

The Analysis of Regional Disparities in Romania with Gini/Struck Coefficients of Concentration

Author*:

Daniela ANTONESCU

A*bstract.* A key objective of regional development policy is to reduce disparities between regions and to ensure a relatively balanced level of development. To achieve this goal studies and social and economic analysis based on certain techniques and methods of evaluation are necessary.

In scientific literature, there are plenty of models that can be applied to assess regional disparities. One of the methods commonly used in practice is related to the calculation and analysis of the degree of concentration/diversification of activities within a region.

The increase or decrease in the degree of concentration of certain activities or areas of activity in a region provides information on:

- the level of overall economic development;*
- economic development and growth rate;*
- the specific features of the region, the potential, local traditions, etc.*

The expert analysis indicate that, in a high level of overall development or a sustained economic growth rate, there are favorable conditions for economic activities to locate in any region, so they are relatively uniformly distributed throughout the country.

* Daniela Antonescu, Ph.D., Scientific Researcher II, Institute of National Economy, e-mail: daniela.antonescu@ien.ro.

Knowing the degree of concentration and also the influence factors are useful in making decisions and setting regional policy measures.

This article proposes a synthetic analysis of the development level of regions in Romania with the concentration/diversification model (Gini/Struck coefficients), based on the existing key statistical indicators.

Key words: *regional disparities, concentration/diversification, regional analysis*

JEL classification: *R1, R12, R15*

1. Introduction

Lately, an increased interest, in regional research area, presents the concentration analysis, with which we can illustrate the intensity of certain phenomena on economic and social categories, the dominant areas, the territorial distribution of some phenomena, etc. In addition, the concentration analysis allows for comparability of data between identical or different phenomena, starting from the same or different number of units, for the same year or different years, etc.

Given the above considerations, this article proposes an assessment of the degree of concentration/diversification in the developing regions of Romania, through a method commonly used by experts in the field: analysis of regional concentration/diversification degree. This method of analysis is also known as the Gini/Struck coefficients method¹.

To achieve the analysis, we used statistical indicators that exist at regional level, grouped by main areas, so that the whole range of economic and social activities of scientific interest can be covered: demography (total population, urban, rural), workforce (employees), economic potential, health, telecommunications, urban infrastructure, investment, regional GDP.

To interpret the results of this analysis we took into account the fact that a higher value of the concentration/diversification coefficients involves an increase in disparities at territorial level, while a lower value may reflect a balanced

¹ *The Gini coefficient is the measure of statistical dispersion used, in particular, to represent the distribution of income and wealth disparities. Gini's coefficient was invented by the Italian statistician Corrado Gini and published in 1912 in his book entitled Variability and mutability.*

distribution of some general or specific activities/phenomena. Also, the interpretation of results implies that the Region 8 Bucharest-Ifov is a major urban area, which may significantly affect the obtained results.

2. Theoretical and methodological issues concerning the analysis of concentration/diversification at regional level

The methodology proposed in this article is based on the analysis of regional disparities in relation to the coefficients of concentration/diversification (also known as indices of geographic distribution).

The interpretation of concentration coefficients shows, in case they are close to zero level, the state of “equity”, balance or proportion between the different analyzed elements.

Measuring the concentration degree of an activity in a region is based the Lorentz curve and the Gini/Struck coefficient¹ (Figure 1).

The concentration curve (Lorentz-Gini) is a graphical representation of a q variable according to p, the values of the two variables being defined by the following relations:

$$p_i = N_i / \sum n_i \quad (1)$$

$$q_i = L_i / \sum x_i n_i \quad (2)$$

¹ There are also other indicators related to this coefficient, which may provide an insight into the level of concentration/diversification of a regional series, as follows:

The Onicescu informational energy – calculated as a sum of the squares of weights of all parts of a collectivity; it has the disadvantage of variability of the minimum possible value, depending on the number of categories/groups and the corrected informational energy, which eliminates the inconvenience of the indicator;

The index of qualitative variation, its value ranging between 0-1; the more it approaches 0, the more it increases the degree of uniformity (reduced variation);

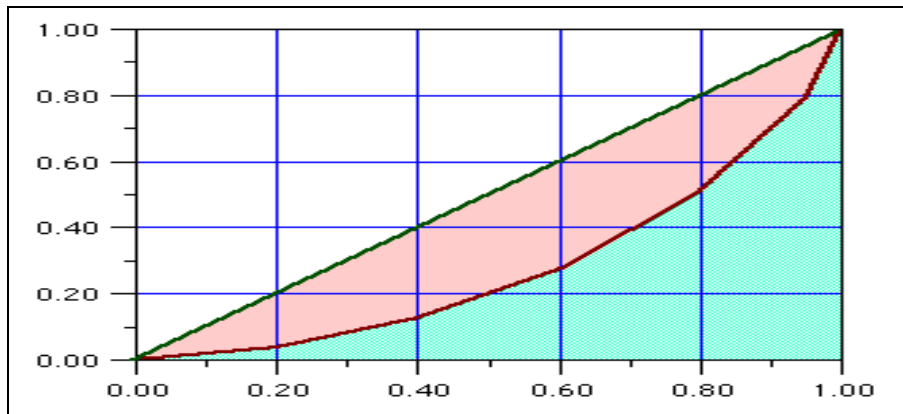
The degree of polarization – polarization is a process that can run parallel with the convergence, towards the emergence of homogeneous subgroups from the perspective of the regions which form the subgroup, but differences between subgroups become, over the time, more and more larger; this concept is also called “development at two speeds”: (1) polarization of society and (2) the state of inequity.

where: p_i represents the relative flocks cumulated till the i level of the clustering feature and q_i represents the global values cumulated till the i level.

The Lorentz curve gives the intensity picture of the analyzed process or phenomenon, and also the ability to quantify its level of concentration. Thus, as the concentration curve deviates more from the square diagonal, the disparities are larger and the concentration is stronger.

The Gini concentration coefficient is defined as a ratio of the concentration surface to the square area, but the square's area being equal to 1 or 100%, the index value is dimensionless, that is independent of the measure units of the studied variable.

Figure 1: Lorentz-Gini concentration curve



The formula used to calculate the Gini coefficient (GC) is the following (with values on the interval $[1/n^{0.5}; 1]$ and n = number of observations):

$$CG = \sqrt{\sum_{i=1}^n p_i^2}$$

For normalization is also used the corrected GC (CGC), by the next formula:

$$CGC = \frac{CG - 1/\sqrt{n}}{1 - 1/\sqrt{n}}$$

CGC takes values in the interval [0; 1]; for a better use of the CGC interval, it amounts to square.

The Struck concentration coefficient represents the corrected form of the Gini coefficient; the values may be in the interval [0; 1]; the minimum possible value (zero) is independent of the number of considered categories, which allows comparison with other structures. The Struck concentration coefficient is calculated as:

$$C_s = \frac{n \sum g_i^2}{n-1}$$

The analysis of indicators on the concentration/diversification can indicate how far we are in comparison with the state of uniform and balanced distribution of economic results registered at the regional level.

Next, to identify the regional disparities in Romania in 2008 and compare with 2000, we will use the Gini/Struck concentration/diversification coefficients method.

3. The assessment of regional disparities

In 2008, at regional level, the concentration analysis was based on the two coefficients presented above (Gini/Struck), taking into account 10 groups of indicators.

If the value of the coefficients exceeded 0.3, there is a relative concentration that can be mentioned and taken into account, and if the value was close to 0.5, then we can speak of a high concentration.

The calculations were made at regional level, taking into account the inherent limitations related to available statistical databases.

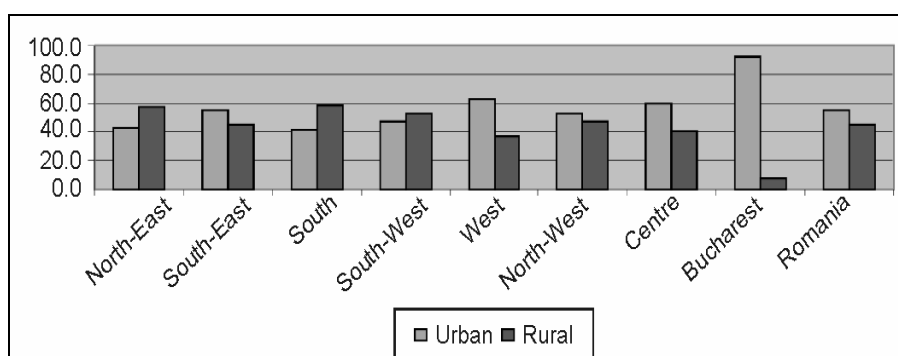
3.1. Population at regional level

The regional concentration analysis was based on the following statistical indicators: total population, population in urban and rural areas.

The analysis of existing data shows that, in 2008, nationally, there was a predominantly urban population (55.04%), while at regional level, five of the eight

regions held a majority urban population (South-East, West, North-West, Centre and Bucharest – Figure 2).

Figure 2: Structure of total population in urban/rural and developing regions, 2008



Source: Data based on the Romanian Statistical Yearbook 2009, NIS, Bucharest.

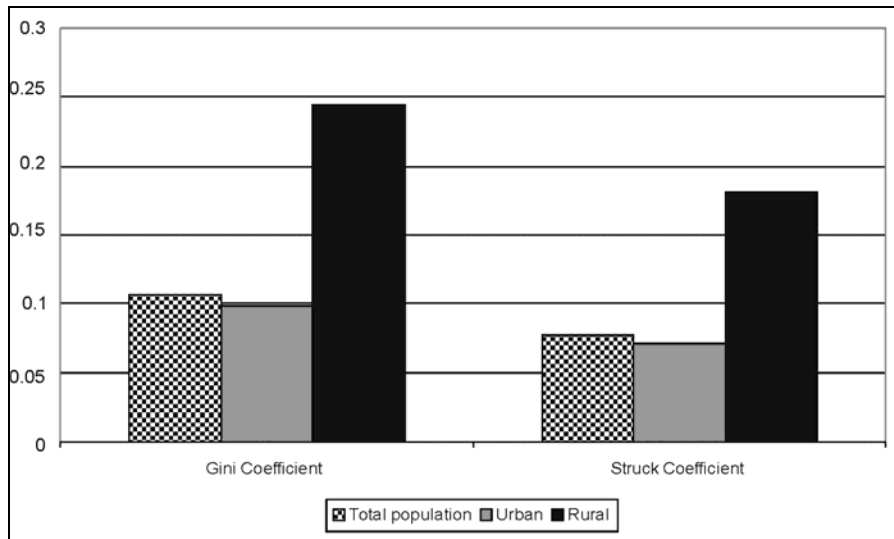
As concerns the concentration of total population and in urban and rural areas, the coefficient value is below 0.15, which means that, in the year 2008 (July 1), there was no significant concentration of the total population in the eight development regions. Also, the urban population does not show an important concentration at regional level (Gini coefficient is below 0.1).

The regional allocation of the population is relatively balanced, the exception being the allocation of rural population at regional level, where, because the Bucharest-Ifov region is highly urbanized, there is a greater concentration of rural population in the other regions (the Gini coefficient is 0.244) (Figure 3).

Compared with the year 2000¹, it is found that there was no increase in the concentration of total population, but there was a slight increase in the concentration of rural population (the Gini coefficient was 0.233 in 2000, while in 2008 it reached 0.244).

¹ See: Daniela Antonescu – Regional Development in Romania – concept, mechanisms, institutions, Oscar Print Publishing, 2004.

Figure 3: Regional concentration of population, year 2008



Source: Data based on the Romanian Statistical Yearbook 2009, NIS, Bucharest.

3.2. Workforce

The analysis of the concentration of workforce was based on the following indicators: employment in major economic sectors, number of employees and the number of unemployed.

The level of Gini/Struck coefficients reveals that there is a low concentration of the employed population in the eight development regions, the value of the Gini coefficient being around 0.114 and the value of the Struck coefficient being only 0.083. Compared with 2000, there is an increase in the degree of concentration of employed population (the Gini coefficient was 0.095 and the Struck coefficient was 0.069).

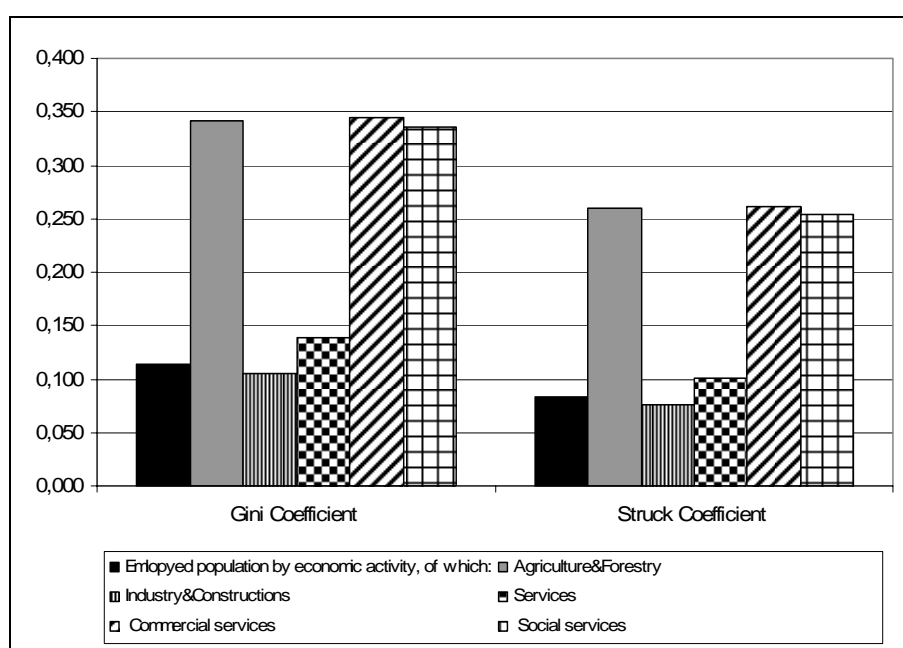
There is a relative concentration of employed population in agriculture and forestry, the Gini coefficient being over 0.3 (the Gini coefficient is 0.341 and the Struck coefficient is 0.259), largely due to the importance of the Bucharest-Ilfov urban region.

Although there is no strong concentration of the employed population in services (the Gini coefficient is 0.138 and the Struck coefficient is 0.101), there is a

relatively high concentration in the two major categories of services: commercial (Gini coefficient is 0.343) and social (Gini coefficient is 0.335) (Figure 4).

Compared with 2000, there was a significant increase in the concentration of employed population in the service sector (in 2000, the Gini coefficient was 0.128 in commercial services and 0.008 in social services).

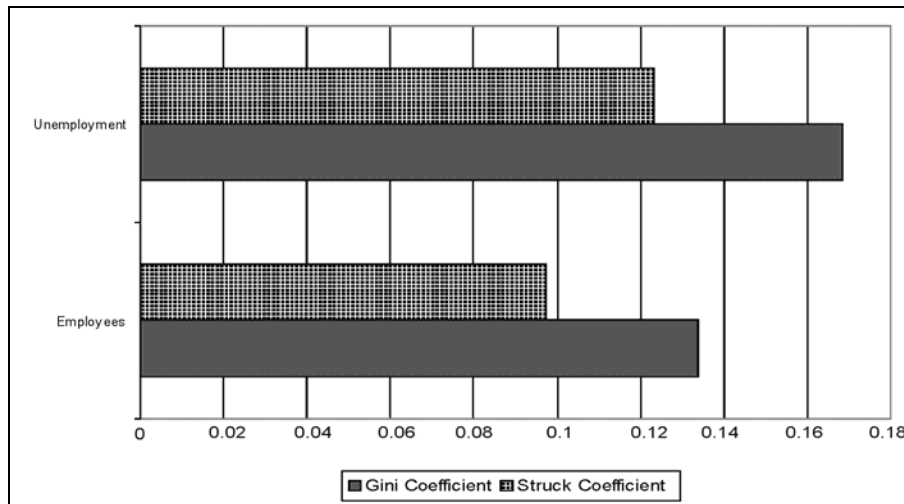
Figure 4: Regional concentration of workforce, 2008



Source: Data based on the Romanian Statistical Yearbook 2009, NIS, Bucharest.

At the same time, we cannot say that there is a strong concentration of the employees at regional level, their distribution being relatively balanced in the territory (the Gini coefficient is 0.133). Regarding unemployment, it approaches the value of employees, not recording a high concentration (Figure 5). There are no significant changes in the Gini/Struck coefficients values compared with 2000.

Figure 5: Regional concentration of the number of employees and unemployed, 2008



Source: Data based on the Romanian Statistical Yearbook 2009, NIS, Bucharest

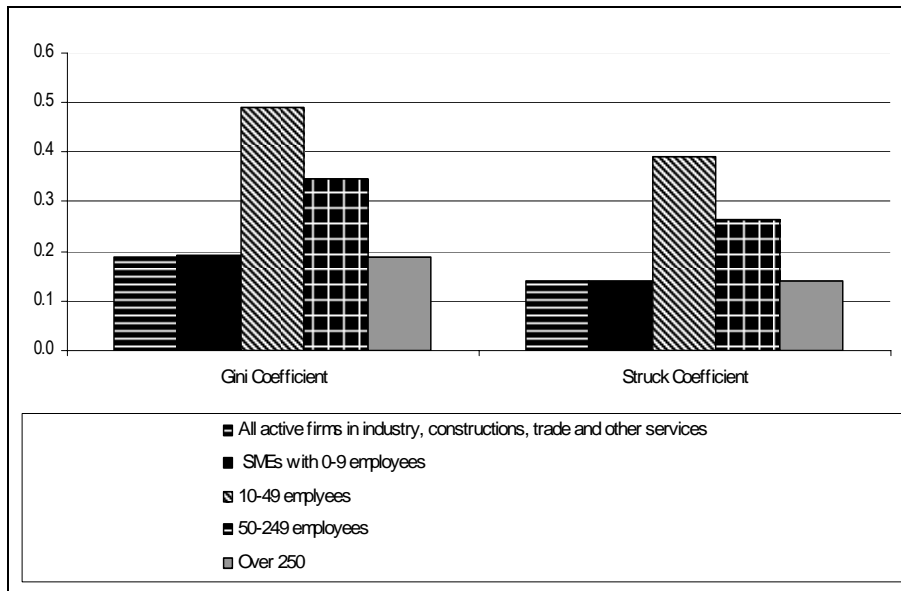
3.3. Economic potential

To assess the concentration of the economic potential at regional level we used the following indicators: the number of active firms at regional level, grouped by size and the number of employees.

According to the Gini/Struck coefficients, there are, at regional level, the following situations (Figure 6):

- ✓ Relatively low concentration of the total number of firms (the Gini coefficient is 0.189 and the Struck coefficient is 0.139);
- ✓ Relatively low concentration of small firms (0-9 employees) and large companies (over 250 employees); the calculated coefficients record values below 0.20;
- ✓ Relatively high concentration of companies with 50-249 employees (the Gini coefficient is 0.346);
- ✓ Strong concentration of firms with 10-49 employees (the Gini coefficient is 0.49);
- ✓ Compared with 2000, the values of the two coefficients have recorded significant increases; in 2000 all the values were below 0.15.

Figure 6: The regional concentration of economic potential, 2008



Source: Data based on the Romanian Statistical Yearbook 2009, NIS, Bucharest.

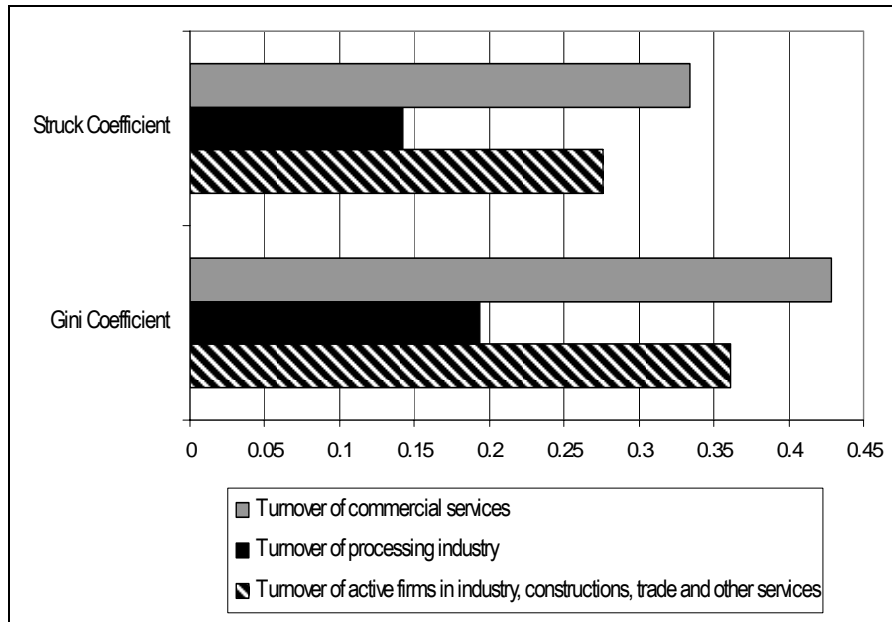
3.4. The economic and financial results

The analysis of the economic results has been achieved in terms of total turnover, the turnover considered for manufacturing industry and also to the one obtained by the business services sector.

As shown in Figure 7, there is a significant concentration of the total turnover (the Gini coefficient is 0.360 and the Struck coefficient is 0.275). The greatest concentration is recorded in the turnover of commercial/business services, which has a Gini coefficient of about 0.428. The concentration is especially visible in the Bucharest-Ifov region, which owns 41% of the total turnover of the business sector.

Compared with 2000, there was a higher concentration of total turnover, from 0.28 to 0.36 (an increase of about 30%) in 2008. At the same time, the concentration of turnover in commercial services recorded a much smaller increase (from 0.41, in 2000, to 0.428, in 2008).

Figure 7: Regional concentration of economic and financial results, 2008



Source: Data based on the Romanian Statistical Yearbook 2009, NIS, Bucharest.

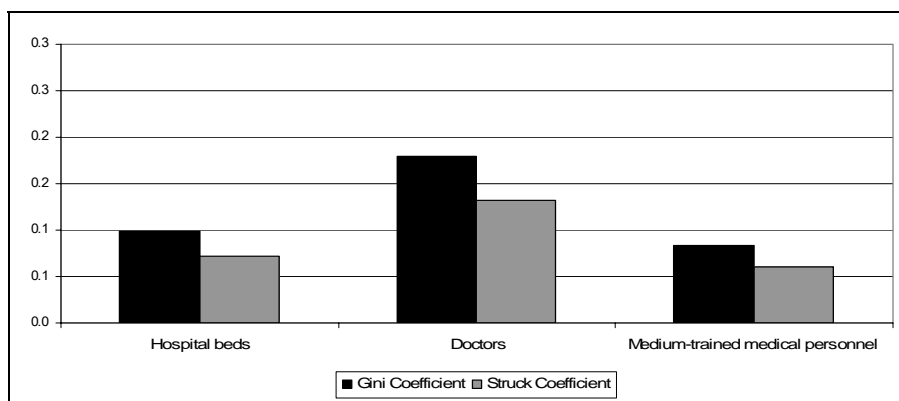
3.5. Health infrastructure

The analysis of the concentration in this sector was based on the following specific indicators: the number of doctors in the region, the number of existing beds and the number of average staff working in the sector.

As shown in Figure 8, there is no significant regional concentration (the values of the two coefficients are below 0.3).

Compared with 2000, there is a relatively small increase in the concentration of health infrastructure at regional level, especially regarding the number of beds (from 0.08 to 0.1) and the number of doctors (from 0.10 to 0.18). This increase may be due to the concentration of this sector in large urban centers and in the Bucharest-Ilfov region (which held about 23% of the total number of doctors in Romania and 16% of the number of beds).

Figure 8: Regional concentration of health facilities, 2008



Source: Data based on the Romanian Statistical Yearbook 2009, NIS, Bucharest.

3.6. Urban infrastructure

Given the importance and complexity of this area, but also the existence of an increased volume of specific data, for the calculation of the degree of concentration/diversification of the sector on development regions several key indicators were used:

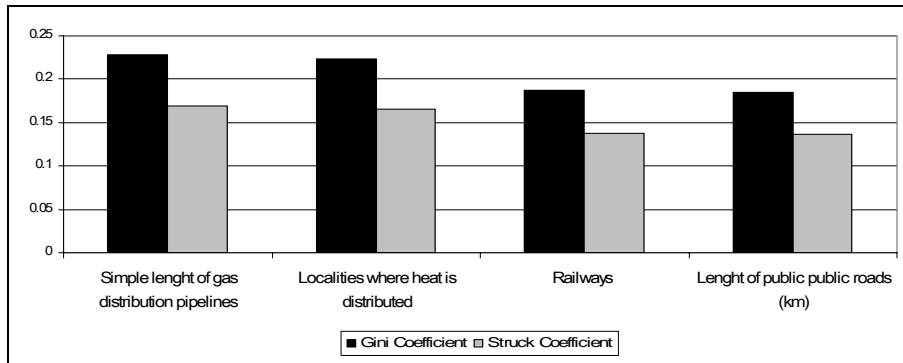
- ✓ The simple length of gas distribution pipelines;
- ✓ The localities where thermal energy is distributed;
- ✓ Railway lines;
- ✓ The length of public roads.

As shown in Figure 9, the regional infrastructure has a relatively high concentration, with Gini coefficients values over 0.22 for indicators such as simple length of gas distribution pipelines and localities where thermal energy is distributed, especially in the Center region (it holds about 0.25% of the total length of pipelines) and the South region (with 19% of all localities in which heat is distributed).

Slightly lower values are recorded for the other two indicators (railway lines and public roads), the Gini coefficient value being under 0.20. In this case, the regions that have high weights are: the West region, which owns 18% of the total railway lines, and the North-East region, which owns 17% of all urban public roads.

Compared with 2000, there is an increase in the concentration of all examined indicators.

Figure 9: Regional concentration of urban infrastructure, 2008



Source: Data based on the Romanian Statistical Yearbook 2009, NIS, Bucharest.

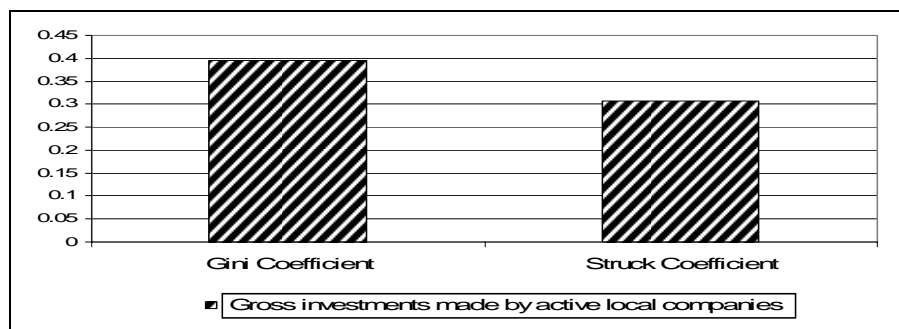
3.7. The investments

The analysis of regional concentration of investments was based on the following indicator: gross investments of active local units.

Thus, as shown in Figure 10, both Gini and Struck coefficients indicate that, at regional level, there is a significant concentration of gross investments, implying that, some regions (especially the Bucharest-Ilfov region) attracted a bigger number of investors. We can talk about an important concentration of investments at regional level, the values of the two coefficients being over 0.3 (the Gini coefficient is 0.396).

Compared with 2000, this concentration increased visibly and some regions were more attractive in terms of local investors (the Gini coefficient increased from 0.3 to about 0.4 in that period).

Figure 10: Regional concentration of investments, 2008

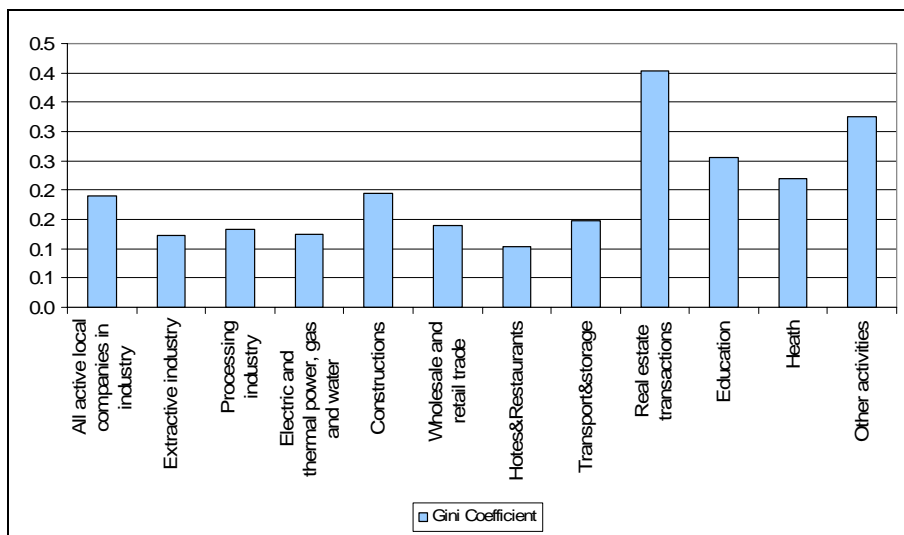


Source: Data based on the Romanian Statistical Yearbook 2009, NIS, Bucharest.

As concerns the concentration of active companies in the economic sectors, we may also find that some regions are more attractive than others and the concentration is stronger.

Thus, in 2008, there was a greater concentration in the real estate transactions field (the Gini coefficient was 0.403). Far behind, there were other areas with a relative concentration: education (the Gini coefficient was 0.255), health (the Gini coefficient was 0.219), construction (the Gini coefficient was 0.194). The lowest regional concentration is represented by the hotels and restaurants sector (the Gini coefficient was 0.102), showing a relatively uniform distribution at regional level leading to a relatively balanced and sustainable development (Figure 11).

Figure 11: Regional concentration of active companies in economic sectors and regions, 2008



Source: Data based on the Romanian Statistical Yearbook 2009, NIS, Bucharest.

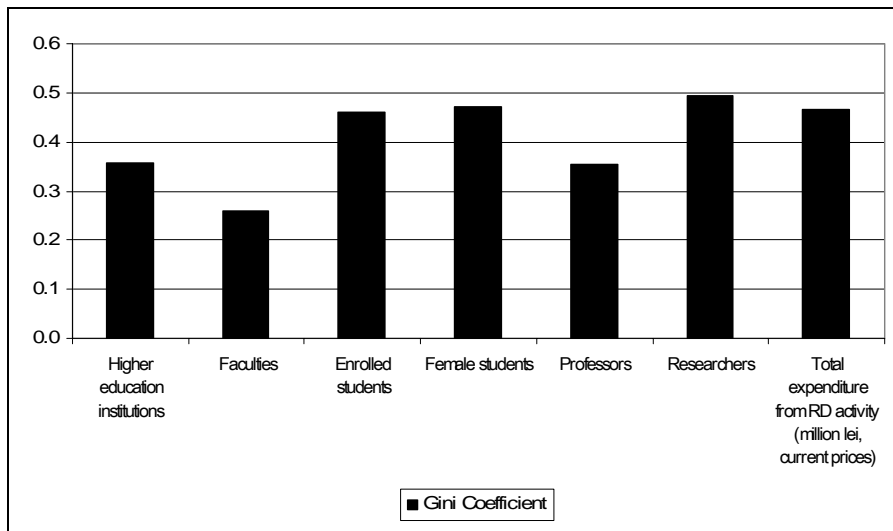
3.8. Education and research

As a result of the fact that the Bucharest-Ilfov region holds approximately 0.45% of all higher education institutions and 47% of the researchers, the values of Gini/Struck coefficients being higher than those registered by other indicators examined so far.

Thus, in 2008, in this area, most indicators that have been analyzed have recorded significant concentrations at regional level, excepting the indicator number of universities/faculties, whose coefficient was below 0.3 (Gini coefficient was 0.260).

The most important concentration was recorded by the indicator “number of researchers”, whose Gini coefficient reached the value of 0.494, followed closely by the indicators: number of students (Gini coefficient was 0.471) and total research expenditures (Gini coefficient was 0.464) (Figure 12).

Figure 12: Regional concentration in education and research field, 2008



Source: Data based on the Romanian Statistical Yearbook 2009, NIS, Bucharest.

3.9. Local budget

At regional level, there is no significant concentration of the revenues and expenditures of local budgets. The value of the Gini coefficient is below 0.12, which means a relatively balanced distribution to the development regions (Figure 13). Also, the Struck coefficient is approximately 0.085. There is a slight concentration of local expenditures (0.117), compared with the recorded revenues (0.116).

Figure 13: Regional concentration of local budgets, 2008



Source: Data based on the Romanian Statistical Yearbook 2009, NIS, Bucharest.

3.10. Regional concentration of GDP

The evolution of total GDP indicator concentration was calculated for the period 1995-2007.

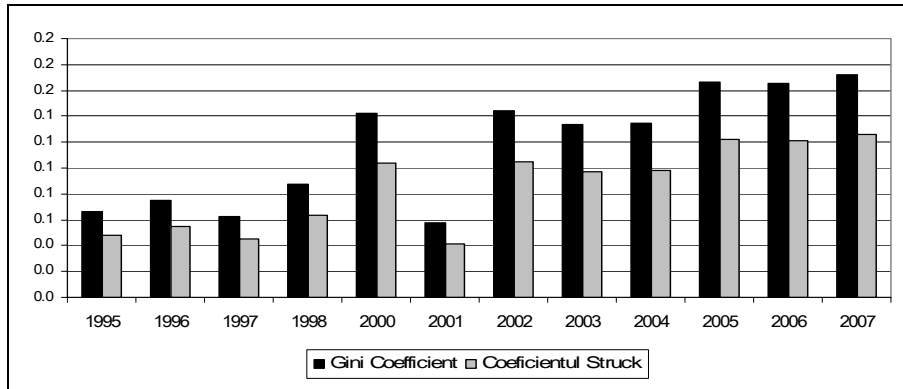
In 1995, regional GDP concentration was very low, the Gini coefficient being 0.066. The difference between the highest and lowest values of the regional GDP occurred between the South and South-West regions, including West (22%).

In 2000, there was a first clear trend of increasing concentration, the Gini coefficient reaching 0.142.

Calculated for 2007¹, the Gini coefficient recorded a value of 0.172, which means a relatively low concentration of total regional GDP (Figure 14).

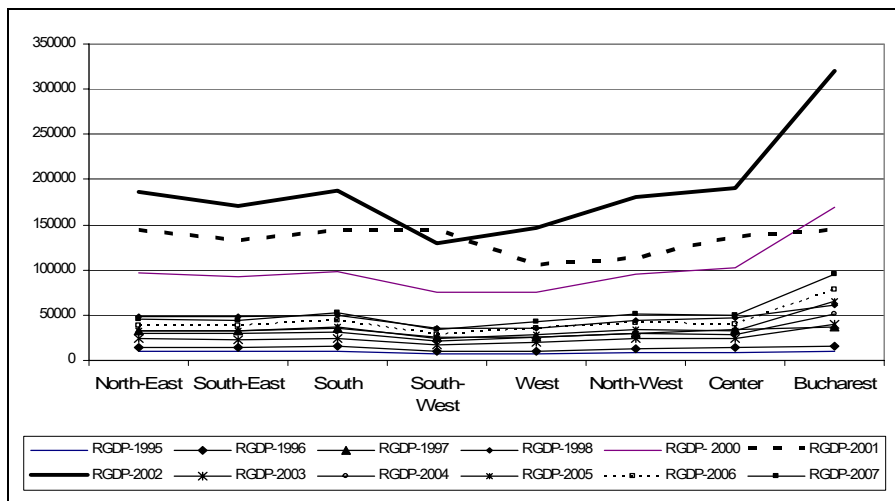
¹ Although there are national GDP data on 2008 at regional level, this indicator stops in 2007 (According to the Romanian Statistical Yearbook 2009, NIS, Bucharest).

Figure 14: Concentration of regional GDP, 1995-2007



Source: Data based on the Romanian Statistical Yearbook 2009, NIS, Bucharest.

Figure 15: The evolution of regional GDP, 1995-2007



Source: Data based on the Romanian Statistical Yearbook 2009, NIS, Bucharest.

4. Regional concentration of EU financed projects

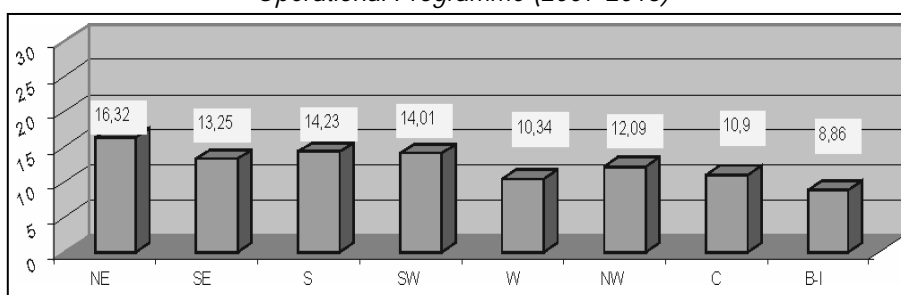
At the end of the analysis regarding the degree of concentration of some indicators relevant to the general level of regional development, a brief

assessment was also made on how the implementation of Regional Operational Programme 2007-2013 was carried on until the year 2008 (December 31)¹.

According to this programming document, the allocation of funds to regions was made in order to achieve the established strategic goal: the balanced development of all regions in Romania, giving priority to the regions and areas that are less developed to prevent increasing social and economic disparities between regions.

Programming the allocation of funds by regions was done differently, in inverse proportion to their level of development². Thus, regions with a low GDP per capita will receive a higher share of total program funds, while the share of financial allocations will be smaller for regions with a higher GDP per capita³.

Figure 16: Financial allocation by development regions of the Regional Operational Programme (2007-2013)



Source: Data based on the Romanian Statistical Yearbook 2009, NIS, Bucharest.

From the analysis of Gini coefficients can be seen that, at regional level, there is a not significant concentration of projects (the Gini coefficient is under 0.3). We can notice that it is a relative concentration of rejected projects (the Gini

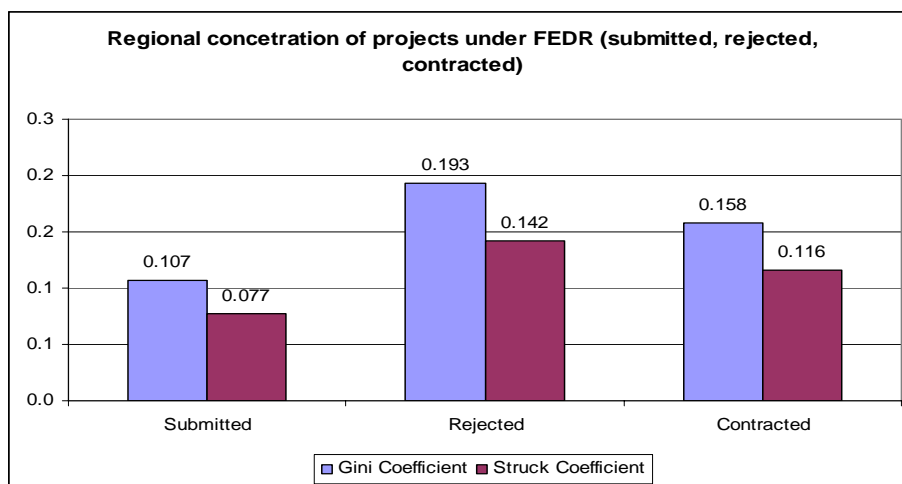
¹ The status of implementation of ROP 2007-2013 an 31st December 2008 was as follows: about 1337 projects were submitted, relating to 11 major intervention areas (ROP 14 areas in total), totaling 3.46 billion Euros; ERDF funding was 2.1 billion Euros. There have been contracted 40 projects (representing 3% of submitted projects) totaling 352 million Euros (10.1% of the total sum of submitted projects), of which ERDF funding was 251.7 million Euros. In 2008, payments were not made.

² Measured by the GDP per capita, adjusted by a coefficient of population density.

³ The financial allocations to regions range between the minimum of 8.86%, in Bucharest-Ilfov region, and 16.32%, in the North-East region, evaluated as the poorest region in the EU.

coefficient is 0.19 and Struck Coefficient is lower) (Figure 17). At regional level, there is a uniform distribution of projects submitted. For rejected projects we may notice an increase of Gini Coefficient comparatively with submitted projects (80.9%).

Figure 17: Comparative analysis – submitted, rejected and contracted projects (30 October 2010)

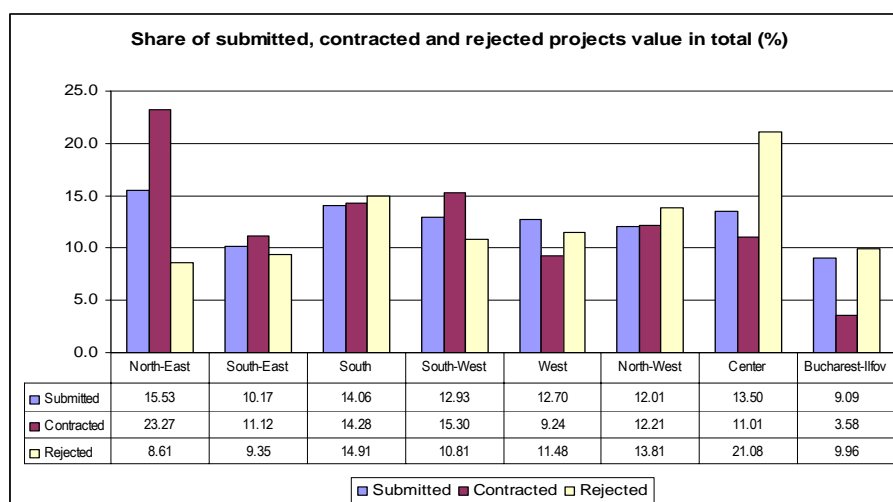


Source: Authors' computations.

First place in the rejected projects (value) is held by the Centre region, with 21.08%, followed by the South region (14.91%) and North West region (13.81%). The last place was held by North East region, with 8.61% of the rejected projects (Figure 18).

Also, in terms of total value of contracted projects, in the front of the top it is the North East region, with 23.27% of total, followed by South West (15.3%) and South (14.28% of total contracted value). At the end of the list, it is the most development region, Bucharest-Ilfov, with only 3.58% of contracted projects.

Figure 18: Share of submitted, contracted and rejected projects value in total (%) – 30 October 2010



Source: Authors' computations on basis Annex 1 and Annex 2.

In terms of absorption capacity, Regional Operational Programme takes the first place from this point of view. At the end of October 2010, maximum absorption capacity is for ROP (27.76% = payments contribution UE/Allocation UE 2007-2013). The minimum value of absorption capacity is for Operational Programme Transport (1.85% = payments contribution UE/Allocation UE 2007-2013) (Annex 3).

5. Conclusions

By this article we have sought an analysis of the main types of regional disparities, in 2008 and also in comparison with 2000, based on the Gini/Struck coefficient method and the existing statistical data in the Romanian Statistical Yearbook – 2009. The results obtained after applying the concentration coefficients are the following:

1. Most coefficients have values placed in the interval [0-0.3]; this shows a relatively uniform distribution, without too much concentration in those areas;

¹ <http://www.fonduri-ue.ro/upload/Anexa%201%2030%20noiembrie%202010.pdf>.

2. There are, however, some sectors that have a high degree of concentration (coefficients over 0.35: population from urban/rural, the SME sector [10-49 and 50-249 employees], total turnover and trade, employment in some sectors [trade], gross investments, active local units in the real estate transactions sector, institutions of higher education, research;
3. Also, there were high levels of Gini coefficients for the submission and contracting of projects financed by the Structural Funds, which shows a greater concentration of the capacity to absorb funds at regional level;
4. The analysis of the evolution of Gini/Struck coefficients shows a clear trend of increasing the concentration of regional disparities in Romania, after the year 2000.

As regards the Structural Funds absorption indicators, it appears that there is a higher concentration compared to other analyzed indicators (population, number of employees, employment). The degree of submission and contracting of projects, financed from the Structural Funds, is determined, on the one hand, by the capacity of a region to propose viable projects, and on the other hand, by the local power to co-finance. Although the proposed financial allocation through the Regional Operational Programme, for the current programming period, took into account the regional development level, it appears that the poorer regions (e.g.: North-East), although they had a large number of projects, they have not yet been contracted. The most contracted projects, under implementation, have been submitted for the South-West, North-West and Centre.

The explanation of this phenomenon results from the following aspects:

- ✓ The access to finance: “freezing” the banking sector, with direct effects on the access to credits, which seriously affects the capacity to co-finance the recipients of ROP (both local authorities and the sector);
- ✓ The availability of public resources: deteriorating the situation of public finances, which leads to a higher public deficit, which pressures on the capacity of the Ministry of Finance to ensure co-financing;
- ✓ Maintaining the relevance of some targets that do not fit anymore the current context: create jobs – 15000 new jobs;
- ✓ Adapting the Romanian legislation, on a regular basis, to the requirements of the process of accessing and absorbing Structural Funds;
- ✓ Frequent change of the Applicant Procedures and Guidebooks;
- ✓ Renunciations from the beneficiaries to contracts already concluded or in progress, due to factors determined by the negative impact of the crisis;

- ✓ Demobilization of the applicants because of bureaucracy, in many cases “overwhelming”, in terms of endorsement and approval of submitted documentation and reports related to the stage of fulfilment of commitments (internal and external);
- ✓ Other macroeconomic factors: the decrease of foreign investments, elimination of a large number of companies, etc,

Finally, one can say that the regional disparities level, in terms of economic and social development, is in a process of growth across all country, without being able to identify one or another model of development. Also, it is clear that the Bucharest-Ifov region, the most developed region of the country, determines an increase in the concentration of certain areas, In parallel, we can observe a slight increase, which is concentrated in the regions from the west of the country (North-West, Centre and West) and less in the eastern regions (North-East, South-East, South and South-West), although the real growth could be better assessed at the sub-regional level¹, where are very obvious the signs of economic decoupling of some marginal areas located on the periphery or face specific development problems,

As a final remark, we underline the necessity to take measures and to create the mechanism to actually promote convergence; taking into account the circumstances created so far, according to, the relatively developed regions are those that access far more Structural Funds than those underdeveloped, which in no case is likely to reduce regional disparities.

¹ To better highlight the current regional situation, we propose, in a future article, a further analysis of development disparities within regions.

Annex 1: Implementation Stage of Operational Programme for Regional Development at 30 October 2010

Region	Allocation (FEDR + State Budget) Mil.lei	Submitted		Rejected		Contracted	
		No.	Value	No.	Value	No.	Value
North-East	2,915.4	1176	5140,4	342	612,3	180	2038,6
South-East	2,366.9	961	3366,9	249	665,6	112	974,0
South	2,542.0	960	4653,4	177	1060,7	91	1251,5
South-West	2,502.7	833	4279,4	239	769,5	122	1340,1
West	1,846.8	715	4204,2	163	816,6	105	809,5
North-West	2,159.7	1165	3974,1	353	982,7	125	1069,8
Center	1,947.2	1084	4468,4	480	1499,8	138	964,5
Bucharest-Ilfov	1,582.7	614	3006,6	187	708,7	49	313,8
TOTAL	17,863.4	7508	33093,5	2190	7115,9	922	8761,8

Source: data of www.inforegio.ro – Implementation Stage of Operational Programme for Regional Development at 30 October 2010.

Annex 2: Payments of Operational Programme for Regional Development at 30 October 2010

Payments	Total payments 18.10.2010		Effective Payments in 2010	
	lei	euro	lei	euro
Prefinancing				
Prefinancing from FEDR	1,354,030,766	322,388,278	679,390,866	161,759,730
Reimbursements				
FEDR	480,447,125	114,392,173	383,245,465	91,248,920
Cofinancing	89,438,604	21,294,906	71,223,981	16,958,091
Total Reimbursements	569,885,729	135,687,078	454,469,445	108,207,011
TOTAL Payments	1,923,916,495	458,075,356	1,133,860,311	269,966,741
% Payments contribution UE/Allocation UE 2007-2013	27,76 ¹			

Source: www.inforegio.ro.

Annex 3: Absorption rate of Operational Programme – 30 October 2010

	Operational Programme	% Absorption Rate
1	Regional	27,76
2	Human Resources	23,3
3	Competitiveness	15,92

¹Source: (<http://www.fonduri-ue.ro/upload/Anexa%201%2030%20noiembrie%202010.pdf>).

	Operational Programme	% Absorption Rate
4	Environment	11,63
5	Technical Assistance	8,29
6	Administrative Capacity	5,92
7	Transport	1,83

Sources: <http://www.fonduri-ue.ro/upload/Anexa%201%2030%20noiembrie%202010.pdf>
(pre-financing + FEDR allocation)

References

1. Antonescu D, – „Regional development in Romania – *concept, mechanisms, institutions*” Oscar Print Publishing (B+ category), ISBN 973-668-011-8, 238 pages, 2004 (www.bookfinder.com);
2. Nicolae V, Daniela-Luminita Constantin, Basis of regional and urban economy, *Oscar Print Publishing, Bucuresti, 1998*;
3. Paelinck J, Klaassen H., 1979, *Spatial Econometrics*, Saxon House;
4. Pecican E, S, 2007, *Econometric for the economists*, *Economic Publishing*, Bucharest;
5. Michael E, Porter (2005), Business Competitiveness Index, in: World Economic Forum, The Global Competitiveness Report 2005/06;
6. Michael E, Porter (1990), The Competitive Advantage of Nations, Free Press;
7. Michael E, Porter (2003), The Economic Performance of Regions, *Regional Studies*, Volume 37, Numbers 6-7 / August-October 2003;
8. Săvoiu Gh, Crăciuneanu V, Țaicu M, A new method for concentration analysis and market diversification, *Romanian Statistic Review no, 2/2010*;
9. Quah D., 1996, *Twin peaks: Growth and convergence in models of distribution dynamics*, *Economic Journal*, 106;
10. Waterson M, 1984, *Economic Theory of the Industry*, Cambridge Univ, Press;
11. Zaman, Gheorghe & Georgescu, George, 2009, "Structural Fund Absorption: A New Challenge For Romania?," *Journal for Economic Forecasting*, Institute for Economic Forecasting, vol, 6(1), pages 136-154, March;
12. Zaman, Gheorghe & Daniela-Luminita Constantin & Zizi Goschin, 2008, "EU Cohesion Policy Needs Differentiated Policy Mix Adequate To Specifics Of Economic Regions," *Romanian Journal of Economics*, Institute of National Economy, vol, 26(1(35)), pages 33-63, June;
13. ESPON Monitoring Committee (2007), ESPON project 4,1,3 – Feasibility study on monitoring territorial development based on ESPON key indicators;
14. National Development Plan 2007-2013, Bucharest: Romanian Government;
15. Lisbon European Council (2000), Presidency Conclusions, Document DOC/00/8;
16. Regional Operational Programme 2007-2013, Government of Romania, Ministry Development, Public Works and Housing,
17. Watterson M, 1984, *Economic Theory of the Industry*, Cambridge University Press;
18. *** 2003, *Statistics Dictionary*, Economic Publishing, Bucharest;
19. *** 1979, *Mathematic Dictionary*: Scientific Publishing, Bucharest;
20. ***Romanian Statistical Yearbook 2009, NSI, Bucharest;
21. ***Annual Report of Implementation of ROP 2007-2013 – ACIS (www.acis.ro);
22. World Economic Forum (2005), The Global Competitiveness Report 2005/06, Palgrave Macmillan.