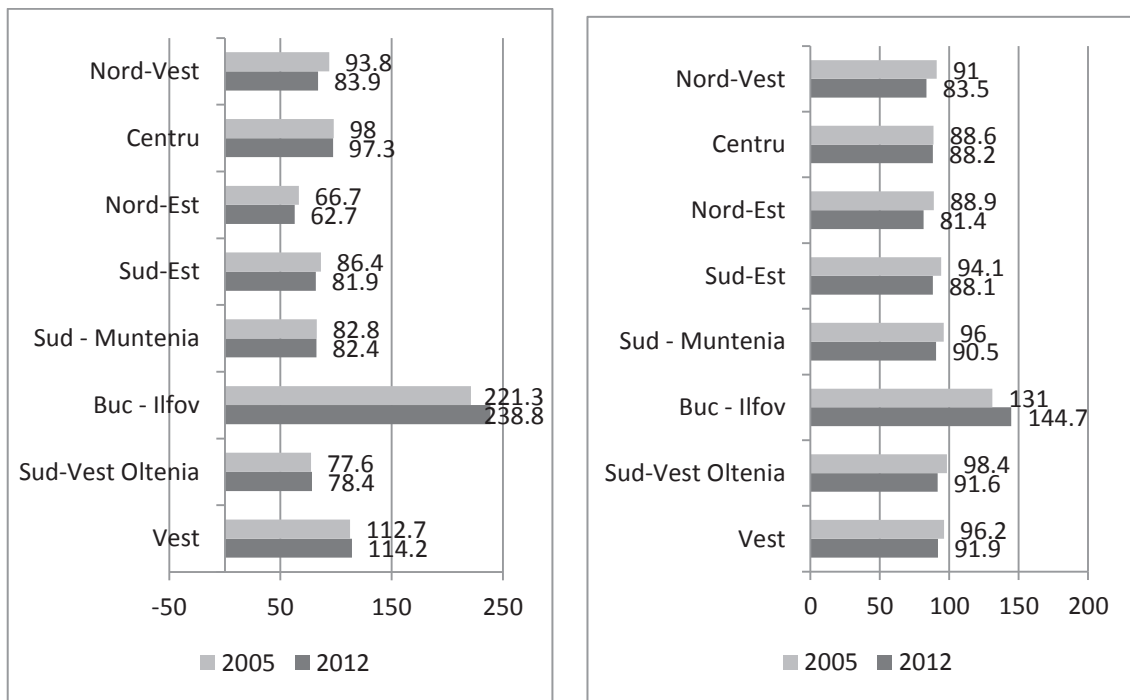
Figure No. 6 Indices of regional disparity in terms of GDP / capita and average net salary
Source: National Commission for Prognosis: *Projection of main social and economic indicators until 2016*, June 2013

It is not possible to highlight a clear trend during the seven years of analysis due mainly to the unfavorable evolution of the economy during the economic and financial crisis. Analyzing the disparity indices for GDP per capita and the average monthly net salary at regional level, we might appreciate a very slight recovery of regional disparities in terms of GDP/capita, but for the richest and the poorest counties, the differences have widened over this period. The increasing wage gap can be seen also in Figure No. 4. Wage disparities are extreme in all regions compared to the Bucharest-Ilfov region and the gap is even higher in 2012 compared to 2005. In 2012 the regional income represented maximum 91.9% of the national average, in the West region, against 96.2% of the national average for the same region, in 2005. The diversity of GDP growth rates is better seen among counties than among regions or among larger geographical areas. Moreover, regions with a high GDP have a more uniform growth rate.

CONCLUSIONS

Economic disparities among the regions of Romania were deepened during the period from 2005 to 2012, especially during economic and financial crisis. Disparities between developed regions and less developed regions and between rich and poor counties increased both in terms of wages and unemployment rate, but also in terms of labor productivity (expressed in GDP/capita). Divergent regional development can be seen in the negative evolution of economic indicators for the Northwestern and Northeastern counties of Romania in relation to the indicators of more developed regions such as West and Bucharest-Ilfov region. Regions of development (geographic areas) that have higher GDP and higher growth rates suggests the importance of market size in the evolution's dynamic and the development of the regional economy. Among the factors most often stated in the literature that come to explain the disparities in the growth rates, the following can be listed: greater fluctuation over time for smaller regions, measurement errors and increased vulnerable to shocks due to a less diversified economy.

There are major political implications stemming from this situation: together with a better territorial organization which should aim to streamline business, measures should be taken both at national and local level in order to support all regions, and particularly the least efficient ones. To develop and implement appropriate policies and programs, the initial conditions, determinants and dimensions should be known and evaluated together with their potential effects, so that the results will be as expected.

Nonetheless, the correlation between market size and growth rates points towards a positive relationship between the various agglomeration economies' local characteristics and spatial economic development. Large spreads among economic performances highlight the heterogeneity of Romania's regions and counties, but also suggests that there are potential determinants of growth across all spatial delimitations.

One of the most easily applicable solutions is the use of EU structural and cohesion funds as these tools are meant to direct liquidity from the rich regions towards the poor ones, in order to increase the competitiveness of the latter and reduce the gap between them. Examples of other countries within the European Union demonstrate, however, that, in order to materially reduce interregional disparities it is necessary the funds be used for the development of appropriate investment projects, taking into account the specific economic and social features of each area.

As a consequence, the findings in this paper reveal some important aspects of the regional development in Romania and recommend further research for the validation or invalidation of assumptions known to date, as well as the formulation of new hypotheses.

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