ANALYSIS OF INTER-REGIONAL INEQUALITIES AND CONVERGENCE

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Abstract: Regional development is a new concept aimed at boosting and diversifying economic activities, stimulating private sector investment, contributing to reducing unemployment, and ultimately improving living standards. In order to be able to apply the regional development policy, eight development regions have been set up, covering the entire territory of Romania. Each development region comprises several counties. Developments regions are not territorial administrative units do not have legal personality, being the result of a free agreement between county and local councils.

The main objectives of regional development policy are: to reduce existing regional imbalances, with a focus on stimulating balanced development and revitalizing disadvantaged areas; to prevent new imbalances; correlation with governmental sector development policies; stimulating inter-regional, domestic and international cooperation that contributes to economic development and is in line with the legal provisions and the international agreements concluded by Romania.

The paper tries to capture the interregional inequalities and convergence of the population number indicator, total, sex and average. For this purpose, two representative coefficients were used in the analysis of regional disparities, namely: Ginny coefficient and concentration coefficient, the results of the analysis being analyzed further.

Keywords: *regional disparities, interregional convergence, population size*
JEL Classification: *C46, J11, R10, R58*

Introduction

The principles underpinning the development and implementation of regional development policies are: decentralization of the decision-making process, from the central / governmental level to that of the regional communities; the partnership between all actors involved in regional development; planning - the process of using resources to achieve set objectives; co-financing - the financial contribution of the various factors involved in the implementation of regional development programs and projects.

The fundamental objective of regional development policies is to reduce territorial disparities, to balance the levels of economic and social development of different areas. An objective of regional policy specific to this period is to facilitate structural and sector adjustments, support to economic restructuring and recovery processes, restoration and stimulation of the competitive capacity of regions, support for European integration processes. Most countries, including those economically developed, face regional disparities and consequently apply regional development strategies and policies. However, it must be borne in mind that the difficulties caused by regional imbalances and the possibilities for solving them cannot be addressed without taking into account the general level of development of each country.

One of the serious problems faced by Romania in the post-decade era was the socio-economic decline of many large urban centers and the diminishing of their role in the development of adjacent areas. Indices of regional disparities indicate significant economic, social and technical disparities, as well as quality of life. The most dynamic changes were recorded by infrastructure and demographics. The most notable positive dynamics was the index showing the increase in the number of personal cars and the number of telephone subscriptions. The level of urbanization, expressed as a percentage of urban population in the total population, remained relatively invariable, suggesting that the population did not migrate massively from rural to urban or vice versa.

Apart from the problems inherited during communism, the major causes that have determined and still determine the increase of the regional disparities can be summarized as follows: the location and scale of foreign and domestic investments in these regions; loss of competitive business capacity; the acceleration of the reform process influences, at a slower or faster pace, the increase of regional disparities; specialized workforce; tradition in craft and trade; infrastructure potential; the influence of migration; proximity

to sources of raw materials; proximity to internal and external outlets; the existence of disadvantaged areas or areas benefiting from government or international programs.

The process of stimulating regional activities, as well as their coordination with government policies to promote inter-regional cooperation, is part of a general effort to correlate the needs of the entire territory as well as the needs of the geographical, economic and cultural regions of the country. The process of regional development must also be analyzed in the wider context of the integration process in the European Union and therefore, in the process of preparing and adapting Romania to the European institutional structures, in order to successfully implement structural policies and funds.

In the short term, however, regional policies should focus in particular on mitigating the negative effects of transition economies, especially industrial reorganization. Local and regional communities have so far not shown an innovative capacity for this purpose and, unfortunately, have not become more flexible to respond effectively and quickly to the new challenges and changes required by the reorganization process of the economy. Taking into account that free initiative and entrepreneurship are the basic premises for development, the regional policy strategy should be oriented towards creating the conditions for developing the capacity of innovation of the territorial communities in order to adopt new activities that will gradually replace inefficient activities.

Analysis of inequalities and interregional convergence

Spatial inequality, one of the major topics in regional research, is usually analyzed with the help of indices that express differences in territorial structure and their variation over time. Standard methods used in empirical research to pursue the simple analysis of territorial inequality are standard deviation, the Herfindahl index and the Ginny index. For analyzes that address the factors behind inequalities and determine their variation in time and space, disparities need to be broken down, for example, by the Theil index, with the Atkinson index being indicated for very small regional inequalities.

The Ginny Coefficient (GC) is one of the most widespread indicators of disparities, both in methodological studies and in applied research, being considered a standard measure for inequality analysis. It was originally used to highlight the income inequality of individuals, and was then used predominantly in the field of spatial analysis. The Ginny coefficient (GC) is a statistical magnitude that highlights the degree of concentration of the values

of a series of statistical data. The Concentration Coefficient (CC) is an adjusted variance (depending on the number of n regions) of the Ginny coefficient.

Table 1. Calculation of the Ginny coefficient and of the concentration coefficient for the total number of population by region

	Total population of the region	$(2*i-n-1)X_{ij}$	$n*X_{ij}$
West	1807287	-12651009	14458296
South - West Oltenia	2005253	-10026265	16042024
Bucharest - Ilfov	2286524	-6859572	18292192
Center	2346562	-2346562	18772496
South East	2481684	2481684	19853472
Northwest	2581768	7745304	20654144
South - Muntenia	3047055	15235275	24376440
North - East	3263564	22844948	26108512
		16423803	158557576
The Ginny Coefficient		0.103582581	
Coefficient of concentration		0.118380093	

Source: Romanian Statistical Yearbook 2017 and author calculations

The analysis of the processed data shows that there are no significant concentrations of the population in the eight development regions, the Ginny coefficient having values of 0.10 and the concentration coefficient of 0.11 which means that there are no significant regional disparities (Table 1).

Table 2. Calculation of the Ginny coefficient and of the concentration coefficient for the number of the male population by region

	Total male population by region	$(2*i-n-1)X_{ij}$	$n*X_{ij}$
West	879077	-6153539	7032616
South - West Oltenia	985517	-4927585	7884136
Bucharest - Ilfov	1072638	-3217914	8581104
Center	1151288	-1151288	9210304
South East	1218087	1218087	9744696
Northwest	1259329	3777987	10074632
South - Muntenia	1494722	7473610	11957776
North - East	1619879	11339153	12959032
		8358511	77444296
The Ginny Coefficient		0.10792933	
Coefficient of concentration		0.123347806	

Source: Romanian Statistical Yearbook 2017 and author calculations

Table 3. Calculation of the Ginny coefficient and of the concentration coefficient for the number of the female population by region

	Total female population by region	$(2*i-n-1)X_{ij}$	$n*X_{ij}$
West	928210	-6497470	7425680
South - West Oltenia	1019736	-5098680	8157888
Bucharest - Ilfov	1195274	-3585822	9562192
Center	1213886	-1213886	9711088
South East	1263597	1263597	10108776
Northwest	1322439	3967317	10579512
South - Muntenia	1552333	7761665	12418664
North - East	1643685	11505795	13149480
		8102516	81113280
The Ginny Coefficient		0.099891362	
Coefficient of concentration		0.114161556	

Source: Romanian Statistical Yearbook 2017 and author calculations

It is also noticed that there are no significant concentrations in the total male population nor in the total female population (Table 2 and 3) Ginny coefficient with values of 0.10 and 0.09 and the concentration coefficient is 0, 12 respectively 0.11. The concentration of the urban population is also small (CG = 0.11). The rural population can be considered less concentrated, meaning there are some disparities (CG = 0.45), but this value is due to the Bucharest-Ilfov region, which is strongly urbanized. The male and female rural population is also slightly concentrated (CG = 0.46 and CG = 0.45, respectively) (Tables 4 - 9).

Table 4. Calculation of the Ginny coefficient and of the concentration coefficient for the number of the urban population by region

	Total urban population by region	$(2*i-n-1)X_{ij}$	$n*X_{ij}$
West	924269	-6469883	7394152
South - West Oltenia	1110275	-5551375	8882200
Bucharest - Ilfov	1204187	-3612561	9633496
Center	1321626	-1321626	10573008
South East	1351752	1351752	10814016
Northwest	1356934	4070802	10855472
South - Muntenia	1358669	6793345	10869352
North - East	2041867	14293069	16334936
		9553523	85356632
The Ginny Coefficient		0.111924789	
Coefficient of concentration		0.127914044	

Source: Romanian Statistical Yearbook 2017 and author calculations

Table 5. Calculation of the Ginny coefficient and of the concentration coefficient for the number of the male urban population by region

	Total male urban population by region	$(2*i-n-1)X_{ij}$	$n*X_{ij}$
West	445439	-3118073	3563512
South - West Oltenia	533048	-2665240	4264384
Bucharest - Ilfov	577528	-1732584	4620224
Center	635529	-635529	5084232
South East	649633	649633	5197064
Northwest	650759	1952277	5206072
South - Muntenia	654192	3270960	5233536
North - East	952190	6665330	7617520
		4386774	40786544
The Ginny Coefficient		0.107554442	
Coefficient of concentration		0.122919363	

Source: Romanian Statistical Yearbook 2017 and author calculations

The male and female population in the urban area is heavily concentrated with Ginny coefficients of 0.11 and 0.12 respectively (Table 5 and Table 6).

Table 6. Calculation of the Ginny coefficient and of the concentration coefficient for the number of female urban population by region

	Total female urban population by region	$(2*i-n-1)X_{ij}$	$n*X_{ij}$
West	478830	-3351810	3830640
South - West Oltenia	577227	-2886135	4617816
Bucharest - Ilfov	626659	-1879977	5013272
Center	686097	-686097	5488776
South East	700993	700993	5607944
Northwest	704477	2113431	5635816
South - Muntenia	707301	3536505	5658408
North - East	1089677	7627739	8717416
		5174649	44570088
The Ginny Coefficient		0.116101386	
Coefficient of concentration		0.132687299	

Source: Romanian Statistical Yearbook 2017 and author calculations

Table 7. Calculation of the Ginny coefficient and of the concentration coefficient for the rural population indicator by region

	Total rural population by region	(2*i-n-1)X$_{ij}$	n*X$_{ij}$
West	478830	-3351810	3830640
South - West Oltenia	244657	-1712599	1957256
Bucharest - Ilfov	697012	-3485060	5576096
Center	994810	-2984430	7958480
South East	1080984	-1080984	8647872
Northwest	1160058	1160058	9280464
South - Muntenia	1224834	3674502	9798672
North - East	1842868	9214340	14742944
	1904895	13334265	15239160
The Ginny Coefficient		**0.455771716**	
Coefficient of concentration		**0.520881961**	

Source: Romanian Statistical Yearbook 2017 and author calculations

In the case of the rural population, both the total and the sexes show a high degree of non concentration, the Ginny coefficient having values around 0.5 (Table 7, Table 8 and Table 9).

Table 8. Calculation of the Ginny coefficient and of the concentration coefficient for the number of the male rural population by region

	Total male rural population by region	(2*i-n-1)X$_{ij}$	n*X$_{ij}$
West	120448	-843136	963584
South - West Oltenia	346029	-1730145	2768232
Bucharest - Ilfov	500529	-1501587	4004232
Center	540078	-540078	4320624
South East	582558	582558	4660464
Northwest	609696	1829088	4877568
South - Muntenia	917194	4585970	7337552
North - East	965687	6759809	7725496
		13217347	28921704
The Ginny Coefficient		**0.457004435**	
Coefficient of concentration		**0.522290783**	

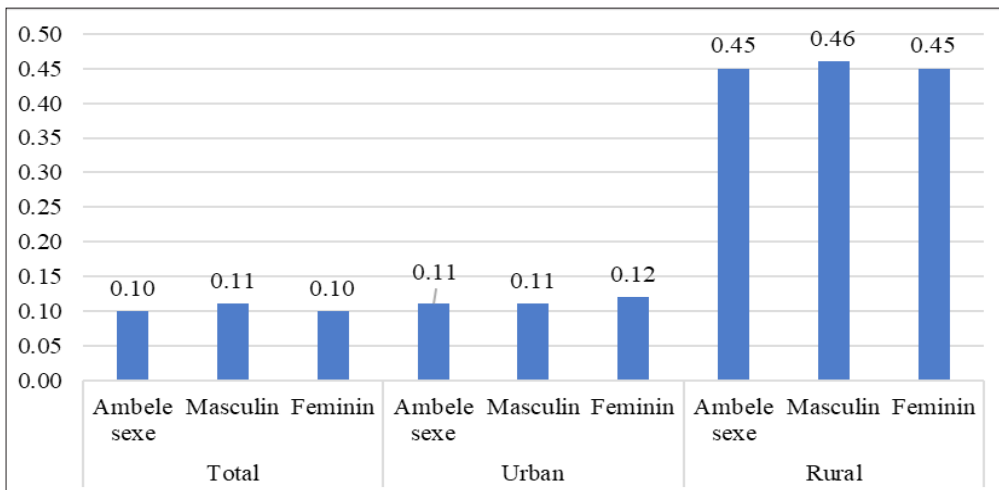*Source: Romanian Statistical Yearbook 2017 and author calculations*

Table 9. Calculation of the Ginny coefficient and of the concentration coefficient for the number of female rural population by region

	Total female rural population by region	$(2*i-n-1)X_{ij}$	$n*X_{ij}$
West	124209	-869463	993672
South - West Oltenia	350983	-1754915	2807864
Bucharest - Ilfov	494281	-1482843	3954248
Center	540906	-540906	4327248
South East	577500	577500	4620000
Northwest	615138	1845414	4921104
South - Muntenia	925674	4628370	7405392
North - East	939208	6574456	7513664
		13084834	28787408
The Ginny Coefficient		**0.454533246**	
Coefficient of concentration		**0.519466567**	

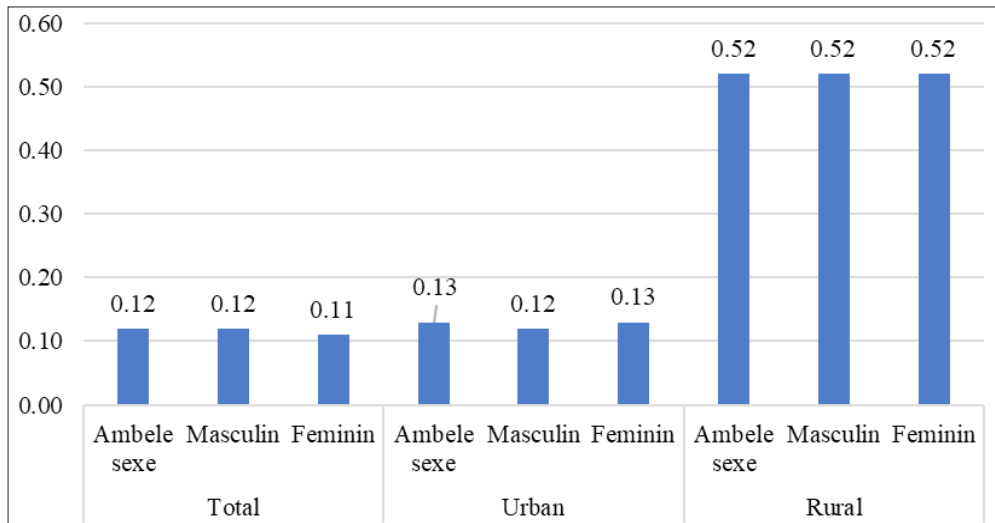*Source: Romanian Statistical Yearbook 2017 and author calculations*

Regional concentration and regional disparities are presented graphically in Figure 1 and Figure 2. As we have mentioned both concentration and disparity is better on the total population registered in the eight development regions, as well as in urban areas (both genders, masculine and feminine). In rural areas, however, the situation is quite different in both sexes, male and female.

Figure 1. Regional concentration of the population by sex and area in 2016

Source: Romanian Statistical Yearbook 2017 and author calculations

Figure 2. Regional Disparity of population by sex and area in 2016

Source: Romanian Statistical Yearbook 2017 and author calculations

The results of the different methods applied to the convergence / divergence process in Romania indicate the same tendency to increase territorial inequalities over a longer period of time, with some deviations in sub periods depending on the evolution of the national economy as a whole.

Conclusions

The overall picture at national level is an aggregate dimension of the state of affairs existing in all eight development regions, each of which can then be analyzed from a multidimensional perspective within the following sections of the present study.

The analysis carried out in the paper highlights that both the concentration and the disparity are better on the total population registered in the 8 development regions as well as in the urban area (both for both sexes, male and female), in rural areas the situation with - totally different, both overall and male and female.

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