Regional Industrial Specialization and Geographic Concentration of Economic Activities in Romania

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Abstract

The article deals with two key problems of regional development policy of a country - regional specialization and geographic concentration of economic activities, especially those specific to manufacturing industry. Romania benefits in its regional development policy by the support of horizontal interventions of the European Regional Development Fund - ERDF, covering regions with GDP / capita below 75% of the Community average. The paper highlights the disparities in regional development in Romania, significantly higher than those in other European Union countries taken into comparison. Calculations based on some relevant indicators - Hallet, Gini-Hirschman, of regional specialization, of geographical concentration, of dissimilarity Krugman - highlight the proportionality of regional specialization and geographical concentration of economic activities at the level of NUTS2 regions of Romania, on the one hand, and the development of these regions, on the other hand.

Keywords: *regional specialization; geographical concentration; regional development policy; regional development level*

JEL Classification: *R12; R58*

Introduction

The issue of regional development is complex in terms of its economy and the policies to be adopted, which are expected to give the most appropriate answers to the economic dilemma of combining the requirements of social justice with that of economic efficiency. The complexity of the issue is reflected in theoretical and empirical research findings, which oscillates between the extreme of an optimistic view on the convergence prospects of regional development levels and the pessimistic one on amplification of disparities between regions.

In addition, the complexity – determined by the realities of the contemporary economy -, made the classical economic theory to demonstrate its limits in explaining issues of regional development, what try, with more chance of success, the New Trade Theory and New Economic Geography. According to these new theories, under trade liberalization outsourcing and relocation of economic activities intensify economic integration, thereby giving rise, in turn, to agglomeration processes of industries and development, by specialization, of regions lagging behind. The beneficial effects of industrial agglomerations in terms of regional development are manifold: the creation of a local specialized labour market, with an increasing average level of qualification of the labour force; possibilities for local producers to choose between specialized

suppliers; driving effect manifested locally in the dissemination of new and better technologies etc.

At the same time, the current organization of economic activities requires configuring on ample spaces of the companies contribution to different value chains, nationally and internationally, which means also considerable multiplication of regional development opportunities. Increasing flexibility of production systems opens, thus, broad prospects for lagging regions development, and even creation of development poles within them.

Research on regional development in Europe, initiated in the first years after the Second World War, but convincingly demonstrates that examples of convergence of regional development are scarce, increasing regional disparities, summarized in the regional GDP / capita, occurring in unparalleled numerous cases. This is the essential reason of reduction and even extinction of development gaps between regions, which is the purpose of EU regional development policy. The policy applies the principle of financial solidarity of the Member States and is based on their contribution to the Community budget.

The main instrument for the implementation of policy is the European Regional Development Fund - ERDF, established in 1975, operating to promote the development and structural adjustment of regions lagging behind, supporting their economic conversion, development of areas with structural problems (declining industrial regions or in the process of deindustrialization) and areas in crisis, including urban areas.

Romania has benefited substantially from this Fund, in 2007-2013 being allotted, by ERDF, EUR 9 billion in the Regional Operational Program - ROP, through which are carried out horizontal interventions to support regions with GDP / capita below 75% of the Community average. ROP provides priority axes of intervention, which include key areas of diversified interventions: supporting sustainable development of cities - urban growth poles (30% of the budget); improving regional and local transport infrastructure (20.35% of the budget); improving social infrastructure (15%); supporting the development of regional and local business environment (17%); sustainable development and tourism development (15%); technical assistance (2.65%). ROP budget is made up of 84% EU funding and 16% national funding (14% public financing and 2% private financing) (Government of Romania, 2014).

Effects of ROP budget consumption by priority axes of intervention shown are difficult to assess in developing regions lagging behind in Romania, much less in regional industrial specialization, direction in which the contribution of foreign direct investment (FDI) proved to be substantial.

The Existing Disparities in the Development of NUTS 2 Regions in Romania Compared to the Situation in Some Countries of the European Union

Picture of regional development in Romania, at NUTS 2 level according to EU standards, shows disparities in GDP expressed in the euro / capita; the ratio between the region with the lowest level (North-East) and the highest level of the indicator (Bucharest Ilfov) was, in 2011, 1: 4.31 (in 2000 the ratio was 1: 3.00; 2005 - 1: 3.58; 2007 - 1: 3.72), as resulting from the following figure. The last year included in the analysis is 2001, because until this year EUROSTAT provided data concerning regional development (last update: 03/03/2014).
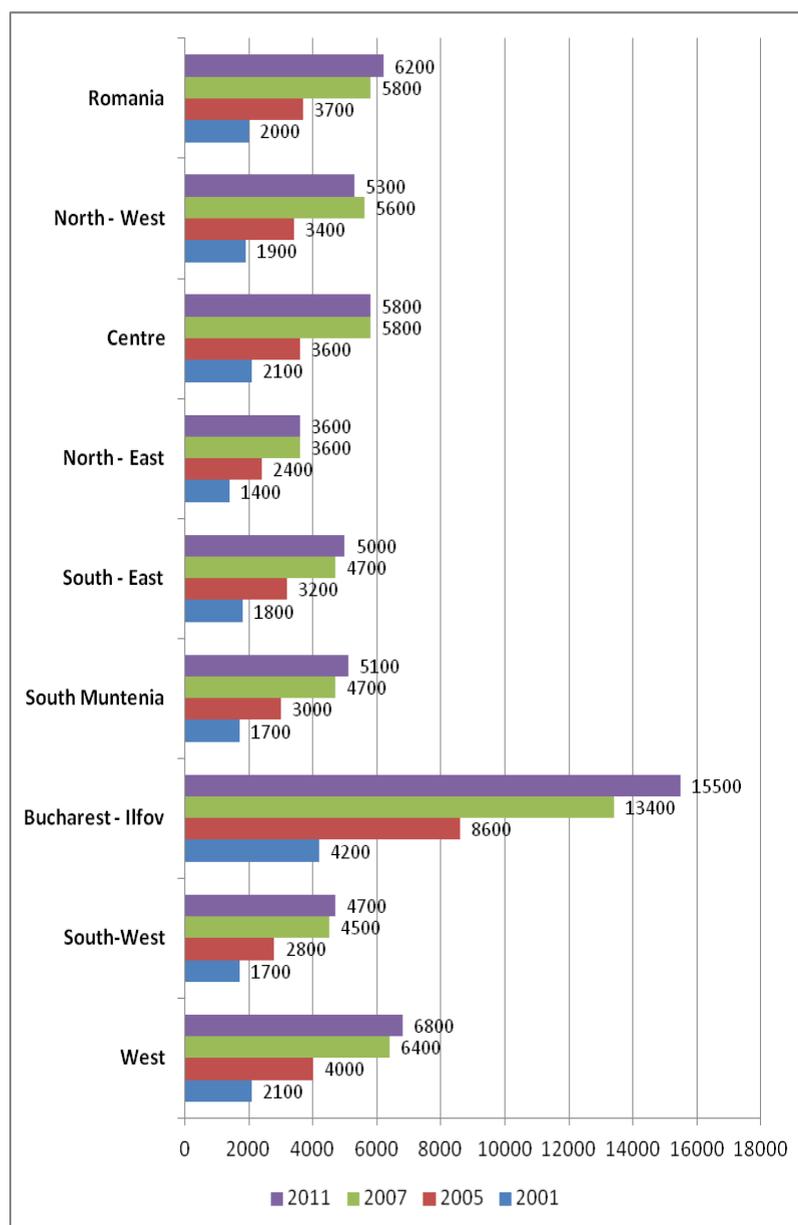
Fig. 1. The level of regional GDP / capita (euros), at current market prices, NUTS2 regions in Romania, 2001, 2005, 2007, 2011

Source: EUROSTAT data, GDP at current market prices, by NUTS2 regions (euro/inhabitant)

GDP / capita growth indices in the eight development regions of Romania during 2001-2011 and 2007-2011 are presented in the following table.

Table 1. Growth indices of GDP / capita in developing regions of Romania, 2001-2011 and 2007-2011

	2001-2011	**2007-2011**
Romania	3.10	1.07
North - West	2.79	0.94
Centre	2.76	1.00
North -East	2.57	1.00
South -East	2.77	1.06
South Muntenia	3.00	1.08
Bucharest - Ilfov	3.69	1.15

South - West Oltenia	2.76	1.04
West	3.23	1.06

Source: Author's calculations based on the data from EUROSTAT, GDP at current market prices, by NUTS2 Regions (euro / inhabitant)

Among development regions with the highest level of the indicator mentioned in 2001 - Bucharest-Ilfov, West and Central -, only the first two recorded high growth indices in the period 2001-2011, the third enrolling between regions with more modest levels of growth. Regions that showed the lowest levels of the indicator in 2001 recorded also the lowest growth rates in the mentioned period, except the South Muntenia region, for which the proximity of the capital and the existence of a consolidated industrial tradition in some counties that compose it (Prahova, Dâmbovița) had an important role in achieving a higher rate.

The situation remained, broadly, and after 2007, so during the period of the ROP operation, regions Bucharest-Ilfov, South Muntenia and West recording, in descending order, the highest growth rates of regional GDP / capita. The region with the lowest level of this indicator in 2007, North -East, maintained it at the same level in 2011, as another region, Centre, which in 2007 but had one of the highest growth rates. A recoil recorded, between 2007-2011, the North-West region, after achieved, in 2001 – 2007, an appreciable increase (index 2.95). These differences between development regions in the evolution of the mentioned indicator clearly show that most developed regions have stronger resorts of economic expansion compared to those left behind, leading, inexorably, to the widening gap.

Differences between development regions in terms of GDP / capita are, therefore, remarkable, the same position maintaining as for the regional GDP for NUTS 3 regions (at county level), to which Romania has one of the largest dispersion in the EU member countries, as shown in the following table.

Table 2. Dispersion of GDP / capita in some European Union countries, by NUTS 3 regions (%)

	2001	**2005**	**2007**	**2011**
Bulgaria	205	26.6	36.1	39.2
Czech Republic	23.4	25.3	26.5	26.2
Denmark	14.7	17.1	15.2	17.2
France	20.4	20.2	20.7	24.3
Germany	19.0	17.9	17.8	16.2
Hungary	32.1	34.8	37.4	38.3
Italy	24.1	23.5	23.1	23.3
Netherlands	10.5	11.6	10.6	11.0
Poland	18.2	19.3	19.9	22.0
Romania	23.4	28.9	29.1	34.2
Slovakia	26.8	32.0	30.8	32.8
Sweden	14.9	16.2	15.5	16.7
United Kingdom	24.3	24.3	24.7	27.2

Source: EUROSTAT data, dispersion of regional GDP by NUTS3 regions (%)

The figures show some main aspects: in all countries, apart from Germany, the dispersion of regional GDP increased in the period under review, which means that regional disparities widened; higher levels of dispersion of indicator values were recorded also in some developed countries, such as France and Italy; in the former communist countries, the dispersion level is significantly higher than in other countries that appear in the table, and the recorded increases were also higher; dispersions higher than in Romania of the mentioned indicator values recorded, in 2011, only Hungary and Bulgaria.

Correlation of Regional Development with Regional Specialization of Economic Activities

To what extent regional disparities shown by Romania as for the regional levels of the GDP / capita are correlated with regional industrial specialization we shall try to demonstrate below.

Calculation of **Hallet indicator** - H_r (Hallet, 2000), which is a measure of regional specialization (measures relative distance between the specialization of a region and the all regions average) is performed with the following formula:

$$H_r = \frac{1}{2} \sum_{s=1}^{N} \left| P_r^s - \overline{P^s} \right| \tag{1}$$

where: s is the industrial sector; N - total number of industrial sectors; r - the region; P_r^s - share of sector s production in region r; $\overline{P^s}$ - average production of sector s in all regions.

Zero value of the indicator signifies lack of specialization, the unit value means extreme specialization (the region is specialized in one sector).

The calculation was based on total regional GDP and regional industrial GDP (manufacturing only), expressed in basic prices for NUTS2 regions of Romania, during the mentioned period, and led to the figures in the table below.

Table 3. Hallet indicator values on manufacturing and NUTS 2 regions in Romania, in 2001, 2005, 2007 and 2011

Development region	2001	2005	2007	2011
North - West	0.505324	0.507638	0.515430	0.521682
Centre	0.532077	0.530707	0.537080	0.533468
North – East	0.503256	0.511258	0.516079	0.506485
South – East	0.504953	0.501133	0.501181	0.503674
South Muntenia	0.517779	0.550824	0.543128	0.549472
Bucharest - Ilfov	0.541422	0.577688	0.584722	0.635396
South – West Oltenia	0.514540	0.506112	0.503466	0.504568
West	0.507427	0.507021	0.509811	0.538158

Source: Authors' calculations based on data from EUROSTAT, Gross value added at basic prices, by NUTS3 regions (NACE Rev. 2)

The first major issue outlined by the figures in the table is that differences in the Hallet indicator levels calculated for the eight development regions of Romania are not very large and are below presented dispersions of regional GDP and regional GDP / capita. The most likely explanation lies in the effects of "balanced territorial development policy of the productive forces in the country" regime followed during state-run economy, according to which industrial activities should be geographically distributed in the most uniform manner, irrespective of differences between counties in the infrastructure, the availability of suitably qualified labour, proximity to large urban centres, geography, etc. The process of deindustrialization that took place after 1990 had different intensities in the development of regions and counties they comprise, but failed to fade effects of somewhat uniform spatial distribution of manufacturing activities. In addition, geographical cut of Romania's territory in development regions was done so differences in economic and social development between regions are much lower than those within one region, between the counties that compose it (for example, in the North-West region, between Cluj and Maramureş counties; in the Centre region, between Brasov county and Harghita and Covasna counties; in the North - East region, between Iasi and Vaslui County; in the South-East region, between Constanta and Tulcea counties etc.).

The second major issue is the very different developments of Hallet indicator values during 2001-2011. North-West, Bucharest-Ilfov and West regions were the only ones in which the indicator has continuously increased (West region - decrease in 2005, after which growth), indicating the trend of increasing specialization in the sectors of manufacturing; for Bucharest-Ilfov region, the increase is explained by the emergence of numerous industrial companies, many with foreign capital, in areas around the capital for the proximity of this was a decisive criterion for choosing location, even if the other conditions mentioned above, primarily infrastructure (transport, energy, communications), showed deficiencies. Fluctuations recorded by Hallet indicator value in the other five development regions can be attributed, probably, to changes in investment efforts that have focused on them and which determined, depending on their intensity, increase or decrease of gross value added yielded in those regions manufacturing.

A measure of the concentration of economic activity at the regional level is provided by the *Gini-Hirschman indicator – GH* - that shows if the regional industrial activity is distributed or concentrated, which gives clues about the specialization of regions in certain directions -, calculated with the following formula:

$$GH = 100\sqrt{\sum_{r=1}^{M}\left(\frac{V_r}{V_t}\right)^2} \qquad (2)$$

where: V_r is the size of the analysed variable in the region (value of production, employment, etc.); V_t - size of the analysed variable in the country; r - the region; M - number of spatial units. This indicator ranges from 1 - uniform distribution of the variable followed, at 100 - maximum concentration.

Calculations based on gross value added made at the level of NUTS2 regions by Romanian manufacturing led to indicator values presented in the table below (we precise that neither national nor the EUROSTAT statistics do not provide data on gross value added or employment in manufacturing industry disaggregated at the level of NUTS2 or NUTS3 regions on activities NACE Rev. 2, so it is not possible to perform calculations on these regional levels by sectors of manufacturing industry).

Table 4. Gini-Hirschman indicator values on manufacturing and NUTS2 regions of Romania, 2001, 2005, 2007 and 2011

Development region	2001	2005	2007	2011
North-West	11.6218	11.7416	12.1426	10.9631
Centre	12.0441	11.2952	11.7457	11.0369
North-East	12.0367	11.3365	10.9104	10.2449
South-East	11.6963	11.3365	10.7116	10.6634
South Muntenia	12.8749	12.6882	12.5287	12.5447
Bucharest-Ilfov	21.0591	23.7879	23.8828	26.6398
South-West Oltenia	9.0668	8.1781	8.1567	7.9782
West	9.6002	9.7833	9.9215	9.9284

Source: Author's calculations based on data from EUROSTAT, Gross value added at basic prices, by NUTS 3 Regions (NACE Rev. 2)

The only regions that have experienced continuous growth of the Gini-Hirschman indicator during the analysed period were Bucharest-Ilfov (with 5.58 points) and West (with only 0.33 points); they are the most developed regions, as demonstrated by the values of the indicators listed above, in which occurred the concentration of manufacturing activities (sectors). At the other extreme, regions that have experienced continuous decrease in the period under review of the Gini-Hirschman indicator value, lies the lagging regions - South-West Oltenia and North-East - where there was a more pronounced uniformity of economic activities distribution between manufacturing and other activities. The other four remaining development regions

showed, in the same period, fluctuations of this indicator values; in all these regions, the indicator value in 2011 was lower, with differences greater or smaller, than that recorded in 2001, suggesting a trend to homogenize the distribution of activities.

To change the reference variable used to get these two indicators related to regional specialization and concentration, i.e. gross value added at regional level, we used to calculate the following indicators employment in economic activities in the development regions, expressed in number of employees in those activities.

In this registry were determined *regional specialization indicator* (SR^S) values, calculated with formulas (3) and (4), and *geographic concentration indicator* (SR^C)**,** calculated with formulas (5) and (6), shown in the following two tables.

$$SR_{s,r}^S = \frac{F_{s,r}}{F_r} = \frac{F_{s,r}}{\sum_{s=1}^{N} F_{s,r}} \qquad SR_s = \frac{F_s}{F} = \frac{\sum_{r=1}^{M} F_{s,r}}{\sum_{s=1}^{N}\sum_{r=1}^{M} F_{s,r}} \qquad (3), (4)$$

where: $SR^S_{s,r}$ is the share of the labour force in the sector *s* and region *r* in the total labour force in all industrial sectors in region *r (regional specialization)*; SR_S - share of the country labour force in the sector s in total workforce employed in the country; *s* – the sector (branch); *r* - the region; *N* - total number of sectors; *M* - number of regions; *Fs,r* - labour input in sector *s* in region *r*; *Fr* - total workforce employed in region *r*; *Fs* - work force employed in the sector *s* in the country; *F* - total workforce employed in the country.

$$SR_{s,r}^C = \frac{F_{s,r}}{F_s} = \frac{F_{s,r}}{\sum_{r=1}^{M} F_{s,r}} \qquad SR_r = \frac{F_r}{F} = \frac{\sum_{s=1}^{N} F_{s,r}}{\sum_{s=1}^{N}\sum_{r=1}^{M} F_{s,r}} \qquad (5), (6)$$

where: $SR^C_{s,r}$ represents the share of the labour force in the industry *s* in region *r* in labour force employed at the level of the country in the industry *s*; SR_r - the share of the labour force employed in region *r* in total use of labour in the country (*geographic concentration*).

Table 5. Values of regional specialization indicator SRS in manufacturing, by NUTS2 regions, 2000, 2005, 2007 and 2011

Development regions	2000	2005	2007	2011
North-West	0.3660	0.3633	0.3406	0.2941
Centre	0.4206	0.3568	0.3571	0.3128
North-East	0.3481	0.2767	0.2730	0.2118
South-East	0.3044	0.2960	0.2851	0.2280
South Muntenia	0.3601	0.3206	0.3285	0.2819
Bucharest-Ilfov	0.2733	0.2387	0.1675	0.1148
South-West Oltenia	0.2871	0.2603	0.2676	0.2081
West	0.3285	0.3644	0.3438	0.3203

Source: Calculations by the author based on data from: for 2001 – Romanian Statistical Yearbook 2001 NIS, Bucharest, 2002, Table 20.16; 2005 – Romanian Statistical Yearbook 2006, Table 3.33; 2007 - Romanian Statistical Yearbook 2008, Table 3.37; 2011 – Romanian Statistical Yearbook 2012, Table 3.37.

Table 6. Values of geographic concentration indicator SRC in manufacturing, by NUTS2 regions, 2000, 2005, 2007 şi 2011

Regiunea de dezvoltare	2000	2005	2007	2011
North - West	0,1351	0,1468	0,1536	0,1629
Centre	0,1691	0,1570	0,1559	0,1663

North - East	0,1414	0,1230	0,1127	0,1014
South - East	0,1104	0,1175	0,1169	0,1085
South Muntenia	0,1424	0,1388	0,1398	0,1410
Bucharest - Ilfov	0,1234	0,1179	0,1129	0,1019
South - West Oltenia	0,0789	0,0783	0,0803	0,0732
West	0,0994	0,1207	0,1279	0,1448

Source: Calculations by the author based on data from: for 2001 – Romanian Statistical Yearbook 2001, NIS, Bucharest, 2002, Table 20.16; 2005 – Romanian Statistical Yearbook 2006, Table 3.33; 2007 - Romanian Statistical Yearbook 2008 Table 3.37; 2011 – Romanian Statistical Yearbook 2012, Table 3.37.

Calculated in terms of labour force employed in manufacturing in development regions, values of regional specialization indicator (SR^S) decreased, in the period 2000-2011, in all regions, the pace and extent of reductions varying widely from one region to another; the largest decreases recorded in Bucharest-Ilfov (58%) and North - East (39.2%) regions, and lowest in the West (2.5%) and North - West (0.3 %) regions. Reductions of SR^S indicator values generalized in all regions were caused by cuts in labour force (number of employees) engaged in manufacturing, the largest recorded in the North-West – by 52.7%, Bucharest-Ilfov (which lost the largest number of manufacturing enterprises, most large and very large) - by 45.6%, and South - West - by 38.8%, and lowest in the West region - 4.0% .

Differences between regional specialization trends highlighted by this last indicator and those spotlighted by the Hallet and Gini-Hirschman indicators can be attributed to very different regions ability to create, through their economic activities, in general, and industry-specific manufacturing, in particular, value added. For example, in the case of Bucharest-Ilfov region, by far the most developed among the eight, the value of the Gini-Hirschman indicator, calculated on the basis of gross value added in regional manufacturing, increased between 2001-2011, with 12.0%, and regional specialization indicator value, calculated on the basis of employment fell, as I said, with 58%, indicating high labour productivity, driven by structure of specific manufacturing activities carried out in this region. At the opposite pole is North - East region, the least developed, to which the Gini-Hirschman indicator value decreased, in the period under review, by 14.9%, and that of the indicator of regional specialization - by 39.2%.

The indications provided by the analysed indicators, calculated on the basis of different variables, apparently can be contradictory, but reveal aspects which, under a careful analysis, reveals links and determinations otherwise undetectable.

Although generally reflect the same reality as the regional specialization indicator SR^S, the geographic concentration indicator SR^C has values shown in Table 6, which indicates significantly different developments. Thus, if the SR^S indicator values decreased, during the same period, in all regions, those of the SR^C indicator have varied developments, the only regions where the values of the two indicators developments were in the same sense being Bucharest-Ilfov and North-East. The differences can be explained by the different ways of calculating the two indicators: in the first, from the share of employment in an industry and a region in total employment in the region is subtracted workforce in the respective sector relative to labour employed by the entire country; in the second, the share of employment in a sector and a region in the total workforce employed in the industrial sector as a whole is deducted the total labour force in that region relative to the total workforce in the country.

Different variations present also the developments of *dissimilarity indicators values* proposed by Krugman for regional specialization – ID^S, and geographical concentration – ID^C, calculated with equations (7) and (8) and presented in the following two tables.

$$ID_r^s = \sum_{s=1}^{N} \left| SR_{s,r}^s - SR_s \right| \quad \text{(for specialization)} \tag{7}$$

$$ID_r^C = \sum_{r=1}^{M} \left| SR_{s,r}^C - SR_r \right| \quad \text{(for concentration)} \qquad (8)$$

Indicator values range from zero, which means identical territorial structures, to 2, meaning totally different structures.

Table 7. Krugman dissimilarity indicator values for regional specialization in manufacturing, by NUTS2 regions, 2000, 2005, 2007 and 2011

	2000	**2005**	**2007**	**2011**
North - West	0.320383	0.317380	0.570022	0.255629
Centre	0.363575	0.307699	0.500086	0.273530
North - East	0.300436	0.238259	0.442950	0.187789
South - East	0.267162	0.259308	0.500051	0.202345
South Muntenia	0.312091	0.277266	0.379122	0.248554
Bucharest - Ilfov	0.231710	0.201835	0.325865	0.090774
South – West Oltenia	0.260490	0.235812	0.530584	0.190764
West	0.294976	0.326640	0.307083	0.286064

Source: Calculations by the author based on data from: for 2001 – Romanian Statistical Yearbook 2001, NIS, Bucharest, 2002, Table 20.16; 2005 – Romanian Statistical Yearbook 2006, Table 3.33; 2007 - Romanian Statistical Yearbook 2008, Table 3.37; 2011 – Romanian Statistical Yearbook 2012, Table 3.37.

Table 8. Krugman dissimilarity indicator values for geographical concentration in manufacturing, by NUTS2 regions, 2000, 2005, 2007 and 2011

	2000	**2005**	**2007**	**2011**
North - West	0.010545	0.019530	0.024082	0.032011
Centre	0.033477	0.030685	0.030514	0.040682
North – East	0.004362	0.001247	0.005866	0.011768
South – East	0.011961	0.003403	0.000863	0.003972
South Muntenia	0.008991	0.013503	0.017584	0.022783
Bucharest - Ilfov	0.028910	0.065676	0.080654	0.107746
South – West Oltenia	0.013819	0.007863	0.005880	0.009945
West	0.002686	0.014472	0.021082	0.037952

Source: Calculations by the author based on data from: for 2001 – Romanian Statistical Yearbook 2001, NIS, Bucharest, 2002, Table 20.16 .; 2005 – Romanian Statistical Yearbook 2006, Table 3.33; 2007 - Romanian Statistical Yearbook 2008.... Table 3.37 .; 2011 – Romanian Statistical Yearbook 2012, Table 3.37.

Dissimilarity indicator values of regional specialization in manufacturing activities varied tortuous, with a peak in 2007 followed by decline until 2011, indicating swinging trends of specialization / diversification. Various developments known also values of the dissimilarity indicator on the geographic concentration of manufacturing activities in NUTS2 regions; regions with constantly increasing values were North - West, South Muntenia, Bucharest - Ilfov and West, which indicates an easy process to diversify their manufacturing structure.

Conclusions

Despite the contradictory indications given sometimes by the reviewed indicators values on regional industrial specialization and geographic concentration of specific activities of manufacturing, a key issue is highlighted by analyses carried out: the regions with the highest industrial potential before 1990 and then before 2000, which had consolidated industrial tradition and maintained their industrial vocation, experienced a process of de-industrialization less severe than other regions, in the sense that they have managed to offset industrial units losses and reductions of industrial production by creating new businesses, many with foreign

capital, in new industrial activities that create high added value. These are the Bucharest-Ilfov, West, North-West and Centre regions, which show a stronger regional specialization, even if in some of them with great fluctuations, and were able to better exploit large commercial opportunities arising from the integration in 2007 of Romanian producers in the European Single Market. In the other regions industrial specialization is less pronounced, some of them experiencing uniform distribution of industrial and non-economic activities.

References

1. Aiginger, K. and Davies, St., 2004. Industrial specialization and geographic concentration – two sides of the same coin? Not for the European Union, *Journal of Applied Economics*, Vol. 12, pp. 231-248.
2. Amiti, M., 1999. Specialization Patterns in Europe, *Review of World Economics* (Weltwirtschaftliches Archiv), vol. 135, no. 4, pp. 573-593.
3. Brülhart, M., 2001. Evolving Geographical Specialization of European Manufacturing Industries, *Weltwirtschaftliches Archiv*, vol. 137, pp. 319-346.
4. Brülhart, M., 1998. Trading Places: Industrial Specialization in the EU, *Journal of Common Market Studies*, Vol. 36, No. 3, pp. 319-346.
5. De Benedictis, L., Gallegati, M. and Tamberi, M., 2007. Overall Specializationand Income: Countries Diversify, Working papers 73, University of Rome "La Sapienza",CIDEI.
6. European Commission, 2014. *European Union. Regional Policy. Making Europe's regions and cities more competitive, fostering growth and creating jobs*, Directorate General for Communication, Brussels, November 2014, Luxembourg, Publications Office of the European Union, p. 10.
7. Franceschi, F. and Pelloni, G., 2009. *A Note of New Measures of Agglomeration and Specialization*. http://amsacta.unibo.it/2683/1/5_2009_Mussoni.pdf
8. Glaeser, E. (Ed.), 2010. *Agglomeration Economies*, University of Chicago Press, NBER.
9. Goschin, Z., Constantin, D., Roman, M. and Ileanu, B, 2009. Regional specialization and Geographic Concentration of Industries in Romania. *South-Eastern Europe Journal of Economics*, Vol.7, No.1, pp. 61-76.
10. Government of Romania, 2014. Ministry of Regional Development and Public Administration, Regional Operational Program, Bucharest.
11. Hallet, M., 2000. *Regional specialization and concentration in the EU*, Economic Papers, 141, European Commission, Brussels.
12. Kalemli-Ozcan, S., Sorensen, Bent E. and Yosha, O., 2003. Risk sharing and industrial specialization: Regional and international evidence, *American EconomicReview*, vol. 93, no. 3, pp. 903-918.
13. Krenz, A. and Rűbel, G., 2010. *Industrial Localization and Countries Specialization in the EU: An Empirical Investigation*, Center for European Governance and Economic Development Research, Georg-August-Universität Göttingen, Discussion Paper, Number 106, July.
14. Krieger – Boden, C., 2000. *Globalization, Integration and Regional Specialization*. Kiel Institute of World Economics, Kiel Working Paper No. 1009, October.
15. Krugman, P., 1991. *Geography and Trade*, MIT Press, Cambridge, Mass.
16. Krugman, P. R. and Obstfeld, M., 2006. *International Economics: Theory and Policy*, 7. ed., Boston, Massachusetts: Pearson, Addison-Wesley.
17. Ohlin, B., 1967. *Interregional and International Trade*, Harvard Economic Studies, Cambridge, MA, Harvard University Press, 1967.
18. Traistaru, I., Nijkamp, P. and Longhi, S., 2002. *Regional Specialization and Concentration of Industrial Activity in Accession Countries*, Zentrum für Europäische Integrationforschung, Universität Bonn, Working Paper B16.