REAL CONVERGENCE IN THE ROMANIAN REGIONS IN THE PERIOD OF POST-ACCESSION TO THE EUROPEAN UNION[1]

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Una dintre condiţiile esenţiale pentru trecerea României la moneda euro este convergenţa reală cu economia europeană, astfel încât economia să facă faţă presiunilor concurenţiale de pe piaţa unică europeană şi să nu inducă şocuri în sectorul nominal prin eventualele dezechilibre macroeconomice. Atingerea unui astfel de obiectiv presupune atât reducerea diferenţelor structurale dintre regiuni cât şi coeziunea socială şi teritorială. Sustenabilitatea creşterii economice dar şi a apropierii dintre ţările UE presupun atât reforme structurale cât mai ales o contribuţie echilibrată a regiunilor şi subregiunilor la dezvoltarea naţională, în funcţie de potenţialul acestora.

Evoluţia economică diferenţiată din perioada de criză dar, mai ales, în anii de recuperare a pierderilor, a reprezentat o trăsătură şi a evoluţiei economice teritoriale. În România, unde disparităţile regionale sunt mai accentuate, efectele crizei au fost chiar mai pronunţate. Fenomenul este mult mai vizibil în interiorul regiunilor, potenţialul şi structura economică a judeţelor mai dezvoltate permiţând o mai rapidă ieşire din criză.

În acest context, lucrarea îşi propune o analiză a evoluţiei procesului de convergenţă reală la nivelul regiunilor României în perioada de post-aderare la Uniunea Europeană, prin intermediul unor indicatori specifici (evoluţia PIB pe locuitor, indici de disparitate, indici de concentrare a activităţii economice, analiză shift-share). Rezultatele indică o îmbunătăţire semnificativă a convergenţei reale la nivel naţional, dar şi evoluţii divergente ale regiunilor, marcate de adâncirea decalajelor de dezvoltare inter şi, mai ales, intra-regionale, procesul de creştere economică suferind din punct de vedere al sustenabilităţii teritoriale. Adâncirea concentrării măreşte vulnerabilitatea viitoare, şi din acest motiv orice dificultăţi ce se vor manifesta la nivelul economiilor judeţelor dezvoltate nu vor fi putea fi contrabalansate de o creştere economică suplimentară în judeţele mai puţin dezvoltate. De aceea, pentru România este esenţial ca sprijinul european pentru coeziunea economico-socială să fie direcţionat cu prioritate către zonele mai puţin dezvoltate, pentru că teoria "polilor de creştere" se pare că nu şi-a dovedit valabilitatea în economia românească.

Cuvinte cheie: *convergenţa reală, piaţa unică europeană, PIB pe locuitor, indici de disparitate, indici de concentrare a activităţii economice, analiză shift-share.*

One of the essential conditions for Romania's transition to the Euro is the real convergence with the European economy, so that the country's economy copes with the competitive pressures of the single European market and does not generate shocks in the nominal sector by any macroeconomic imbalances. Achieving this objective involves both reducing structural differences between regions and the social and territorial cohesion. The sustainability of economic growth and of approaching among the EU countries involves both structural reforms and, especially, a balanced contribution of regions and sub-regions to the national development, as according to their potential.

The differentiated economic dynamics during the crisis, and, especially, in the years to recover the losses, was also a feature of territorial economic development. In Romania, where regional disparities are deeper, the effects of the crisis were even more pronounced. The phenomenon is more visible within the regions, where the potential and economic structure of the most developed counties allow for a faster exit out of the crisis.

In this context, this paper aims at analyzing the evolution of real convergence in the regions of Romania in the period of post-accession to the European Union, through specific indicators (evolution of GDP per capita, disparity indices, indices of concentration of economic activity, shift-share analysis). The results show a significant improvement of real convergence at national level and divergent developments of the regions, marked by widening inter- and, especially, intra-regional development gaps, the economic growth process suffering in terms of territorial sustainability. Deepening of concentration increases the future vulnerability, and, therefore, any difficulties that will manifest in the economies of the developed counties will not be offset by additional growth in the less developed counties. Therefore, for Romania it is essential that the European support for economic and social cohesion to be directed primarily towards the less developed areas, because, apparently, the theory of "growth poles" was not proven valid in the Romanian economy.

Key words: *real convergence, single european market, GDP per capita, disparity indices, indices of concentration of economic activity, shift-share analysis.*

Introduction

In the European Union, the problem of economic convergence between countries and regions is linked to the main

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objectives of Union, stated in the Rome Treaty stipulated that “the harmonious development of the economic activities” and “the continuous and balanced expansion”. The Maastricht Treaty includes three economic objectives concerning convergence: (1) harmonious and sustainable development of the economic activities; (2) high level of convergence of the economic performance; (3) economic and social cohesion and solidarity of the member states (Neagu, 2008).

The approach of real convergence in literature is not new, and almost all the great economists that studied the long-term economic growth have also incidentally or directly addressed issues pertaining to real convergence, such as economic development and the dynamics of complex economic sectors with high economic and social impacts, and the favoring/unfavoring institutions and economic mechanisms (market structure, distribution of economic results as form of economic incentives). The systematic study of real convergence started with the development of neoclassical economic growth models and their econometric applications, and also in connection with the applicative research on European integration and the related decision-making mechanisms and institutions (Iancu, 2008).

In fact, the real convergence in the European Union deals with structures, flows and behaviors related to the production, distribution and consumption of goods and services, which by combination have to maximize the performances of the EU Single Market. Although from such a perspective the real convergence process is endogenous to each national entity, it also has a globalizing dimension, especially pertaining to its aim, namely to harmonize the area economies in a single competitive and efficient whole. Thus, the convergence of regional economies within the framework of the national economies is the first and probably the most important process for improving the European cohesion, and the competitiveness and efficiency of the European Single Market.

The general objective of real convergence overlaps and concomitantly requires territorial convergence, and the reform of European cohesion policy recognizes this by aiming at maximizing the regions’ contribution to economic growth by adapting the community assistance to the development level of each region and directing the resources towards the main growth sectors. However, the financial support for territorial convergence and real convergence in the current (2014-2020) budgetary framework has also requirements in contrast to the overall very generous objectives, such as the commitment towards investment allocation efficiency, which may redirect the cohesion support towards the more developed areas, with higher capitalization potential, and the emphasis on urban policies, which, on the one side, disadvantages the less developed rural regions, such as many of the Romanian ones, and on the other side, may not prove as fully efficient, since the regional economic growth propagation by the urban growth poles has not been fully verified in practice. Such a policy might favor and in fact it has favored the territorial concentration of economic growth and not the convergence – a process also deepened by the economic crisis, which has disrupted the growth mechanisms, differently impacting on countries and regions in relation to their response capabilities (Iordan, Ghizdeanu and Tapu, 2014, Chilian, 2013).

Measuring the real convergence

Measuring economic convergence is a complex issue, because there are several definitions of convergence, which correspond to different concepts of convergence. Therefore, we should have a clear view of what is measured when using convergence indices, at the same time acknowledging that there is no convergence measure capable of capturing all the relevant aspects of a convergence process (Neagu, 2013). When considering real convergence (especially at national level), the main factors that were analyzed were the differences in GDP per capita in purchasing power parity (PPP), in labor productivity and in price levels, and many studies have concentrated on the distribution of income per capita real convergence (Miron, Tatomir and Alexe, 2013).

In literature, the most used concepts refer to the *beta* and *sigma convergence*. The beta-convergence refers to a process in which poor regions grow faster than rich ones and thus catch upon them. The concept is directly related to the neo-classical growth theory, whose one key assumption is that factors of production, in particular capital, are subject to diminishing returns. When all economies are assumed to converge towards the same steady-state (in terms of GDP per head and growth rates), the beta-convergence is said to be *absolute*, but the steady-state may depend on features specific to each economy (factor endowment or institutions), in which case convergence will still take place, but not necessarily at the same long-run levels. In such a case, the beta-convergence is said to be *conditional* (Neagu, 2013).

Despite the literature’s stress on beta-convergence, economists have acknowledged that it was not a sufficient condition for convergence, and economists such as Quah (1993) and Friedman (1992) suggested that *sigma-convergence* was of greater interest since it spoke directly as to whether the distribution of income across economies has become more equitable, because it simply referred to a reduction of disparities among regions in time. The beta- and sigma-convergence are two concepts closely related. Formally, the beta-convergence is necessary but not sufficient for sigma-convergence. Economies can converge towards one another but random shocks may push them apart or, in the case of conditional beta-convergence, economies can converge towards different steady-states (Neagu, 2013).

There are many indicators that can be used to asses real convergence, some more general, such as the GDP growth rate, GDP per capita, exports to GDP, foreign direct investments intensity, stock market capitalization, unemployment rate, labor cost and R&D expenditures made by private sector, etc., others more specific, particularly related to the beta or sigma-convergence, such as the coefficient of variation, the Lorenz curve, the Gini index, the Atkinson index, the Theil index and the Mean Logarithmic Deviation, the Robin Hood index, etc. (Albu, 2013; Iancu, 2009; Miron, Tatomir and Alexe, 2013; Neagu, 2013). Especially in the European Union, the convergence both of national economies and of the EU regions has been extensively investigated, in a macroeconomic setting as well as related to the concept of *cohesion* (economic, social and territorial (Sala-i-Martin, 1996; Monfort, 2008; European Commission, 2010).

In the case of Romania, most of the studies have approached the real convergence of the national economy towards the EU economy as whole and particular groups of Member States (Albu, 2012; Miron, Dima and Păun, 2009). However, we may also find studies on the real convergence of the Romanian regions, based on specific indicators or in the context of a broader approach of cohesion (for instance, Neagu, 2013, Iordan, Ghizdeanu and Tapu, 2014, Iordan *et al*., 2014, Chilian, 2013). Their main conclusion was, generally, that over the last years Romania has experienced a process of economic divergence, of widening of inequalities between regions and counties, deepened by the economic crisis.

A concept much related to real convergence is that of *structural convergence* and the literature on structural convergence and especially on economic structure convergence and the dynamics of its components has been developing in the last years in the light of its influence on the business cycle synchronization and as a benchmark for assessing the stage of economic development (Miron, Tatomir and Alexe, 2013, Iordan, Ghizdeanu and Tapu, 2014, Iordan and Chilian, 2014). However, fewer studies approached the relationship between real and structural convergence, with results pointing towards an alignment of sectoral similarity and converge in terms of per capita income (see Miron, Tatomir and Alexe, 2013, for details). Different indices of real and structural convergence/divergence and their combinations were used to such purposes.

In the following, we present a brief analysis of the real convergence process in the Romanian regions and countries during the post-accession period, based on the GDP per capita at PPP. We also present an estimate of the relationship between the real and structural convergence, based on a real convergence index (namely GDP per capita at PPP) and a structural convergence index (computed on the basis of several *structural coefficients*, as according to the methodology of Dobrescu, 2011 and Iordan and Chilian, 2014).

Territorial disparities in the economic growth of Romania

The *GDP per capita at PPP* in Romania as compared to the EU28 average has increased during the post-accession period up to 54% in 2013, but at a slower pace over the interval 2008-2011, because of the economic crisis. By regions, it varied between 34% of the EU average in the Nord-Est Region in 2013 and 131% in the Bucuresti-Ilfov Region (Table 1). The similar stagnating trend during the crisis period is revealed in the case of most regions, while some more developed ones recorded visible fluctuations (Nord-Vest, Centru and, especially, Bucuresti-Ilfov, which experienced a prolonged growth instability). *The regional gap index*[1] revealed that during the interval 2007-2013 the economic development gaps in the Romanian regions have generally maintained, and that the most developed regions were the ones that benefitted most from the EU accession (Table 2). The crisis has also induced significant fluctuations, and te post-crisis period revealed both a declining trend of the inter-regional gaps and a slowdown of growth in some more developed regions (Bucuresti-Ilfov, Nord-Vest and Vest). All these reveal that the improvement of real national convergence was mostly due to the convergence dynamics in the Bucuresti-Ilfov region and to some regional growth poles, while the regional convergence showed different speeds. The regions with higher economic growth potential experienced a faster convergence and vice-versa: the least developed region, Nord-Est, has improved its convergence towards the EU28 average by only 8 percentage points during the post-accession period, while more developed regions, such as Vest or Bucuresti-Ilfov improved their convergence by 12 and 33 percentage points, respectively.

Table 1. Dynamics of regional GDP per capita in Romania (PPP, percentage of the EU28 average)

	2006	2007	2008	2009	2010	2011	2012	2013
Romania	**38**	**42**	**48**	**49**	**50**	**51**	**53**	**54**
Macroregiunea unu	36	41	44	46	46	46	48	49
Nord-Vest	36	40	43	45	44	44	46	47
Centru	37	41	46	47	48	47	50	51
Macroregiunea doi	28	29	33	34	35	35	38	39
Nord-Est	24	26	29	30	30	30	33	34
Sud-Est	32	34	38	39	41	41	44	45
Macroregiunea trei	53	59	73	72	74	79	77	79
Sud - Muntenia	31	34	39	42	41	42	40	41
Bucuresti - Ilfov	86	98	123	116	121	132	126	131
Macroregiunea patru	36	39	44	45	46	47	48	50
Sud-Vest Oltenia	30	32	36	37	38	39	40	41
Vest	43	47	54	54	56	57	58	59

Source: Data from Eurostat.

[1] Computed in relation to the national average.

Table 2. The inter-regional gap index in Romania (percentage of the national average)

	2007	2008	2009	2010	2011	2012	2013
Romania	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Nord-Vest	95.4	89.3	91.2	89.0	85.9	87.2	86.7
Centru	99.3	94.4	96.8	95.4	92.9	95.4	94.3
Nord-Est	62.9	61.1	62.5	60.7	58.6	62.5	62.3
Sud-Est	80.9	78.6	79.8	81.2	80.5	84.1	83.3
Sud - Muntenia	80.1	80.8	84.7	82.3	81.6	75.8	75.8
Bucuresti - Ilfov	235.6	254.6	237.7	243.7	267.6	238.0	240.5
Sud-Vest Oltenia	76.1	73.8	75.5	76.0	75.7	76.1	75.5
Vest	112.1	110.9	110.8	112.5	110.6	108.9	108.9

Source: Data from National Commission of Prognosis, Bucharest, Romania.

The inter-county development gaps[1] revealed an increase in the territorial concentration of economic growth over the period 2007-2013, including in some more developed regions as Vest, Nord-Vest and Centru, also revealing significant fluctuations during the crisis (Table 3).

Table 3. The inter-county development gaps in Romania

	2007	2008	2009	2010	2011	2012	2013
Nord-Vest	4.8	4.7	4.7	4.8	5.1	5.2	5.1
Centru	4.0	4.1	4.2	4.7	4.3	4.7	4.6
Nord-Est	3.3	3.0	3.1	3.4	3.3	3.0	3.1
Sud-Est	5.1	4.7	4.9	4.7	4.3	5.2	4.9
Sud - Muntenia	5.8	5.5	5.2	3.8	3.9	4.2	4.1
Bucuresti - Ilfov	9.3	9.5	8.8	9.5	9.5	8.0	8.1
Sud-Vest Oltenia	2.8	3.1	3.1	3.1	3.2	3.2	3.5
Vest	3.5	4.0	3.7	3.9	4.2	3.8	3.9

Source: Data from National Commission of Prognosis, Bucharest, Romania.

This suggests that the most developed counties benefitted most by the accession to the European Union, also better absorbing the shock of economic crisis, despite the significant initial decline in the economic activity. Such a trend also calls into question the effectiveness of the support policies directed at certain „growth poles” or cities, able to induce the propagation of economic growth. In the less developed countries such as Romania or Bulgaria the state of infrastructure and the low prospects for better jobs makes difficult the mobility of all production factors and connected businesses able to serve such growth poles and irradiate development also in the neighbor areas.

Similar situations of deepening gaps between the economic „core” and „perifery” are also revealed in the rest of the new Member States (and also in some of the EU15 countries), showing that the regions adapt differently to a new economic environment, and that the regions which have previously recorded good performances have strengthened their positions, while the regions with lower performances stagnate, at best, on a level of slow economic growth (Chilian, 2013). Such a phenomenon may be illustrated by the *dynamics of GDP per capita at NUTS3 level*, which reveals significant increases in countries such as Bulgaria, the Czech Republic, Ireland, Greece, France, Italy, Hungary, Romania, Sweden and the United Kingdom (Figure 1).

[1] Computed as ratio of the GDP per capita of the most developed county to the least developed one in each region.

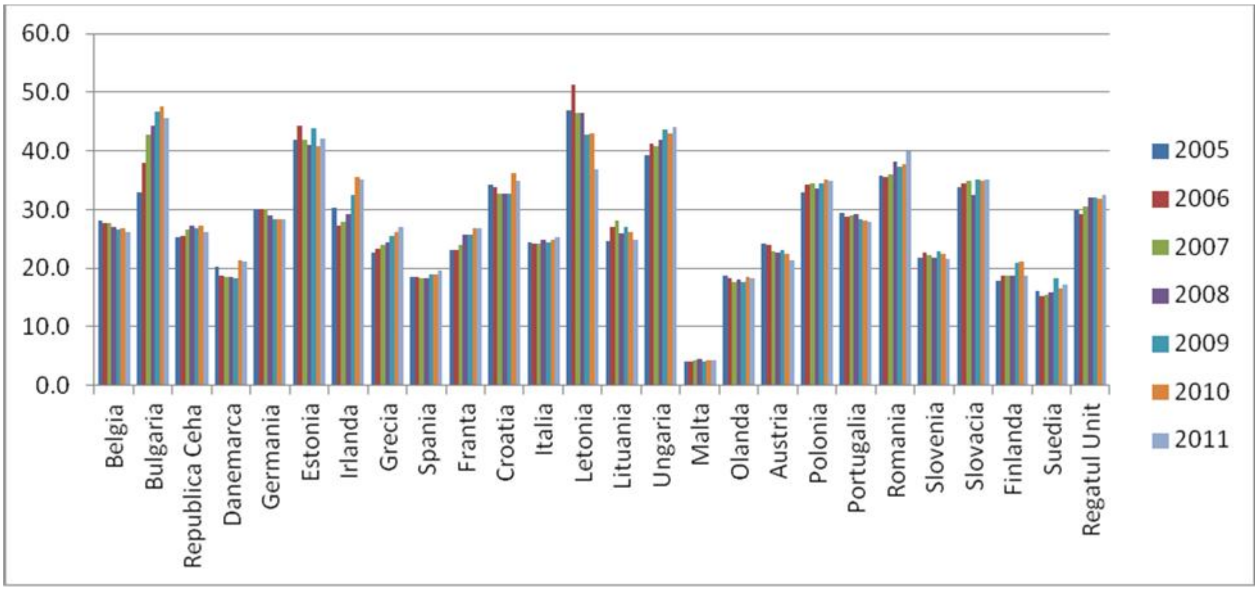

Figure 1. Dynamics of regional GDP per capita at NUTS3 level in the EU28 countries during the period 2005-2011

Source: Data from Eurostat.

Finally, as stated above, we present an estimate of the relationship between the real and structural convergence, based on a real convergence index, RCI (GDP per capita at PPP) and a structural convergence index, SCI (computed on the basis of several *structural coefficients*, as according to the methodology of Dobrescu, 2011 and Iordan and Chilian, 2014). The results are summarized in a matrix of RCI and SCI, with four performance quadrants, as follows (as in Miron, Tatomir and Alexe, 2013 - Table 4):

1st Quadrant – Low Performance – includes counties and regions with both RCI and SCI lower than 50 points out of 100;
2nd Quadrant – Medium-Structural Performance **–** includes counties and regions with RCI higher than 50 points, but with SCI lower than 50;
3rd Quadrant – High Performance **–** includes counties and regions with both RCI and SCI higher than 50 points out of 100;
4th Quadrant – Medium-Real Performance **–** includes counties and regions with SCI higher than 50 points, but RCI lower than 50 points.

Table 4. The real-structural convergence matrix of the Romanian counties and regions in 2010

RCI												
100												**BUC-IF,** BUC
90												
80												
70												
60												
50					TM	IF						
40												
30				SB		CT		BV	CJ			
20	AG, PH		**VE,** GJ, AR	**CE**	BH, AB							
10	**SUM**	**SVO,** DB	**SE,** CV, BR	BN, SM, HR, MS, GL, DJ	**NV,** SJ, BZ, GR	TL, IL, HD	MM, BC, CL, VL, CS		IS			
0	OT		TR		BT, VS	**NE,** NT, VN, MH	SV					
	0	10	20	30	40	50	60	70	80	90	100	**SCI**

Source: Authors' computations on the basis of Eurostat data.

The results show that apart from the Bucharest region, most of the counties and regions are placed in the quadrants of low and medium-real performance, while the more developed counties are also advancing towards medium-structural performance (Timis, Ilfov, Brasov, Cluj, Constanta and Sibiu and the Centru region). The opposite is also valid; counties with more balanced economic structures register low levels of development (most notably, Iasi and Suceava, and the entire Nord-Est region) calling again into question the real strength and growth irradiation power of the local growth poles and the possible effectiveness of the connected policies.

Conclusions

The process of real convergence is complex and strongly related to other economic domains, such as growth theories and cohesion. Different models and indicators were developed to assess it, especially in the European Union, but also in other developed economies (most notably in the USA). As regards the regional real convergence, its assessment was mostly performed in connection with the evaluation of regional development and cohesion policies, and with the accession to the EU of the new Member States and regions.

In Romania, one may notice an improvement of the real national convergence during the post-accession period, 2007-2013, which was mostly due to the convergence dynamics in the Bucuresti-Ilfov region and to some regional growth poles. The regional convergence showed different speeds, with regions with higher economic growth potential experiencing a faster convergence and vice-versa.

The most developed regions and counties benefitted most by the accession to the European Union, also better absorbing the shock of economic crisis, despite the significant initial decline in the economic activity. Such a trend calls into question the effectiveness of the support policies directed at certain „growth poles” or cities, able to induce the propagation of economic growth towards the neigbor areas.

The real convergence is generally aligned with the structural convergence in the Romanian counties and regions, the more developed counties also advancing towards medium-structural performance and higher real convergence. However, the presence of counties with more balanced economic structures but low real convergence in terms of GDP per capita signals untapped local growth potentials and calls again into question the real strength and growth irradiation power of the local growth poles and the possible effectiveness of the connected policies. Further research is necessary in this area and will be conducted by the authors in the near future.

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