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REGIONAL ECONOMIC INTEGRATION IN ROMANIA

[1]Ihor Yaskal
Chernivtsi National University,
2 Kotsjubynskyi Str.
Chernivtsi 58012
Ukraine
E-mail: igoryaskal@gmail.com

[2]Liviu-George Maha
Department of Economics and
International Relations
Faculty of Economics and
Business Administration
Alexandru Ioan Cuza University
of Iasi
Bd. Carol I, nr. 22, B334
700505, Iasi
Romania
Tel.: +40 232 201 412
Fax: +40 232 217 000
E-mail: mlg@uaic.ro

[3]Cristian Incaltarau
Centre for European Studies
Alexandru Ioan Cuza University
of Iasi
Bd. Carol I, nr. 19
700505, Iasi
Romania
Tel.: +40 232 201 318
Fax: +40 232 201 318
E-mail: cristian.incaltarau@uaic.ro

[1]Ihor Yaskal, PhD, is Associate Professor at the Yuriy Fedkovych Chernivtsi National University. His reasearch interests are mainly related to regional economy. He was an Erasmus Mundus Post-Doc Researcher at "Alexandru Ioan Cuza" University of Iasi during 2013-2014 period, being involved in various research projects and grants funded by national or international forums. He is member of the editorial board of Romanian journal „Ecoforum".

[2]Liviu-George Maha, PhD, is Associate Professor and has 15 years experience of teaching and research in Economics, International Business and European Integration. He participated in the development of the Center for European Studies within the „Alexandru Ioan Cuza" University of Iasi, coordinated or was involved in three Jean Monet projects, with teaching activities, information and research in the field of European Studies, and other more than 15 research projects and grants funded by national or international forums. He is member of several national and international organizations, member of the editorial boards of two Romanian journals, participated to national and international conferences and published books, articles and papers in journals and volumes.

[3]Cristian Incaltarau is currently working as a researcher at Centre for European Studies within Alexandru Ioan Cuza University of Iasi; his main research interests are *regional development, labour mobility and regional development, the economic impact of remittances*. Economist by profession, his PhD thesis was entitled *Labour migration from Romania - economic consequences*.

Since 2009 he has become the executive editor of CES Working Papers. A journal published by the Centre for European Studies which is indexed in various international databases.

ABSTRACT. The experience of developed countries proved that a country can only get full advantage of an international economic integration zone after deepening its internal integration. This paper analysis the equal-share relationship across regions in Romania (whether there is conformity – pair-wise – between rankings of the output and factor shares), presents some considerations about the direction of spatial distribution of economic activity and measures the internal economic integration between the Romanian regions at both NUT 2 and NUT 3 levels.
The results have shown that the distribution of output and factor shares across regions in Romania conforms to a rank-share distribution and that the level of economic integration between the regions is gradually increasing, although differences in economic activity growth and factor distribution.

KEYWORDS: output distribution, production factor distribution, internal economic integration, external economic integration, Romania.

JEL classification: P25, R11, R12.

Introduction

The globalization processes enhance the importance of economic activity locations. The changes in regional performance, associated with the last decades of globalization, have also altered the way in which the economic geography is viewed. The evidence that the prevailing growth and development theories could no longer explain empirical growth patterns has led to a thorough reconsideration of how economic development takes place, and how it is related to economic geography. The importance of aspects, such as human capital and innovation (endogenous growth theory), agglomeration and distance (new economic geography), and institutions (institutional economics), has been brought to the fore (Barca *et al.*, 2012). Globalization has also drawn attention to the often neglected role of space. It has made localities, and their interactions are more important for economic growth and prosperity (Rodriguez-Pose, 2011). The location is an important determinant of competitiveness. The region concentrates natural resources; the human capital, scientific and industrial potential creates and strengthens competitive advantages which are the core of economic development and success.

The idea of spatial interactions is central in regional economics. Broadly defined the spatial interaction refers to a wide array of flows that subject to various types of spatial frictions, such as traded goods, migrations, capital movements, interregional grants, remittances, and the interregional transmission of knowledge and business cycle effects (Bahrens, Thisse, 2007). However, there is one area of regional development to which not enough of attention has been drawn: the spatial integration in a particular country.

At a time when national borders are gradually eliminated, it is especially important to investigate the level of interactions between regions of one country in order to enable the government to respond adequately to the changing economic environment, otherwise there are

increasing threats of economic separatism and disintegration of the state itself. Of course, the separatist tendencies lay more often in the political, cultural, linguistic, and religious area, but the economic background is not completely excluded. This problem is typical for many countries. After the economic integration in Russia has been explored, Gusev (2011) states that the homogeneity of economic development of the state territory and strong commercial and production linkages between areas have particular importance in ensuring the unity of the country. He shows that the contribution of interregional trade in the consumer goods in the GDP is less than 12%. At the same time the foreign trade turnover of the regions in 2009 was 36.5% of the GDP (or 44% of total GRP) and exceeded at least 1.5 times the annual trade turnover between the subjects of the Russian Federation. Thus, it may be noticed that the Russian regions are involved more in the trade with foreign countries than in trade relations within Russia. In this case the territorial unity does not have a strong economic foundation, as the federal districts and administrative units are 10 times more dependent on foreign markets than on intra-district economic interaction of regions (Gusev, 2011).

After the analysis on the long-run growth performance and convergence in per capita income across 15 major Indian states has been carried out, Ghosh (2008) showed that the divergence has increased, particularly after the implementation of large-scale economic reforms, mainly due to inter-state variations in production structures, human capital, and infrastructure. Frey and Wieslhuber (2011) did not find any prove for regional convergence in Kazakhstan, after the empirical analysis of the economic growth process at the regional level has been conducted. They used the annual gross regional product (GRP) data for the period 1998 - 2008 in 16 Kazakh regions.

Storonyanska (2008; 2009) used some parameters based on the models of convergence and made important conclusions after the factor analysis. At the same time Yevdokymenko and Yaskal (2008) used the approach of the assessment of intra-regional economic integration based on the indicators of trade in the region, and Yevdokymenko and Yaskal (2011; 2012) proposed the method for detecting the approximate directions of interregional production and resource integration in industry and manufacturing industry using Euclidean distance, fuzzy clustering, and gravity model.

Bowen et al. (2011) assess the level of economic integration between the U.S. states and the members of European Union members taking into consideration the Regional Trade Agreements. Noteworthy, this approach is used to estimate the level of integration in a country (i.e. the USA), and between countries in a particular group (i.e. EU, NAFTA etc.). The methodology suggested by Bowen et al. (2010; 2011) has been employed in order to analyse the quantitative measurement of internal economic integration in the Romanian economy.

Romania is a promising field of study, regarding this issue, due to the following reasons. First, the Romanian economic development is characterized by the large regional disparities (Dachin, Popa, 2011; Surd, 2011; Constantin et al., 2011). It has a big territory that provides ample space for the emergence of regional economies. Second, Romania has undergone a process of „marketization" during the past two decades with the conjuncture that was determined by the market forces since the late 1990s. Therefore, it may be assumed that the strong forces of integration reigned over the Romanian economy recently. Third, Romania has been a communist country, and it is useful to explore the influence of the transition process on regional integration.

Most papers limit their attention to NUTS 2 level data (development regions and macroregions). However, the highly aggregate nature of statistic at macro regional level

masks important tendencies in regional integration. Nevertheless, this literature has paid very limited attention to the inter-counties (NUTS 3) links. Thus, this paper tries to fill this gap.

The major gap that has been identified in the literature is the absence of investigations on internal integration of EU members; therefore, the aim of this paper is to explore the level of internal economic integration in Romania, a new EU member state with transition economy. Thus, this research objectives are as follows: 1) to review the literature about the international integration impact on the internal spatial interactions in order to identify the nature of such impact; 2) to evaluate the spatial distribution of economic activity; and 3) to make quantitative measurement of internal economic integration between the NUTS 2 and NUTS 3 regions in Romania.

The paper is organized as follows. Section 1 explains the mutual influence of internal and external integration processes. Section 2 offers a short theoretical explanation of distribution of output, labour, and capital across integrated economic space (in a country): this distribution is a base of economic ties between regions. Section 3 discusses the data used for estimating the factor and output distribution among Romanian regions, while section 4 presents the empirical results and the measure of economic integration. The last section summarizes the main findings.

1. Mutual Influence of Internal and External Integration Processes

The production of goods and services begins, as it is well known, with choosing the territory. This raises a number of vital difficulties. Regional policy should give answers to these questions. This policy and its implementation mechanism should promote the regional growth and development optimizing the allocation of production factors across the country, the convergence of economic environment, and human activity. The latter has a particular relevance to the conditions that deepen various disparities in national and global scale. In addition, the need for alignment is dictated by the further strengthening of the internationalization and globalization. According to Sokolov (2001), the increasing free movement of goods, services, and capital, the deepening of international labour division over national borders creates more or less stable reproductive relationships. In the past, when the general (sectorial) international labour division was predominant, the national economy at a certain level of abstraction could be interpreted as a single partner of other national economies that sells some goods and services and buys others. Due to the increasing importance of unit's (detailed and technology) labour division, the national economy has been seen as a conglomeration of manufacturing units that interact with each other and form a reproductive system with foreign partners, as well as outsiders, which are not included in the reproductive relationship in the modern technological level. As a result, Kochetov (1999) notes that the economic boundaries appear not in order to coincide with the national boundaries.

It should be said that the problem of interaction between internal and external (international) integration is more common within developing countries. The largest companies and banks at a certain stage of development turn their attention from the national economic space to the world. Exports, as a distribution channel, are becoming more attractive to management companies, in comparison to the sales in the domestic market. Due to the consumers' low solvency in the domestic market, export orientation of enterprises gives them „live" money allowing to increase the manufacturing output and improve the quality of goods in accordance with the requirements of competitive foreign markets.

The negative aspect of international economic integration that is deepening in the developing countries appears in a form of fast implementation of globalization models, due to

their lack of experience in a modern market economy and hiding the dangers of high costs. The increase of domestic energy prices, in particular, will lead to the rise in prices of domestic products and the reduction of its competitiveness in the world markets (Dobyndo, 2008).

Libman (2008) claims that the growth of international economic integration in countries with low level of internal integration of markets can be seen as a stimulus for deepening the relationship between the regions, some of them can become „gate-regions", and „tearing" the territory from the internal market. If the level of integration in the country is already quite high, one can hardly expect it to decline as a result of cross-border processes, which is being relatively inferior to the domestic processes (Libman, 2008).

If the economies of the countries involved in the integration process are characterized by the high level of internal integration, the latter is hardly reduced. It is referred to the „border effect", that is a comparison of trade between the territories and evaluation of the potential trade based on the volume of the GDP and geographical distance (gravity models). Initially, the effect was detected by J. McCallum in 1995 in the economy characterized by the highest levels of both formal and informal integration as well as linguistic, territorial, and cultural proximity, i.e., the United States and Canada[1]; border effects (by diminishing) were found in trade between the EU countries (Chen, 2004; Pelkmans, 2008). However, the border effects on relationships with all the major trading partners are small in Japan (Okubo, 2003). Subnational economic relations were sufficiently resistant to global processes. The European Union has achieved a high level of correlation in prices (Gaulier, Haller, 2000; Faber, Stokman, 2005; Goldberg, Verboen, 2005), large-scale intra-firm trade in closely intertwined companies (Chevassus-Lozza, Galliano, 2009; Pires, 2006), and „transition" of a significant level of competition in many sectors of the EU level (instead of separate countries) (Lyons, *et al.*, 2001).

It means that transition economies should deepen the internal integration. It will enable them to participate in the integration processes between countries more completely. This argument has been proved by the experience of developed countries.

The reorientation of economic relations from regions of the country to foreign trade is an additional factor of reduction of intra-regional interaction, which hinders the development of territorial labour division, as a result of „shrinking" space. The smaller is the size of the space necessary for economic activity, the slower is the economic development, which in turn slows the economic growth.

2. Theoretical Background

Bowen *et al.* (2010; 2011) developed a methodology for measuring the degree of economic integration between members of an *integrated economic space* (IES). The mobility of goods and production factors, as well as the harmonization of policies have been considered and the IES has 3 properties related to the distribution of output and production factors among the member states: 1) each member's share of the total area output will be equal to its share of the total area stock of each productive factor; 2) the distribution of output and factor shares across IES members will conform to the rank-share distribution that exhibits Zipf's law; and 3) the long-run distribution of output and factors across area members is unique and depends only on the number of IES members. These characteristics help to evaluate the degree of economic integration in the IES by measuring the distance between the theoretical and the actual distribution of shares. If the actual distribution is close, it may be assumed that there will be a greater degree of integration.

I.C.......:.. F....... (2004)

Thus, using the theoretical background developed by Bowen *et al.* (2010; 2011), the degree of economic integration in Romania is analysed considering the national economy of Romania as the IES and the Romanian regions as the members of the IES.

3. Data

The hypothesis that the long-term distribution of shares among the regions of the integrated economic space exhibits Zipf's law is accepted, so it is possible to calculate the theoretical share value of the regions according to the number of the member states. In this case three groups of regions were used: macroregions, development regions, and counties. Theoretical shares values in the regions of Romania are given in *Table 1*.

Table 1. Theoretical share values assuming distribution of share exhibits Zipf's Law

Group of regions	Theoretical share values (descending)
4 macroregions (NUTS 2)	0,4800; 0,2400; 0,1600; 0,1200
8 development regions (NUTS2)	0,3679; 0,1840; 0,1226; 0,0920; 0,0736; 0,0613; 0,0526; 0,0460
42 counties (NUTS 3)	0,2311; 0,1156; 0,0770; 0,0578; 0,0462; 0,0385; 0,0330; 0,0289; 0,0257; 0,0231; 0,0210; 0,0193; 0,0178; 0,0165; 0,0154; 0,0144; 0,0136; 0,0128; 0,0122; 0,0116; 0,0110; 0,0105; 0,0100; 0,0096; 0,0092; 0,0089; 0,0086; 0,0083; 0,0080; 0,0077; 0,0075; 0,0072; 0,0070; 0,0068; 0,0066; 0,0064; 0,0062; 0,0061; 0,0059; 0,0058; 0,0056; 0,0055

Source: authors' compilation based on Zipf's law and group size.

The annual data regarding the output and stocks of human and physical capital in the Romanian regions have been used: 4 macroregions, 8 development regions and 42 NUTS 3 regions. The output of these regions was measured by the gross domestic product (GDP) with corresponding regions. The development regions correspond to NUTS 2 level divisions in the European Union. The Romanian development regions, despite becoming increasingly significant in regional development projects, do not actually have the administrative status and do not have legislative or executive councils or governments. They rather served a function of allocating European Union PHARE funds for regional development (before 2007), as well as for collection of regional statistics. After 2007 (joining the EU) the Regional Operational Program was implemented (infrastructure, social services, education, health, business environment, tourism etc.) in the development regions.

The approach of Bowen *et al.* (2010) brings further improvements to previous research by dealing with the human capital instead of labour force, although human capital is even harder to measure because of the various attributes it embraces. The educational attainment is considered as the best proxy for human capital formation (see Barro, Lee, 1993; 1996), as it reflects the skills and knowledge gained through education. The data, in the Romania's case, regarding the population in a secondary level of education are available only for the NUTS 2 regions and only for the period 2000 - 2011 for the development regions, and for the macroregions for the period 2007 - 2011. These data are insufficient to derive conclusions. Therefore, the stock of human capital of Romanian macroregions, development regions, and counties are measured as civil economically active population, which characterizes the

potential labour force and the employment population rate consisting of the civil employed population and the registered unemployment[2].

The estimation of a county's physical capital stock faces some difficulties. There are no statistical data regarding tangible assets and investments of counties in Romania. However, every enterprise possesses some amount of fixed capital. Assuming more of the enterprises in the county means a greater amount of fixed capital. Thus, if the shares of counties and their ranks, not numbers, are operated, it has been decided to use the number of enterprises by counties instead of the physical capital. It may be supposed that a county's share of enterprises in total partly reflects the share of physical capital of this county in total, and the difference in the number of enterprises between counties reflects the differences in stock of physical capital[3]. The procedure was used by Munnell (1990), Garofalo, Yamarik (2002), as well as Bowen *et al.* (2010; 2011) and does not offer appropriate results in the Romanian regions.

4. Results

4.1 The Equal-Share Relationship

The validity of the equal-share relationship hypothesis will be further verified by analysing the „weak" form of this relationship, namely, whether there is conformity (pairwise) between the rankings of the output and factor shares across the regions in Romania, as Yaskal did in Ukraine (2013).

Table 2. Spearman rank correlations between share values*

Year	Output-Physical capital	Output-Human capital	Physical capital-Human capital
1995	-	0.937	-
1996	-	0.925	-
1997	0.930	0.934	0.895
1998	0.921	0.901	0.886
1999	0.925	0.879	0.873
2000	0.931	0.885	0.874
2001	0.924	0.900	0.892
2002	0.947	0.917	0.904
2003	0.941	0.917	0.894
2004	0.954	0.921	0.905
2005	0.950	0.914	0.900
2006	0.944	0.912	0.914
2007	0.952	0.919	0.915
2008	0.958	0.934	0.922
2009	0.953	0.922	0.914
2010	0.953	0.910	0.910
2011	-	-	0.909

Notes: * Correlation coefficients are significant from null-hypothesis at the level 0.01. „-" – data are not available

Source: own calculations.

Table 2 offers data on the Spearman rank correlation coefficient calculus for the pairwise rankings of shares for each county between 1995 and 2010. A fairly high positive

correlation confirms the consistent distribution between pairwise ranks. The correlation coefficients are in some cases close to 1, which proves almost a perfect monotonic relationship between the GRP and capital shares, while the rank correlation with human capital is generally lower. Except for some differences between counties (population, area, resources etc.), this result may indicate the smaller „contribution" of human capital in GRP of Romanian regions in comparison to the „contribution" of capital. At the same time, the existence of a lower correlation with the share of human capital, which can be caused by a lower mobility of this factor, comparing to the capital, should be mentioned.

There is an evident general increasing tendency for all the Spearmen correlation coefficients in the analysed period. This means that the proportion of the investigated regions is characterized by the smaller differences. These results confirm the „weaker" form of the equal-share relationship, the increase of the correlation coefficients may indicate that the equalization of marginal returns between regions becomes more perfect.

4.2 Spatial Distribution of Economic Activity

The *Appendix 1* describes the evolution of the output and employment shares distribution and their rankings in the Romanian regions NUTS 3 and NUTS 2. In particular, *Tables A3 and A4* show the ranking and output share value for the 42 counties and 8 development regions in 1995, 2001, 2006, and 2010, along with the changes in rank and share values between these years. *Tables A5 and A6* show the ranking and the employment share value for the similar regions and years.

Table A3 shows that Bucharest has constantly increased its share of production during 1995 - 2010. Besides Bucharest, the shares of Cluj (0.55), Timis (1.3), Sibiu (0.24), and Ilfov (0.94) have increased the most. If Cluj and Timis counties were earlier among the leaders in terms of the output, the others made an abrupt „jump" in the ranking: Sibiu (+6), Ilfov (+19). The growth of county-leader's shares of the regional GDP occurred by reducing the shares of 29 counties (1995 - 2001), 26 (2001 - 2006), and 28 (2006 - 2010). Among the counties that have significantly reduced their position in the ranking are Galati (–6), Neamt (–9), Vrancea (–9), Teleorman (–6), Ialomita (–9). At the same time there was also a reduction of the share output of these counties: Galati (–0.98), Neamt (–0.85), Vrancea (–0.69), Teleorman (–0.64), Ialomita (–0.72).

Table A4 also shows a steady increase of the capital region: the output share of Bucharest-Ilfov increased by 10.02. The Western region also increased its share of production, but only by 0.83. Moreover, the shares of the two regions have increased during 1995 - 2001, but only one maintained the ascending path during 2006 - 2010.

If the distribution of employment ranking and shares is considered (*Table A5 and A6*), the leading positions are occupied by the same counties, plus Bihor. The growth of the county-leaders by employment was due to reduction of shares of 18 counties between 1995 and 2001, 32 between 2001 and 2006, and 27 between 2006 and 2010. The counties which reduced their position in the ranking were Galati (rank: –7; share value: –0.64), Hunedoara (rank: –5; share value: –0.57), Gorj (rank: –6; share value: –0.33). For example, Hunedoara and Gorj lost some important economic activities and specialized in mining, and it becomes the main reason for such reduction. *Table A5* shows a much more uniform distribution of employment shares between regions, but also the growth of concentration of employment in the Bucharest-Ilfov region can be seen. The dramatic growth of the capital region's share occurred during the 2001-2006 period, while the production share had increased before, namely, between 1995 and 2001. This indicates that initially there were higher economic activities and the labour deficit has been created, which was later covered by the moving employees from other regions (32 counties decreased their share,

and only 10 increased in the same period). Another reason of huge concentration of economic activities in Romanian capital is that the public sector in this country is important, and almost all government agencies are located in the capital. Thus, it is more appropriate to run a business in the capital.

It can be noticed that the trend towards the concentration of economic activity in the capital is a common feature in transition countries (and not only). According to Eurostat, the Slovakian, and Czech capital city regions of Praha and Bratislavsky kraj were the only regions in the member states that joined the EU in 2004 or 2007, among the 41 regions where the average GDP per inhabitant was 25% or more than the EU-27 average. The next most prosperous region by this measure was Bucharest-Ilfov from Romania at 111% of the EU-27 average. The Hungarian, Polish, and Slovenian capital city regions were the only other regions in the member states that joined the EU in 2004 or 2007, which reported a GDP per inhabitant (in PPS) equal to or above the EU-27 average (Eurostat, 2013).

The capital agglomeration grows significantly faster than in other regions. One can assume that the capital in a transition economy plays the role of „region-gate" through which the country gets new knowledge, technologies, and investments. Bucharest-Ilfov is the most developed region with a labour force that is predominantly specialized in services and constructions, the highest employment rate, and a significant contribution of younger and higher educated persons (Dachin, Popa, 2011). This is a positive effect in the growth of the capital. The negative side is the abrupt growth of the capital region, which causes the deepening of regional disparities (Antonescu, 2012).

The growth of regional disparities within development regions is worth noticing. The Western region takes the 7th position by output share during the study period (*Table 4*). At the same time the counties' shares which are included in this region vary in opposite directions: Timis increased by 1.3 (rank: +2), Arad by 0,003 (rank: +4), Caras-Severin by 0.005 (rank: +9), and Hunedoara reduced its share by 0.49 (rank: –5). The same is observed in the South-Western region, Oltenia: Dolj decreased its share by 0.06, but increases its position (+4); Gorj increases share by 0.1 (rank: +5); but Valcea decreases its share by 0.5 (rank: –4), Olt by 0.41 (rank: –1), and Mehedinti by 0.28 (rank: –3). The South-Western region takes the 8th position during the analysed period (*Table 4*).

Tables A 3 to 6 allow making some considerations about the direction of spatial distribution of economic activity in Romania. The data indicate the growth of the output and employment shares of the capital and the counties in the Western and Central regions. In return, counties from Eastern regions (North-East and South-East) have decreased their share values. Constanta is the exception because its employment share value has increased over the period. This county has a competitive advantage due to the main Romanian seaport which is located there. The situation of Constanta proves the correctness of McCord and Sachs's argumentation: „an economy's physical access to sea-based ports is crucial for economic development" (McCord, Sachs, 2013).

These trends allow ascertaining the evidence of how to form clear leading counties in the development regions in Romania. This conclusion can be confirmed by the share of the county in the regional gross product of the region (*Table 7*).

Table 7 shows that there are a few counties in each development region with a GDP share much larger than others. Moreover, each region has several leaders, except for the capital region. The capital is the indisputable leader, as it was emphasized, a separate development region. Noteworthy trends are being observed in the change of shares. Counties-leaders' share in each development region are changing in different directions. For example, in the Nord-Western region, the share of Cluj has increased, but Bihor's share has decreased,

in the Centre region the shares of Brasov and Sibiu have increased, but the share of Mures has decreased etc. The South-Western Oltenia is the exception because both leaders' shares have increased.

Table 7. Counties with the biggest GDP shares, 1995-2010

Region	County-leaders	Share in development region's GDP, %											
		1995	1997	1998	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010
North - West	Cluj	29.3	30.5	31.3	34.1	32	32.2	32.5	33.5	33.2	35.5	34.8	35.1	35.7
	Bihor	23.6	23.9	24	22.9	25.4	24.7	24.6	23.3	23.2	22.6	22.9	22	22.5
Centre	Brasov	27.5	27.7	29.6	28.9	28.9	28.2	27.4	28.3	27.9	28.7	27.9	28.8	30
	Mures	21.5	22.1	20.9	21.3	21.3	22.7	21.4	20.8	20.3	19.1	19.7	19	18.4
	Sibiu	16	15.4	15.8	15.5	18	17.2	17.8	18.4	19	18.3	19.7	20	19.5
North - East	Iasi	24.3	23.2	24.4	25.4	24.7	25.2	24.8	26.1	26.1	26.2	27.4	27.2	29
	Bacau	22.4	23.6	23.4	22.3	23.7	23.3	24.3	22.6	22.1	21.4	21.8	21.7	21.8
South - East	Constanta	31.3	34.9	34.9	34.8	36.5	36	35.2	38	38.1	36.8	35.7	37.1	37.6
	Galati	23.2	22.2	22.5	21.6	20	19.6	20.4	19.7	18.6	19.4	19.5	18.4	19.5
South - Muntenia	Prahova	28.1	25.3	26.6	28.2	28.9	28.7	25.5	30.3	31.1	31.3	30.5	30.8	27.5
	Arges	21.2	23.1	23.7	24.5	24.1	24.9	24.9	26.1	26.6	26	26	26.9	25.1
Bucharest - Ilfov	Bucharest	90	91.8	91.3	92.4	91.3	90.8	89.9	90	88.8	89.5	90.2	89.6	90.2
South - West Oltenia	Dolj	28.8	28.4	27.4	28.7	28	29	30.2	30.4	30.9	31	33.2	33.4	32.1
	Gorj	19.2	20.7	20.5	21.3	25.1	22.8	21.4	21.4	20.9	22.1	19.9	21.9	23.2
West	Timis	38.1	39.4	38.7	39.2	41.3	42.3	41.9	43.1	44.9	43.8	46.7	46.2	47.9
	Arad	23.7	25.3	25.3	24.8	23.2	23.2	24.2	24.2	23.5	23.4	22	21.9	21.8

Source: authors' compilation using data from the Romanian Institute for Statistics Database.

This means that the economic activity in the second macro region grows slower (the macro region's GDP share value of total GDP has decreased from 26.82% in 1995 to 21.39% in 2010). At the same time, the GDP share value of macro region 3 (including capital) has increased from 30.32% (1995) to 37.75 (2010).

In order to confirm these tendencies, counties with the biggest share have been grouped, their regional product and some ratios have been calculated (*Figure 1*).
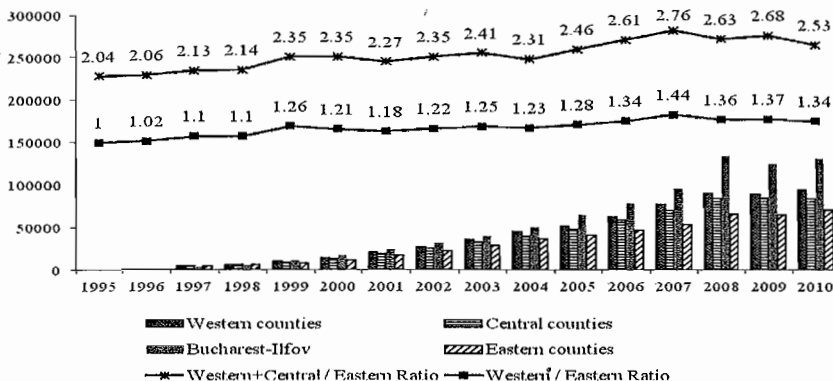
Source: authors' representation using data from the Romanian Institute for Statistics

Figure 1. Regional GDP of Different Groups of Counties, 1995-2010

The Ialomita and Calarasi counties were included in the Eastern group due to their geographical proximity to the South-East development region.

Figure 1 shows that Western and Central counties' GDP has increased faster than the Eastern ones. The growing role of the regional economy in Western and Central districts is shown by the ratios between corresponding groups. The Eastern and Western groups' GDP in 1995 was almost equal, but the ratio is 1.44 in 2007. Thus, the economy of Western Romania makes a greater impact on the national economy than the Eastern part of the country. It can be noticed that the same situation with Western-Central / Eastern Ratio which increases even faster. This phenomenon was predicted by Resmini (2003), who tried to understand what type of regions would gain, and what type of regions would lose from the EU enlargement processes. She claimed that „proximity to the EU has stimulated a catching up process which has contributed to overcome the disadvantage of being located in a peripheral position with respect to capital cities" (Resmini, 2003).

The previous material can be summarized as follows. The economic activity in Romania has a clear tendency to concentrate in several leading counties; they attract production factors from the other counties, so leaders' share increases, while other counties' share reduces. The proof of this statement is that the number of districts, which have increased their share in the total GDP and employment, is smaller than the number of districts which have reduced their share. This concentration leads to the fact that some counties are growing at the expense of others, thereby increasing regional disparities. In addition, the economic activity „shifts" from East to West (Cluj, Timis, Arad, Dolj, Gorj), centre (Brasov, Sibiu, Alba) and capital region (Bucharest-Ilfov). Among the Eastern counties, only Constanta and Iasi occupy a dominant position. Pascariu and Frunza (2011) showed that the spatial peripherality of a region may be a very important factor in development. Unlike the North-East region which is at the EU Eastern border, the Central region has greater access to the commodity markets of the other regions in the country. The proximity of more developed EU regions may foster development even more (West and Nord-West regions). Therefore, improving accessibility, especially through infrastructure improvement, may represent a key policy. Furthermore, Quirino *et al.* (2014) confirms the importance of public investment in fostering economic growth. The analysis of the Portuguese NUT 3 regions evidenced that the contribution was even more substantial in the low economic growth regions, showing the potential of public investment in supporting the convergence process.

4.3 Measures of Internal Economic Integration

The index for measuring the distance between the distribution of the actual and theoretical specific weights is needed for estimating the level of economic integration between the Romanian regions. Since the Kullback-Leibler divergence (KLD) is used to measure the difference between two probability distributions (Kullback, Leibler, 1951), KLD can be used similarly to measure the distance between the actual and the theoretical share distributions:

$$KLD(\bar{S} : S_t) = \frac{1}{3} \sum_{j=Y,K,L} \left(\sum_{m=1}^{M} \bar{S}_{mj} \ln\left(\frac{\bar{S}_{mj}}{S_{mjt}} \right) \right) \qquad (1)$$

where S_{mjt} – observed proportion at the time, and t; $\bar{S}_{mj}$ – independent of time the theoretical part.

The values of KLD range between 0 and infinity, it is equal to 0 (which is interpreted as the full integration) when the proportions are pairwise equal, i.e. $\bar{S}_{mj} = S_{mjt}$ as of the date t and for all m and j. Otherwise the detected deviations indicate how far the group of investigated regions is from the complete integration. According to Bowen *et al.* (2010), the main drawback of the index (1) is its asymmetry meaning that a deviation between an actual and theoretical share can be negative or positive. Therefore, you cannot tell if a zero value of

KLD arises due to equidistant shares around a common mean or due to a zero distance between the shares. Thus, as in Bowen *et al.* (2010) the symmetrical version of Kulbaka-Leibler divergence (SKLD) is preferred:

$$SKLD(\overline{S}:S_t) = \frac{1}{3}\sum_{j=Y,K,L}\left(\sum_{m=1}^{M}(\overline{S}_{mj}-S_{mjt})\ln\left(\frac{\overline{S}_{mj}}{S_{mjt}}\right)\right) \quad (2)$$

The SKLD values are usually higher for the respective KLD, since all deviations between actual and theoretical shares in the index SKLD are positive (Bowen *et al.*, 2010).

Table 8 presents the calculated indicators (1) and (2) in the Romanian regions during the period 1997 - 2010.

Table 8. Kullback-Leibler indicator in Romanian regions

Year	NUTS 3 (counties)				NUTS 2 (development regions)				NUTS 2 (macroregions)			
	Kullback-Leibler divergence		Indicator of integration*		Kullback-Leibler divergence		Indicator of integration*		Kullback-Leibler divergence		Indicator of integration*	
	KLD	SKLD	I-KLD	I-SKLD	KLD	SKLD	I-KLD	I-SKLD	KLD	SKLD	I-KLD	I-SKLD
1997	0.168	0.322	5.952	3.106	0.151	0.293	6.640	3.416	0.080	0.158	12.537	6.341
1998	0.162	0.311	6.163	3.218	0.141	0.275	7.116	3.636	0.076	0.150	13.206	6.678
1999	0.169	0.321	5.903	3.119	0.132	0.260	7.574	3.848	0.072	0.143	13.914	6.999
2000	0.157	0.297	6.386	3.372	0.120	0.237	8.329	4.212	0.066	0.130	15.269	7.684
2001	0.156	0.297	6.408	3.367	0.125	0.247	8.015	4.054	0.068	0.136	14.613	7.337
2002	0.145	0.277	6.911	3.617	0.128	0.252	7.838	3.973	0.070	0.140	14.236	7.170
2003	0.140	0.268	7.128	3.728	0.128	0.252	7.821	3.962	0.072	0.142	13.961	7.033
2004	0.136	0.261	7.338	3.825	0.128	0.253	7.803	3.950	0.071	0.141	14.143	7.116
2005	0.135	0.266	7.414	3.754	0.121	0.238	8.299	4.197	0.066	0.131	15.166	7.650
2006	0.132	0.263	7.580	3.805	0.122	0.241	8.192	4.153	0.066	0.131	15.107	7.636
2007	0.117	0.224	8.567	4.456	0.121	0.239	8.234	4.190	0.064	0.126	15.739	7.969
2008	0.112	0.216	8.910	4.637	0.114	0.224	8.759	4.466	0.057	0.113	17.458	8.827
2009	0.115	0.220	8.711	4.544	0.116	0.227	8.653	4.404	0.059	0.116	17.008	8.602
2010	0.113	0.218	8.849	4.596	0.116	0.227	8.652	4.401	0.058	0.115	17.180	8.686

Notes: * Inverse of (symmetric) Kullback-Leibler divergence.

Source: authors' compilation using data from the Romanian Institute for Statistics.
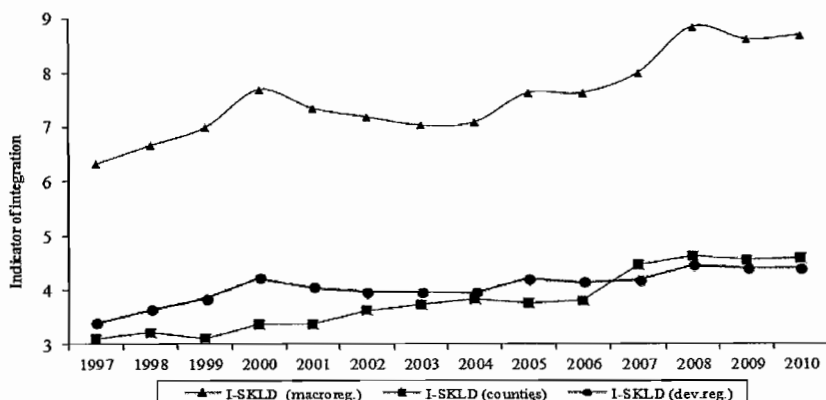
Source: authors' representation using data from the Romanian Institute for Statistics.

Figure 2. **Level of Interregional Integration in Romania, 1997-2010**

However, since the indicators (1) and (2) measure the extent of divergence, in order to estimate the integration level the inverse of the KLD and SKLD, marked as I-KLD and I-SKLD, respectively, will be used. *Figure 2* displays the I-SKLD for the better comparison of the dynamics and level of integration between different types of regions in the considered period.

The results show that the level of economic integration between the regions in Romania has gradually increased since 1997, despite some changes in the direction of reduction. The deterioration of the economic environment during the period of 2009 - 2010, obviously, has led to unequal changes in specific weights of output and production factors of regions in total, and increased the discrepancy between the theoretical and the actual distribution of shares.

Interesting results regarding the level of integration between the NUTS 3 regions have been obtained. The differences between indicators of integration for counties and development regions were bigger from the start of the period, but since 2000 they have decreased. The level of integration in the counties and development regions was almost the same during 2002 - 2010. These findings mean that development regions in Romania respect correct economic tendencies. Thus, a big difference between I-SKLD in NUTS 2 and NUTS 3 shows that carrying out regional research only for macroregions is not enough. It is necessary to pay attention to the lower level of regions, in order to avoid the impact of aggregation data.

Conclusions Remarks

This paper investigates the spatial interactions within a particular country. In this case the integrated economic space is the national economy of Romania and its units: macroregions, development regions, and counties. The connection between international and inter-regional (internal) integration have been discussed. The reorientation of economic relations from regions of the country to the foreign trade is an additional factor of reduction in the intra-regional interaction, which hinders the development of territorial labour division, as a result space is „shrinking". The smaller is the size of the necessity for economic activity space, the slower economic development is being realized; it is slowing the economic growth.

Three theoretical propositions have been empirically tested regarding the distribution of output and factors of the Romanian economy. The results strongly support the theoretical predictions of the equal-share relationship in the Romanian counties. The calculation of the Spearman rank correlation showed a significant connection between the presence of specific weights of regions in total output and production factors.

The spatial distribution of economic activity shows a big concentration of activity in the capital region (Bucharest-Ilfov), but this is a common tendency for transition countries. There are several county-leaders as well. These counties attract production factors from other counties, so leader's share increases, while other counties' shares reduce. The analysis of output and factor shares of the Romanian counties during the period of 1995 - 2010 concludes that economic activity in Romania has grown faster in Western and Central regions and slower in the Eastern regions.

The prediction that the distribution of output and factor shares across the county conforms to a rank-share distribution exhibits Zipf's law. Moreover, according to the most recent data, the measure of the extent of integration indicated that the level of economic integration between regions in Romania is gradually increasing. There is a big difference between the NUTS 2 and NUTS 3 interregional integration; therefore it is necessary to investigate the regional development on the lower regional level. Furthermore, small differences between indicators of integration in counties and development regions mean that development regions in Romania represent a correct economic activity. The increase of

Integration indicator between the Romanian NUTS 2 and NUTS 3 regions suggests that effectiveness in reallocating resources within the country is also increasing.

Promising areas for further research can be regarded as the answers for the two questions: 1) how integrated are the national economies of other EU member, which joined the Union in 2004 and 2007; and 2) how does the EU membership impact the level of internal economic integration in Romania and the other new member states.

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REGIONINĖS EKONOMIKOS INTEGRACIJA RUMUNIJOJE

Ihor Yaskal, Liviu-George Maha, Cristian Încalţărău

Santrauka

Išsivysčiusių valstybių patirtis parodė, kad valstybė gali pilnai pasinaudoti tarptautine ekonominės integracijos zona tik pagilinusi vidinę integraciją. Straipsnyje nagrinėjami lygiaverčiai santykiai tarp Rumunijos regionų (tai, ar juos galima suderinti, suporuoti pagal produkcijos ir gamybos veiksnių laipsnius), pristatomi svarstymai apie geografinį ekonominės veiklos pasiskirstymą ir vertinama vidinė ekonominė integracija tárp Rumunijos regionų NUT 2 ir NUT 3 lygiuose. Tyrimo rezultatai atskleidė, kad produkcijos ir gamybos veiksnių pasiskirstymas Rumunijos regionuose atitinka veiksnių laipsnių pasiskirstymą, o ekonominės integracijos lygis regionuose kyla laipsniškai, nepaisant ekonominės veiklos augimo ir veiksnių pasiskirstymo skirtumų.

REIKŠMINIAI ŽODŽIAI: produkcijos pasiskirstymas, gamybos veiksnių paskirstymas, vidinė ekonominė integracija, išorinė ekonominė integracija.

Appendix 1

Table 3A. Distribution and rank of Romanian county output shares during 1995-2010 years

County*	Share Rank (1 =largest share)				Change***				Share Value**				Change****			
	1995	2001	2006	2010	1995-2001	2001-2006	2006-2010	1995-2010	1995	2001	2006	2010	1995-2001	2001-2006	2006-2010	1995-2010
Bucharest	1	1	1	1	0	0	0	0	13,6	18,95	20,02	22,67	5,347	1,078	2,645	9,97
Prahova	2	6	4	5	-4	2	-1	-3	4,21	3,557	3,997	3,475	-0,913	0,84	-0,522	-0,795
Constanța	3	2	3	3	1	-1	0	0	4,14	4,046	4,252	4,045	-0,094	0,206	-0,207	-0,095
Ilfov	4	4	2	2	0	2	0	2	3,535	3,874	4,065	4,240	0,339	0,78	0,183	1,311
Cluj	5	3	5	4	2	-2	1	1	3,489	3,88	3,934	4,041	0,391	0,054	0,107	0,552
Brasov	6	5	7	6	1	-2	1	0	3,385	3,436	3,267	3,388	0,051	-0,169	0,121	0,003
Iasi	7	7	8	8	0	-1	0	-1	3,304	3,131	2,913	3,079	-0,173	-0,218	0,166	-0,225
Argeș	8	10	6	7	-2	4	-1	1	3,225	2,805	3,415	3,17	-0,42	0,61	-0,245	-0,055
Galați	9	13	10	15	-4	3	-5	-4	3,074	2,524	2,017	2,093	-0,55	-0,447	0,076	-0,981
Bacău	10	8	12	12	2	-4	0	-2	3,037	2,922	2,488	2,317	-0,115	-0,434	-0,151	-0,72
Bihor	11	9	9	10	2	0	-1	1	2,806	2,823	2,749	2,548	0,017	-0,074	-0,201	-0,258
Mureș	12	11	14	16	1	-3	-2	-4	2,651	2,743	2,372	2,074	0,092	-0,371	-0,298	-0,577
Dolj	13	12	10	9	1	2	1	4	2,630	2,552	2,565	2,575	-0,084	0,013	0,01	-0,081
Suceava	14	15	17	18	-1	-2	-1	-4	2,553	2,225	2,047	1,902	-0,128	-0,178	-0,145	-0,451
Hunedoara	15	16	18	20	-1	-2	-2	-5	2,287	2,088	1,992	1,794	-0,199	-0,096	-0,198	-0,493
Timiș	16	19	24	25	-3	-5	-1	-9	2,224	1,868	1,698	1,373	-0,356	-0,17	-0,325	-0,851
Arad	17	14	13	13	3	1	0	4	2,202	2,365	2,439	2,205	0,163	0,074	-0,234	0,003
Dâmbovița	18	21	19	17	-3	2	2	1	2,177	1,775	1,858	1,957	-0,402	0,083	0,099	-0,22
Sibiu	19	17	15	13	2	2	2	6	1,965	2,027	2,216	2,205	0,062	0,189	-0,011	0,24
Vâlcea	20	22	22	24	-2	0	-2	-4	1,902	1,787	1,729	1,406	-0,135	-0,058	-0,323	-0,496
Maramureș	21	25	23	22	-4	2	1	-1	1,87	1,84	1,721	1,62	-0,25	0,081	-0,101	-0,25
Buzău	22	24	25	23	-2	-1	2	-1	1,786	1,659	1,548	1,493	-0,127	-0,111	-0,055	-0,293
Vrancea	23	32	30	31	-10	2	-1	-9	1,79	1,265	1,212	1,098	-0,525	-0,053	-0,114	-0,692
Olt	24	18	20	19	6	-2	1	5	1,758	1,931	1,736	1,858	0,173	-0,195	0,122	0,1
Gorj	25	23	27	26	2	-4	1	-1	1,757	1,677	1,423	1,551	-0,08	-0,254	0,028	-0,406
Alba	26	27	21	21	-1	6	0	5	1,75	1,548	1,733	1,771	-0,184	0,187	0,038	0,041
Teleorman	27	26	33	33	1	-7	0	-6	1,709	1,569	1,116	1,067	-0,14	-0,453	-0,049	-0,642
Neamț	28	30	36	37	-2	0	-1	-9	1,639	1,098	0,969	0,921	-0,541	-0,129	-0,048	-0,718
Satu Mare	29	28	26	29	1	2	-3	0	1,528	1,343	1,364	1,181	0,015	-0,179	-0,183	-0,347
Harghita	30	20	11	11	10	9	0	19	1,515	1,777	2,523	2,456	0,262	0,746	-0,067	0,941
Brăila	31	29	31	28	2	-2	3	3	1,497	1,35	1,200	1,188	-0,147	-0,144	-0,018	-0,309
Bistrița	32	31	28	30	1	3	-2	2	1,471	1,313	1,295	1,118	-0,158	-0,018	-0,177	-0,353
Botoșani	33	33	34	34	0	-1	0	-1	1,384	1,034	1,033	1,044	-0,21	-0,021	0,011	-0,32
Vaslui	34	35	35	38	-1	0	-3	-4	1,3	1,114	0,991	0,916	-0,186	-0,123	-0,075	-0,384
Călărași	35	38	41	35	-3	-3	6	0	1,284	0,998	0,78	1,028	-0,286	-0,218	0,248	-0,256
Caraș-Severin	36	36	29	27	0	7	2	9	1,266	1,339	1,29	1,271	0,073	-0,049	-0,019	0,005
Mehedinți	37	37	32	32	0	5	0	5	1,205	1,069	1,186	1,078	-0,136	0,117	-0,108	-0,125
Covasna	38	39	40	42	-1	-1	-2	-4	1,102	0,99	0,807	0,733	-0,112	-0,183	-0,074	-0,369
Mehedinți	39	34	37	41	5	-3	-4	-3	1,096	1,124	0,942	0,819	0,028	-0,182	-0,123	-0,277
Sălaj	40	40	38	39	0	2	-1	1	1,070	0,878	0,886	0,853	-0,138	0,008	-0,033	-0,163
Ialomița	41	41	39	40	0	2	-1	1	0,95	0,863	0,878	0,84	-0,087	0,015	-0,038	-0,11
Giurgiu	42	42	42	36	0	0	6	6	0,897	0,857	0,719	1,007	-0,04	-0,138	0,288	0,11

Source: authors' compilation using data from the Romanian Institute for Statistics.

Table 4A. Distribution and rank of Romanian development region output shares during 1995-2010 years

Region*	Share Rank (1 =largest share)				Change***				Share Value**				Change****			
	1995	2001	2006	2010	1995-2001	2001-2006	2006-2010	1995-2010	1995	2001	2006	2010	1995-2001	2001-2006	2006-2010	1995-2010
South-Muntenia	1	2	2	2	-1	0	0	-1	15,2	12,46	12,85	12,62	-2,74	0,39	-0,23	-2,58
Bucharest-Ilfov	2	1	1	1	1	0	0	1	15,11	20,72	22,55	25,13	5,61	1,83	2,58	10,02
North-East	3	3	6	6	0	-3	0	-3	13,58	12,41	11,15	10,63	-1,17	-1,26	-0,52	-2,95
South-East	4	6	5	5	-2	1	0	-1	13,24	11,71	11,17	10,76	-1,53	-0,54	-0,41	-2,48
Center	5	4	4	4	1	0	0	1	12,3	12,06	11,69	11,29	-0,24	-0,37	-0,4	-1,01
North-West	6	5	3	3	1	2	0	3	11,91	11,83	11,84	11,32	-0,08	0,01	-0,52	-0,59
West	7	7	7	7	0	0	0	0	9,29	9,67	10,38	10,12	0,38	0,71	-0,26	0,83
South-West Oltenia	8	8	8	8	0	0	0	0	9,15	9,05	8,3	8,01	-0,1	-0,75	-0,29	-1,14

Source: authors' compilation using data from the Romanian Institute for Statistics.

Table 5A. Distribution and rank of Romanian development region output shares during 1995-2010 years

County*	Share Rank (1 =largest share)				Change***				Share Value**				Change****			
	1995	2001	2006	2010	1995-2001	2001-2006	2006-2010	1995-2010	1995	2001	2006	2010	1995-2001	2001-2006	2006-2010	1995-2010
Bucharest	1	1	1	1	0	0	0	0	7.91	8.21	11.35	12.03	0.3	3.14	0.68	4.12
Prahova	2	3	5	4	-3	0	1	-2	4	3.5	3.47	3.49	-0.5	-0.03	0.02	-0.51
Iasi	3	2	4	6	1	-2	-2	-3	3.74	3.72	3.49	3.41	-0.02	-0.23	-0.08	-0.33
Cluj	4	4	3	2	0	1	1	2	3.31	3.51	3.65	3.8	0.2	0.14	0.15	0.49
Constanta	5	5	6	5	-2	1	1	0	3.27	3.24	3.45	3.44	-0.03	0.21	-0.01	0.17
Timis	6	6	2	3	0	4	-1	3	3.18	3.31	3.71	3.68	0.13	0.4	-0.03	0.5
Arges	7	10	8	8	-3	1	0	-2	3.124	3.089	2.97	2.9	-0.035	-0.119	-0.07	-0.224
Dolj	8	7	9	9	3	-2	0	1	3.117	3.52	3.23	3.3	0.403	-0.29	0.07	0.183
Suceava	9	8	10	10	1	-2	0	-1	3.08	3.16	2.81	2.88	0.08	-0.35	0.05	-0.22
Bacau	10	11	13	13	-1	-2	0	-3	3.04	2.94	2.67	2.52	-0.1	-0.27	-0.15	-0.52
Galati	11	15	14	19	-4	1	-4	-7	2.92	2.69	2.45	2.28	-0.23	-0.24	-0.17	-0.64
Mures	12	14	11	11	-2	3	0	1	2.84	2.72	2.79	2.75	-0.12	0.07	-0.04	-0.09
Brasov	13	12	12	12	1	0	0	1	2.82	2.8	2.75	2.73	-0.02	-0.05	-0.02	-0.09
Hunedoara	14	18	19	17	-4	-1	2	-3	2.73	2.4	2.304	2.16	-0.33	-0.096	-0.144	-0.57
Neamt	15	13	17	17	2	-4	0	-2	2.71	2.77	2.31	2.3	0.06	-0.46	-0.01	-0.41
Bihor	16	9	8	8	7	1	0	8	2.7	3.09	3.13	3.14	0.39	0.08	0.01	0.44
Maramures	17	16	18	16	1	-2	2	1	2.35	2.42	2.305	2.31	0.07	-0.115	0.005	-0.04
Dambovita	18	17	16	14	1	1	2	4	2.21	2.41	2.367	2.35	0.2	-0.043	-0.017	0.14
Arad	19	21	15	15	-2	6	0	4	2.2	2.18	2.37	2.35	-0.02	0.19	-0.02	0.15
Valcea	20	23	24	22	-3	-1	2	-2	2.172	2.12	1.96	2	-0.052	-0.16	0.04	-0.172
Olt	21	20	23	23	1	-3	0	-2	2.17	2.22	2.03	1.96	0.05	-0.19	-0.07	-0.21
Buzau	22	19	20	20	3	-1	0	2	2.15	2.32	2.18	2.14	0.17	-0.14	-0.04	-0.01
Teleorman	23	22	25	25	1	-3	0	-2	2.07	2.15	1.95	1.9	0.08	-0.22	-0.05	-0.17
Botosani	24	24	27	28	0	-3	-1	-4	2.01	2.08	1.79	1.72	0.07	-0.29	-0.07	-0.29
Gorj	25	28	29	31	-3	-1	-2	-6	1.97	1.85	1.68	1.64	-0.12	-0.17	-0.04	-0.33
Alba	26	25	21	24	1	4	-3	2	1.931	2.05	2.06	1.94	0.119	0.01	-0.12	0.009
Vaslui	27	26	26	27	1	0	-1	0	1.933	2.03	1.82	1.74	0.097	-0.21	-0.08	-0.193
Sibiu	28	27	22	21	1	5	1	7	1.91	1.95	2.031	2.07	0.04	0.081	0.039	0.16
Vrancea	29	30	30	30	-1	0	0	-1	1.86	1.74	1.66	1.71	-0.12	-0.08	0.05	-0.15
Satu Mare	30	29	28	28	1	1	0	2	1.76	1.78	1.71	1.72	0.02	-0.07	0.01	-0.04
Caras-Severin	31	32	35	35	-1	-3	0	-4	1.75	1.62	1.41	1.39	-0.13	-0.21	-0.02	-0.36
Braila	32	33	33	33	-1	0	0	-1	1.63	1.58	1.51	1.5	-0.07	-0.05	-0.01	-0.13
Covasna	33	31	32	32	2	-1	0	1	1.51	1.53	1.58	1.61	0.02	-0.07	0.05	0
Bistrita-Nasaud	34	33	34	34	1	1	0	0	1.41	1.44	1.42	1.49	0.03	-0.02	0.07	0.08
Mehedinti	35	34	36	36	1	-2	0	-1	1.38	1.51	1.38	1.3	0.13	-0.13	-0.08	-0.08
Calarasi	36	36	37	37	0	-1	0	-1	1.33	1.3	1.22	1.22	-0.03	-0.08	0	-0.11
Ialomita	37	37	38	39	0	-1	-1	-2	1.26	1.26	1.2	1.178	0	-0.06	-0.022	-0.082
Tulcea	38	41	40	42	-3	1	-2	-4	1.2	1.09	1.032	0.91	-0.11	-0.058	-0.062	-0.23
Covasna	39	42	41	41	-3	1	0	-2	1.17	1.03	1.028	1	-0.14	-0.002	-0.028	-0.17
Salaj	40	39	39	38	1	0	1	2	1.14	1.22	1.19	1.19	0.08	-0.03	0.01	0.04
Giurgiu	41	40	42	40	1	-2	2	1	1.1	1.14	1.02	1.03	0.04	-0.12	0.01	-0.07
Ilfov	42	38	31	26	4	7	5	16	1.08	1.23	1.59	1.8	0.15	0.36	0.21	0.72

Source: authors' compilation using data from the Romanian Institute for Statistics.

Table 6A. Distribution and rank of Romanian development region output shares during 1995-2010 years

Region*	Share Rank (1 =largest share)				Change***				Share Value**				Change****			
	1995	2001	2006	2010	1995-2001	2001-2006	2006-2010	1995-2010	1995	2001	2006	2010	1995-2001	2001-2006	2006-2010	1995-2010
North-East	1	1	1	1	0	0	0	0	16.52	16.7	14.88	14.55	0.18	-1.82	-0.33	-1.97
South-Muntenia	2	2	2	2	0	0	0	0	15.09	14.85	14.17	14.07	-0.24	-0.68	-0.1	-1.02
South-East	3	4	3	4	-1	1	-1	-1	13.04	12.65	13.28	13.03	-0.39	-0.37	-0.25	-1.31
North-West	4	3	3	3	1	0	0	1	12.66	13.45	13.42	13.83	0.79	-0.03	0.21	0.79
Center	5	5	6	5	0	-1	1	0	12.28	12.17	11.25	12.11	-0.11	0.08	-0.12	-0.17
South-West Oltenia	6	6	7	7	0	-1	0	-1	10.81	11.22	10.27	10.2	0.41	-0.95	-0.07	-0.27
West	7	7	8	8	0	-1	0	-1	9.86	9.52	9.8	9.59	-0.34	0.28	-0.21	-0.27
Bucharest-Ilfov	8	8	4	3	0	4	1	5	9.74	9.44	12.94	13.83	-0.3	3.5	0.89	4.09
* Sorted by rank in 1995																
** Share values in percent																
*** A positive change indicates a higher rank in end year relative to start year																
**** A positive value indicates a higher share value in end year relative to start year																

Source: authors' compilation using data from the Romanian Institute for Statistics.