

Development Patterns in the EU and Romanian Regions - Convergence and Resilience

**Marioara IORDAN, Ph.D., Senior Researcher I, Institute for Economic Forecasting,
Bucharest, Romania, miordan@ipe.ro**

**Mihaela-Nona CHILIAN, Ph.D., Senior Researcher II, Institute for Economic Forecasting,
Bucharest, Romania, cnona@ipe.ro**

**Carmen Beatrice PAUNA, Ph.D., Senior Researcher I, Institute for Economic Forecasting,
Bucharest, Romania, carmenbpauna@gmail.com**

Abstract

The current European Union and international context is increasingly stressing the process of EU integration to the point of threatening the existence of the EU itself. In such circumstances, the EU and Member States regional policies goal of how to generate a process of convergence conducive to benefits to all the EU citizens and not to a mere quantitative convergence of the regional income per capita is increasingly linked to other areas of economic and social development and policy, such as the resilience of national and regional economies to shocks, sustainable development and climate change mitigation, securing an adequate balance between globalization and local development, etc. In the economic literature, the theories of convergence and divergence examine the reasons for diminishing or increasing disparities between the rich and the poor regions, while the economic resilience of regions/locations deals with their capability to record economic growth accompanied by social inclusion, environment protection and rapid recovery after shocks. Though differently, both concepts may reveal both the long-term adaptability and the capability of the social and economic milieu and government institutions of a region/location to respond to short-term pressures and recover and resume development after different shocks.

In such a context, based on the concept of real convergence and resilience, the paper presents an analysis of these processes in the EU (more precisely, in the New Member States) and Romanian regions, by using a joint set of indicators chosen as to assess the two processes together.

The results reveal different convergence and resilience patterns both in the EU and Romanian regions, the regional economies adapting differently to the challenging EU and international economic environment, generally conditional on their development level. However, especially regarding the productivity patterns, the situation seems worrisome for the laggard regions, both more or less developed, including most of the Romanian regions. While being in line with the findings of other studies on the economic development of the Member States regions, the results also reveal certain peculiarities of the ongoing development processes in the EU and Romanian regional economies. All these call both for adequate implementation of the existing national general and development policies, as well as of the EU regional policy, and for finding new policy measures and actions to deal with the existing and future economic and social challenges and threats.

Keywords: real convergence, regional resilience, convergence and resilience indicators, EU and Romanian regions, regional policy

JEL Classification: O47, R11, R12

Introduction

The current European Union and international context is increasingly stressing the process of EU integration to the point of threatening the existence of the EU itself. In such circumstances, the EU and Member States regional policies goal of how to generate a process of convergence conducive to benefits to all the EU citizens and not to a mere quantitative convergence of the regional income per capita is increasingly linked to other areas of economic and social development and policy, such as the resilience of national and regional economies to shocks, sustainable development and climate change mitigation, securing an adequate balance between globalization and local development, etc. In the economic literature, the theories of convergence and divergence examine the reasons for diminishing or increasing disparities between the rich and the poor regions, while the economic resilience of regions/locations deals with their capability to record economic growth accompanied by social inclusion, environment protection and rapid recovery after shocks. Though differently, both concepts may reveal both the long-term adaptability and the capability of the social and economic milieu and government institutions of a region/location to respond to short-term pressures and recover and resume development after different shocks.

In such a context, based on the concept of real convergence and resilience, the paper presents an analysis of these processes in the EU (more precisely, in the New Member States) and Romanian regions, by using a joint set of indicators chosen as to assess the two processes together. The period under analysis (2000-2013/2015 – depending on data availability) covers different development phases of the NMS and their regions: pre-accession and early accession (except for Croatia, 2000-2007), crisis (2008-2010) and post-crisis (2011-2013/2015).

Regional Convergence and Resilience - Definition and Theoretical Issues

In the European Union, the issue of **economic convergence** among the Member States and among their regions is linked with the main objective of the Union. The Maastricht Treaty includes three economic objectives concerning convergence: the harmonious and sustainable development of economic activities; the high performance level of economic activities and the economic and social cohesion and solidarity of the Member States. The *economic and social cohesion at regional level* is a fundamental objective of the European Union (EU), especially reinforced in the Treaty of the European Union, which called for balanced development, as well as economic and social cohesion. The need for policies to promote both regional development and reduction in the economic disparities across regions has remarkably increased after the latest waves of enlargement (Peiro-Palomino, 2016); these objectives also lie at the heart of Europe 2020 strategy, and are key themes of “inclusive growth” (European Commission 2010, Rodrigues-Pose and Tselios, 2015). In particular, the objective of **regional convergence** aims at reducing regional disparities by helping those regions whose income per capita is below 90% of the EU-27(28) average, and a phase of progressive regional convergence was noticed between 2000 and 2008 in the EU regions: the regional disparities in GDP per capita were shrinking, largely due to the positive dynamics of the regions in the New Member States of the European Union, but the convergence trend that came to a halt due to the economic crisis of 2008, and then reverted towards divergence in 2010 and 2011 (Crescenzi *et al.*, 2016).

The **economic convergence** refers usually to the *process of reducing the economic, development or socio-economic gaps of the less developed/emerging countries/regions/territories towards the developed countries, regions or territories*. Economic growth theories (neoclassical - exogenous growth - and endogenous growth) and economic integration theories are often associated with the processes of *convergence or divergence* (Barro and Sala-i-Martin, 1992; Capello, 2007; Quineti *et al.*, 2011). Different definitions of convergence are found in the literature, which correspond to different concepts related to convergence, two *types of convergence* being identified in the *neoclassical growth theories*: 1) *absolute convergence* (also known as the *beta convergence*), which implies that poorer countries or regions tend to grow faster per capita than the rich ones, and 2) *conditional convergence* (the *sigma convergence*), which implies that an economy grows faster the further it is from its steady state value, regardless if it is poor or rich. Though contested in the literature on economic growth, groups of economies (countries or regions) that present homogeneous economic growth patterns and which converge towards a common steady state, called *convergence clubs*, were identified and analyzed (Quah, 1996; Lopez-Bazo *et al.*, 1999; Ertur *et al.*, 2006; Mora, 2008).

A large body of devoted literature has suggested the presence of a *polarization pattern* in Europe, including two differentiated groups of regions (or *convergence clubs*): one of relatively poor regions, and the other of regions evolving around the mean income. Moreover, such studies also revealed that such a polarization pattern has been a persistent trend especially in the Western Europe over the last three decades (e.g. Quah, 1996), making the successful implementation of policies aimed at reducing these disparities essential for achieving the targets of cohesion policies (Peiro-Palomino, 2016). Moreover, the EU as a whole is accommodating the integration of the New Member States and their regions, which at the moment of accession were economies in transition with levels of income per capita far below the EU average (Chilian, 2013; Peiro-Palomino, 2016). Last but not least, to all these add up the effects of the global financial and economic crisis, which might be of interest from the convergence point of view, since the recession has disrupted the growth mechanisms has had an uneven impact across regions, affecting countries and regions differently depending on their responsiveness and reaction (Jordan and Chilian, 2015; Peiro-Palomino, 2016).

Real convergence is a process endogenous to each national entity, and the convergence of regions within the Member States is very important for improving European cohesion and the competitiveness and efficiency of the Single Market. Currently, the Europe 2020 Strategy that aims at achieving smart, sustainable and inclusive growth stresses the need for reducing regional disparities, stating that “Regional development and investment also support inclusive growth by helping disparities among regions diminish and making sure that the benefits of growth reach all corners of the EU” (European Commission, 2012). Real convergence was one of the major objectives of the EU cohesion policy in the period 2007-2013 and it has covered the poorest EU regions, defined as convergence regions. The key objective in these regions, eligible for the cohesion policy, involved the stimulation of growth potential to maintain and achieve high growth rates in such regions (Jozwik and Ponikowski, 2014). The overall objective of the EU regarding real convergence also overlaps with and requires the *territorial convergence*. Sustainability of economic growth and closing the development gaps among the EU countries involve both structural reforms and, especially, a balanced contribution to the national development of regions and sub-regions, according to their potential, and the cohesion policy reform aims to ensure maximization of regional contribution to growth by adapting the

Community assistance to the development of each region and by channeling resources to the key sectors for growth (Iordan and Chilian, 2017).

The process of real convergence of the EU Member States and their regions has been extensively studied, either in a macroeconomic context and considering its relationship with the nominal convergence, or in connection with the concept of *cohesion* (economic, social and territorial - see, for instance, Sala-i -Martin, 1996; Monfort, 2008; European Commission, 2010a; Halmai and Vásáry, 2011; Quineti *et al.*, 2011; Albu, 2012). The main indicators used to analyze real convergence refer to the differences in *GDP per capita at purchasing power parity* and in *income per capita*, *differences in labor productivity* and in the *price level* (e.g., Tselios 2009; Miron, Tatomir and Alexe, 2013; Iordan, Ghizdeanu and Tapu, 2014; Chilian *et al.*, 2016). The literature highlights several indicators that can be used to assess the real convergence process, from *broadier indicators* (GDP growth rate, GDP per capita, the ratio of exports to GDP, the intensity of foreign investment, stock market capitalization, unemployment rates, labor costs and R&D expenditures, etc.) to *specific indicators and modeling methods* used to assess the beta and sigma convergence, the convergence clubs, and the concentration and entropy of the process (coefficient of variation, Lorenz curve, Gini index, Atkinson index, Theil index, average logarithmic deviation, Robin Hood index, Markov chains, panel regressions, non-parametric methods, etc. - see Albu, 2013; Iancu, 2009; Răileanu Szeles and Marinescu, 2010; Miron, Tatomir and Alexe, 2013; Simionescu, 2014; Chilian *et al.*, 2016).

The results of existing empirical studies on the EU provide mixed evidence. Some studies have generally revealed the presence of absolute convergence between the EU member states and/or their regions, but the pattern and speed of convergence were found to vary sharply across different sub-periods and regional subsets (including periods of divergence), with peculiarities for the EU15 countries and the New Member States, and also within these groups of countries (Landesmann and Romisch, 2006; Carrington, 2006; Ezcurra *et al.*, 2007a; Melchior, 2008; Enflo, 2010; Jozwik and Ponikowski, 2014; Dobrinsky and Havlik, 2014). Iordan and Chilian (2016) have also found mixed evidence regarding the real convergence in the EU regions, with both peculiarities and similarities for the regions of the EU15 and NMS13 countries. Both a single highly developed region, usually the region where the Capital of the country is located, has registered the best performance in terms of real convergence and the presence of several well-performing “regional growth engines” (in Italy, the Netherlands, Spain and Finland, but in none of the NMS13) were noticed. Also, in the case of the most developed regions from the EU15 countries (but also in some NMS13 countries) the very high level of GDP per capita and its growth trend up and away from the EU average, makes the “weak” performance in terms of real convergence as usually defined in literature (as catching-up towards the average) a logical consequence. This might call for a redefinition of the real convergence as, for instance, catching-up not towards the average, but towards the highest regional GDP per capita level, which may dramatically expand the growth gaps and redraw the map of convergence/diverge clubs identified so far among the EU regions (Iordan and Chilian, 2016).

The evidence is also mixed regarding the relationship of convergence in income per capita and the *social convergence*. Some studies (Tselios, 2009) suggested the presence of a conditional convergence in income per capita and that of an unconditional convergence in income inequality in many regions of the EU, while other studies indicated that the weak or even the lack of economic convergence is not matched by a similar absence of social convergence, as the welfare levels have converged significantly across European regions, although the regions with high

social welfare levels may remain advantaged in welfare terms while the low social welfare regions may continue to lag behind (Rodriguez-Pose and Tselios, 2015).

In the particular case of Romania, different studies assessed the growth process at regional and sub-regional (county) level, especially in connection with the process of GDP convergence towards the EU national and regional average levels (see, for instance, Iordan, Ghizdeanu and Tapu; 2014 Iordan and Chilian, 2014; Chilian, Iordan and Pauna, 2016). The intra-regional gaps in terms of GDP per capita in Romania revealed an increase in the territorial concentration of economic growth, especially during the post-accession period, including in the more developed regions (Nord-Vest, Centru and Vest), and significant oscillations during the period of crisis (Chilian, Iordan and Pauna, 2016). Such findings suggest that similar to the more developed regions (Iordan *et al.*, 2015) also the more developed counties have benefitted most from the EU accession, and were more able to absorb the shock of economic crisis and to return to a path of economic growth, signaling greater resilience and adaptability. However, such developments are not specific only to Romania, but they are also found in other newer or older EU Member States (Antonescu, 2012; Chilian, 2013; Ghizdeanu *et al.*, 2015).

To the already complex domain of economic growth and development, the economics of sustainability and complexity has added a new component - the **economic resilience**, which means identifying ways and means of solving problems of increasing resistance, the ability to stop or recover the negative effects of external shocks, which lately became a fundamental feature at micro and macro level. Resilience deals with reducing the probability of failure or economic risks, assuming combined analytical and predictive approaches, ex-post and ex-ante (Zaman, 2014), being broadly described as the *ability of an economy to recover from or adjust to adverse exogenous shocks and to benefit from positive shocks* (Briguglio *et al.*, 2009).

A universally accepted definition of **economic resilience** is not found in the literature, but there are differences of opinion among experts regarding the content, specificity and area of coverage. Several *definitions of regional resilience* may be identified in literature, but in principle it is defined as *the ability of a region to record economic success accompanied by social inclusion, to protect environment and ability to overcome (fast) the shocks* (Bristow, 2010), by reconfiguring its structure (firms, industries, technologies and institutions – see Martin, 2012) or as the ability of a regional economy to maintain or return to a pre-existing state (typically assumed to be an equilibrium state) in the presence of some type of exogenous (i.e., externally generated) shock. Thus, resilience is typically concerned with *the extent to which a regional or national economy is able to return to its previous level and/or growth rate of output, employment, or population after experiencing an external shock* (Hill *et al.*, 2012).

Broadly, two meanings of the notion, not necessarily interfering, have been identified (Zaman, 2014): one based on the analysis of *economic equilibrium* that concerns the ability of an economic system to return to a pre-existing state in a unique balance system, and another one based on the *theory of complex adaptive systems* that refers to the ability of a system to adapt and to change in response (reaction) to sudden pressures, shocks and negative impacts. In both meanings, two aspects (coordinates) are important: a) the ability to return to a previous state of equilibrium (optimal) without the system changing its fundamental structure (or, as according to the evolutionary perspective, the strong rooting of resilience of regions in their past legacy, as embodied in their industrial, network and institutional structures – see Boschma, 2014) and b) responsiveness, the system response to external or internal shocks without returning to the previous state, but with recovery and stabilization in a new equilibrium (or the capacity of a region to develop new growth paths in the evolutionary approach - Boschma, 2014). The shocks

to the regional socio-economic systems may be of different kinds, such as shocks caused by downturns in the national economy, shocks caused by downturns in particular industries that constitute an important component of the region's export base (industry shocks), and other external shocks (e.g., natural disasters). All these are connected to the ability to withstand or respond adequately to external pressures (the so-called *short-term resilience*) and long-term adaptability (or *learning ability*) accompanied by the capacity of governments to engage in actions and processes for implementing appropriate policies and strategies and social learning (the so-called *long-term resilience*) (Iordan and Chilian, 2017).

At local level, the phenomenon of **resilience of regions/locations**, as a possible response to the uncertainty and to various rapid and volatile changes in the social and economic environment began to capture the attention of both researchers and policy makers. The issue of regional "resilience" is, basically, quite old: namely why some regions manage to overcome short or long term economic adversity and maintain the standard of living of their citizens and others fail - but is not limited to regional sensitivity to economic shocks or other shocks, which induce serious economic and social problems (for instance, natural disasters – see Christopherson *et al.*, 2010). Moreover, a region with high resilience does not only achieves short-term economic success, but it is also able to maintain it on long term, despite (or perhaps in response to) the continuous pressures towards adaptation induced by changes in the international competition, in the consumer behavior, etc. For these reasons, resilience is a matter of interest regarding the political discourse and the governance capacity and successful implementation of policies and strategies at regional level (Iordan and Chilian, 2017).

Increasing interest in the evolutionary approach to regional resilience was more recently revealed (see, for instance, Christopherson *et al.* 2010; Simmie and Martin 2010; Boschma, 2014), which is focused more on the long-term evolution of regions and their ability to adapt and reconfigure their industrial, technological and institutional structures in an evolving and dynamic economic system. In such a framework, resilience seen as the capacity of a region to sustain long-term development is regarded as important as the capacity of the same region to respond positively to short-term shocks (Boschma, 2014). More recently, interest in regional vulnerability to shocks and their trajectories to overcome and return to growth increased with the onset of the global economic crisis in 2008; a number of European studies highlighting the differences between the different regions of Europe regarding the size of recession and the subsequent economic recovery (Martin, 2010; Groot *et al.*, 2011; Brakman *et al.*, 2014; Bristow, 2014).

As regards measuring the **regional economic resilience**, two approaches are commonly used (Han and Goetz, 2015): one that examines regional properties or characteristics that reflect economic resilience, such as macroeconomic stability, microeconomic market efficiency, governance, and social development (Briguglio *et al.*, 2006); the degree to which resources are owned locally, the organizational capacity of residents, and the local capacity of institutions to adapt and reorganize in response to a shock; local knowledge network structure; income equality, economic diversification, regional affordability, and business environment (Iordan *et al.*, 2015), and another that analyzes changes to a region's representative measure in response to a shock, by using, for instance correlations between unemployment and gross domestic product (GDP), population, share of manufacturing, construction, finance, and public infrastructure investment (Davies, 2011; Han and Goetz, 2015), structural composition of employment change across industries (Martin, 2012), regional employment change rates during recessionary and recovery periods (Martin, 2012), employment and employees' dynamics during different periods (Iordan *et al.*, 2016).

The composition and the size of the population of a region are considered among the most important determinants of regional growth, and the regions that have a more skilled population or work force do perform better while, by and large, the regions that are more urbanized also outperform less urbanized regions. The possible relevance of the degree and composition of urbanization for resilience is to be found in the fact that urbanization also signals the degree to which cities or regions are able to adjust to shocks (Martin *et al.*, 2013). Findings on 255 EU NUTS 2 show that the EU regions with a relative large share of their population in commuting areas are relatively resilient, while, in contrast, the regions with a large share of people living in rural areas or small cities face more difficulties in absorbing shocks (Brakman *et al.*, 2014).

As mentioned above, the resilience of regions in relation to the impact of the 2008 economic crisis became more recently of high interest to the economic specialists and practitioners (Martin and Sunley, 2014; Martin *et al.*, 2015), and the studies found, in general, several categories of resilient regions among the EU regions (Bristow, 2014): *resistant* (not adversely affected by the economic crisis – 12% of the NUTS2 regions, 16% of the NUTS3 regions), *recovering* (adversely affected by the economic crisis but have recovered to former peak - 23% of the NUTS2 regions, 24% of the NUTS3 regions), *revealing upturn* (adversely affected by the economic crisis, but experiencing upturn and yet not recovered to their former peak - 33% of the NUTS2 regions, 28% of the NUTS3 regions) and *revealing no upturn* (adversely affected by the economic crisis and not yet experiencing upturn - 33% of the NUTS2 regions, 33% of the NUTS3 regions). In the particular case of Romania, such studies showed a greater resilience of Bucharest-Ilfov region's economy, and continuing fragility of many other regional economies and the difficulties associated with structural changes and integration into the EU economy (Davies, 2011, Groot *et al.*, 2011; Bristow, 2014; Iordan *et al.*, 2016). Other studies found a complex core-periphery pattern (Crescenzi *et al.*, 2016), with a “core” continental area, where the impacts of the 2008 crisis were low or moderately low, including Germany, most of Poland, and partly stretching to the neighboring regions (most regions of Slovakia and the Czech Republic), surrounded by a ring of more peripheral areas where the impacts were high/very high (including most of the regions of Ireland, Spain, parts of Italy, Greece, Cyprus, Lithuania, Latvia and Estonia).

Resilience and Convergence in the New Member States

The complexity and peculiarities of the processes of *regional resilience* and *convergence* raise particular problems in terms of assessment. Two of the main questions to be answered by the scientific approach regarding their assessment are: 1) How can they be adequately measured? and 2) How can we enhance and best employ their territorial specific features in such a way to ultimately raise the socio-economic development and the standard of living of **any** region? The answers to these questions lead to the construction of various systems of indicators and models to assess and/or model such processes and their interconnections and the relationships with other socio-economic processes at work at macroeconomic, territorial, sectoral, microeconomic and even international levels.

As previously mentioned, the paper presents an analysis of *resilience* and (*real*) *convergence* in the NUTS-1 and NUTS-2 regions of the European Union NMS, based on a joint framework of analysis (see Iordan and Chilian, 2017), in which the above-mentioned processes are considered together and analyzed in the sense of process outputs. A minimum of specific indicators was chosen from among the most used indicators in such assessments, covering a longer time span (2000-2013/2015, depending on the available data for each indicator), which

includes three sub-periods: ante-crisis (but also pre-accession and early accession for the NMS, except for Croatia - 2000-2007), crisis (2008-2010) and post-crisis (2011-2013/15). A common, “root” indicator was first chosen for analysis, namely the GDP per capita at purchasing power standard (PPP), expressed in relation to the EU average. However, not the absolute levels were chosen, but the gross modifications over each of the above-mentioned sub-periods, in the sense of gross speeds of change, computed as the ratio of the difference between the absolute levels of the indicator at the beginning and the end of period to the length in years of the analyzed period (see Zaman and Goschin, 2015).

The other specific indicators used in our analysis were the following:

- *A productivity indicator (gross value added per employment over 15 years of age – denoted by GVAE), to account for convergence;*
- *Employment rates (denoted by EMPR), to account for resilience for the regions’ response to the economic crisis, but also to other shocks, computed in relation to the EU28 average and as “gross modification”.*
- *Employment levels (denoted by EMP), expressed in thousand persons, also for the resilience side, computed as “gross modification” over the analyzed periods, in order to reveal the depth of regional adaptation.*
- *An income convergence indicator (compensation of employees estimated at PPP – denoted by CPSE), also for the convergence side, to account for the developments in the ultimate outcome of convergence – the rise in the living standard of a region’s inhabitants. The indicator was also computed in relation to the EU27 average (excluding Cyprus) and as “gross modification”.*

The results are presented in Appendix 1.

Mixed evidence regarding the evolution of resilience and convergence in the NMS regions was found, with both differences and similarities within and across periods, within and across countries. Thus, in most of the NMS countries a single highly developed region, usually the Capital region of the country, registered the best performance over the *ante-crisis period*, except for the employment rates in the Czech Republic, Hungary and Romania, pointing towards possible reminiscences of past adjustment shocks determined by the transition to the market economy and by inherited but yet unsolved labor market rigidities. This was especially obvious in the case of Romania, where the ante-crisis economic growth was accompanied in all the regions (except for Bucharest-Ilfov) not by overall job creation, but by continuation of labor force downsizing, “delayed” from the transition period. Three Capital regions (in the Czech Republic, Slovenia and Slovakia) have already reached GDP per capita levels above the EU average since the ante-crisis period, accompanied by high growth rates. Besides the resilience side, the income convergence has also showed high within-country variability and even decline before the economic crisis in regions of Bulgaria, Poland and Slovenia, more or less developed. However, the most notable was the positive performance in terms of productivity in virtually all the regions of the NMS – evidence pointing towards real advance in the overall catching-up process of all the countries.

Some of the “national growth engines” did not fare too well during the crisis period, especially in terms of productivity, but revealed capability to adjust to the shock of crisis and retain and even create employment (in the Czech Republic and Romania). Different adjustment to crisis and growth paths were revealed within and across the NMS: small advances in productivity and convergence accompanied by layoffs and decline in employment rates in Bulgaria and Slovakia, some declines in productivity, but still good performance in convergence,

accompanied by smaller job losses and declines in employment rates in most of the regions of Poland, declines in productivity, convergence and employment; however accompanied by small gains in terms of employment rates evolution in most of the regions of the Czech Republic, Hungary, Romania, Slovenia, and in the smaller NMS, except for Malta. The crisis struck hard all the NMS regions and the ones that performed poorly during the crisis were mostly the regions (and countries) with trailing and unsolved development issues.

The post-crisis period revealed another mix of recovery and/or growth paths, but the overall trend looks positive, even for some of the regions that previously recorded only poor performance regarding the analyzed processes. Except for Poland and Romania, the productivity side seems still affected by the negative impacts of the crisis, while income convergence is again mostly on an ascending path. Even more variation is noticed in the regional employment levels and employment rates, most of the NMS regions seeming to recover the lost jobs by creating others, others still experiencing greater labor force restructuring. It is worth noticing that more Capital regions registered GDP per capita and even productivity and employment rates levels exceeding the EU averages (in the Czech Republic, Hungary, Poland, Romania, Slovenia and Slovakia). As previous studies revealed, the core-periphery patterns of development were accentuated by the crisis also in the NMS, setting on a different (less balanced) footing the catching-up processes within the countries, and not only across countries and regions.

However, in the case of the most developed regions of the NMS, we must again mention their very high level of GDP per capita and its growth trend up and away from the EU average, which requires a different scale to assess their performance in terms of competitiveness, resilience and convergence, probably as catching-up not towards the European average, but towards the highest regional GDP per capita and other indicators levels. This will expand the within-countries growth gaps and will redraw the development maps and patterns identified so far also among the NMS regions, but this calls for another analysis. Redefining resilience and convergence (as well as other development processes) performance in terms of catching-up towards the (ever-moving) absolute levels of regional GDP per capita and other relevant indicators (distance to a specific or composite development frontier) may bring new insights about how much and for how long has in fact impacted the global crisis such processes.

Conclusions

The issues of resilience and convergence among the European regions generated many academic and/or political debates over the past decades, with particular interest after the recent EU enlargements. This paper attempted to analyze such topics together, at regional level, based on their common roots within the economic growth and development theories, with the view to outline a more integrated framework of analysis, with a direct focus on the regions of the New Member States of the European Union. The paper contributes to literature in several different aspects. First, it has analyzed a longer time span, namely 2000-2013/2015, by focusing on three different sub-periods delineated by the global economic crisis that started in 2008: ante-crisis, crisis and post-crisis. Second, considering resilience and convergence of regions as specific continuous and very dynamic processes, they may be examined through very different and divergent lenses, and may be quantified and visualized with the help of the same (or similar) instruments (indicators, models, methods, techniques and methodologies). Third, a common, “root” indicator for both “sides” of the framework of analysis was first chosen (the GDP per capita at purchasing power standard), accompanied by a minimal set of indicators relevant

mainly for each process, but also for the others, depending on the perspective of analysis. Future lines of research would be to analyze the relationships between the processes within the chosen framework, and their relationships with other socio-economic processes at work in specific territorial locations, and to develop a tree-like, networked system of indicators pertaining to the revealed relationships (Jordan and Chilian, 2017).

Though the chosen indicators were simple, but powerful, the results suggest mixed, but complex evidence, with both differences and similarities within the NMS countries and across regions and countries. The “history” of past transition shocks was still influencing the recent development and integration paths of the NMS within the European Union, their adaptation processes having to deal with additional socio-economic rigidities and burdens in an already difficult socio-economic context. Though the crisis has impacted each country differently, in direct relation to the state of its economic structures and institutions, the post-crisis accentuation of the core-periphery pattern noticed in the “older” Member States of the EU was also revealed in the NMS, where the performance of their “national engines” (usually their Capital regions) “jumped” out of their specific development charts. Such evolutions might even call for redefinition of competitiveness, resilience and convergence performance in terms of catching-up towards an (ever-moving) absolute levels of regional GDP per capita and other relevant indicators (distance to a specific or composite development frontier), which may bring new insights about the length and depth of crisis impacts on such processes and its subsequent foundational changes, and would redraw the current development maps and patterns of the NMS and EU regions.

References

- Albu, L.L., The Convergence Process in the EU Estimated by Gini Coefficients, *Romanian Journal of Economic Forecasting*, 2012, 4, 5-16.
- Albu, L.L., Trends in Real Convergence and Structural Changes in EU, Project “Increasing the contribution of foreign trade to achieving real convergence”, Strengthening the institutional capacity for evaluation and formulation of macroeconomic policies for economic convergence with EU within the National Commission for Prognosis - SMIS code 27153 - project co-financed by the European Social Fund through PODCA - Operational Programme for Administrative Capacity Development, 2013.
- Antonescu, D., Measuring regional convergence - An application to the European Union and Romania, *Revista Economică*, 2012, vol. Supplement, issue 1, 46-59.
- Barro, R., Sala-i-Martin, X., Convergence, *Journal of Political Economy*, 1992, 100:223–251.
- Boschma, R., Towards an evolutionary perspective on regional resilience, CIRCLE, Lund University and Department of Economic Geography, Urban and Regional research Centre Utrecht, Utrecht University, 2014, Paper no. 14.
- Brakman, S., Garretsen, H., van Marrewijk, C., The Crisis and Regional Resilience in Europe: On the Importance of Urbanization and Specialization, CESIFO Working Paper No. 4724, 2014.
- Briguglio, L., Cordina, G., Bugeja, S., Farrugia, N., Conceptualizing and Measuring Economic Resilience, University of Malta Economics Department Working Paper, 2006.
- Briguglio, L., Cordina, G., Farrugia, N., Vella, S., Economic Vulnerability and Resilience: Concepts and Measurements, *Oxford Development Studies*, 2009, 37, 229-247.
- Bristow, G., Resilient regions: re-‘place’ing regional competitiveness, *Cambridge Journal of Regions, Economy and Society*, 2010, 3: 153–167.

Bristow, G., Agency, Choice and Agenda: Developing Perspectives on Economic Resilience, Resilience in Urban and Regional Development DLGS International Conference, Berlin, 2014, March 27th – 28th.

Capello R., Regional Economics, 2007, Routledge, London and New York.

Carrington, A., Regional Convergence in the European Union: A Stochastic Dominance Approach, *International Regional Science Review*, 2006, 29, 1: 64–80, January.

Chilian, M.N., Coeziunea economico-socială la nivel regional – Elemente de fundamentare a unei strategii regionale, 2013, Expert Publishing House, Bucharest, Romania.

Chilian, M.N., Iordan, M., Pauna, C.B., Real and Structural Convergence in the Romanian Counties in the Pre-accession and Post-accession Periods, 56th ERSA Congress, Cities & Regions: Smart, Sustainable, Inclusive? Vienna, 2016, 23-26 August.

Christopherson, S., Michie, J., Tyler, P., Regional Resilience: Theoretical and Empirical Perspectives,” *Cambridge Journal of Regions, Economy and Society*, 2010, 3, 3-10.

Crescenzi, R., Luca, D., Milio, S., The geography of the economic crisis in Europe: national macroeconomic conditions, regional structural factors and short-term economic performance, *Cambridge Journal of Regions, Economy and Society* 2016, 9, 13–32.

Davies, S., Regional Resilience in the 2008-2010 Downturn: Comparative Evidence from European Countries, *Cambridge Journal of Regions, Economy and Society*, 2011, 4, 369-382.

Dobrinsky, R., Havlik, P., Economic Convergence and Structural Change: the Role of Transition and EU Accession, WIIW Research Report 395, 2014, July.

Enflo, K.S., Productivity and employment—Is there a trade-off? Comparing Western European regions and American states 1950–2000, *Annals of Regional Science*, 2010, 45: 401-421.

Ertur, C., Le Gallo, J., Baumont, C., The European Regional Convergence Process, 1980-1995: Do Spatial Regimes and Spatial Dependence Matter?, *International Regional Science Review*, 2006, 29, 1: 3–34, January.

European Commission, DG regional - Social mobility and intra-regional income distribution across EU countries, 2010, No. 2008CE160AT054/2008CE16CAT017, Final Report, July.

European Commission, Inclusive growth: a high-employment economy delivering economic, social and territorial cohesion. Europe 2020, 2012, [online], http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/priorities/inclusive-growth/index_en.htm.

Ezcurra, R., Pascual, P., Rapun, M., Spatial disparities in the European Union: an analysis of regional polarization, *Annals of Regional Science*, 2007, 41: 401-429.

Ghizdeanu, I., Iordan, M., Chilian, M.N., Țapu, D., Real Convergence in the Romanian Regions in the Period of Post-Accession to the European Union, The Tenth Edition of the International Conference on Theoretical and Applied Economic Practices “Economic Growth in Conditions of Globalization”, National Institute for Economic Research, Chisinau, Republic of Moldova, 2015, October 15-16.

Groot, S. P.T., Mohlmann, J.L., Garretsen, J.H., de Groot, H.L.F., The crisis sensitivity of European countries and regions: stylized facts and spatial heterogeneity, *Cambridge Journal of Regions, Economy and Society*, 2011, 4, 437–456.

Halmai, P., Vasary, V., Nominal and Real Convergence in the New Member States (Longer-Term Perspective), *Bulletin of the Transilvania University of Braşov, Series V: Economic Sciences*, 2011, Vol. 4 (53), No. 1, pp. 193-220.

Han, Y., Goetz, S.J. (2015), The Economic Resilience of U.S. Counties during the Great Recession, *The Review of Regional Studies*, 45, 131–149.

Hill, E., St. Clair, T., Wial, H., Wolman, H., Atkins, P., Blumenthal, P., Ficenec, S., Friedhoff, A., Economic Shocks and Regional Economic Resilience, in *Building Resilient Regions: Urban and Regional Policy and Its Effects*, vol. 4, edited by Nancy Pindus, Margaret Weir, Howard Wial, and Harold Wolman. 2012, Washington: Brookings Institution Press.

Iancu, A., Real Convergence and Integration, Working Papers of National Institute of Economic Research, 2009, 090102, National Institute of Economic Research.

Jordan, M., Chilian, M.N., The sectoral structures in Romania, its regions and the EU countries – Key features of economic and social cohesion, *Procedia Economic and Finance*, 2014, Elsevier, Vol 8.

Jordan, M., Chilian, M.N., Dynamics of Real and Structural Convergence at Sub-regional Level in Romania, *Proceedings of the 3rd International Conference 'Economic Scientific Research - Theoretical, Empirical and Practical Approaches'*, ESPERA 2015, 3-4 December 2015, Bucharest, Romania, Peter Lang Publishing House.

Jordan, M., Chilian, M.N., Convergence and Divergence Patterns in the EU and Romanian Regions, *Proceedings of the 4th International Conference 'Economic Scientific Research - Theoretical, Empirical and Practical Approaches'*, ESPERA 2016, 14-15 December 2016, Bucharest, Romania, Peter Lang Publishing House.

Jordan, M., Chilian, M.N., Some Perpetually Old and New Development Issues in the EU Regions: Competitiveness, Resilience, Convergence. Where Do the New Member States Stand? In: *Management of regions and Cities*, InTech Open Publishing, 2017, forthcoming.

Jordan, M. (coordinator), Performance. Sustainability - A Multidimensional Perspective, Part I, Romanian Academy, 2015, IPE, INCE.

Jordan, M. (coordinator), Performance. Sustainability - A Multidimensional Perspective, Part II, Romanian Academy, 2016, IPE, INCE.

Jordan, M., Ghizdeanu, I., Tapu, D., Romania – Between the Real Convergence Aim and the Reality of Territorial Concentration of the Economic Development, *Strategii Manageriale / Management Strategies*, 2014, Universitatea „Constantin Brâncoveanu”, Pitești, Anul VII, nr. 1, Editura Independența Economică, ISSN 1844-668X, pp. 50-63.

Jozwik, B., Ponikowski, H., Real convergence, economic crises and EU cohesion policy, *Cambridge Conferences Business & Economics*, 2014, July 1-2, Cambridge, UK.

Landesmann, M., Römisch, R., Economic Growth, Regional Disparities and Employment in the EU-27, Vienna: WIIW Research Report 333, 2006.

López-Bazo, E., Vayá, E., Mora, T., Suriñach, J., Regional dynamics and convergence in the European Union. *Annals of Regional Science*, 1999, 33(3):343–370.

Martin, R., Regional Economic Resilience, Hysteresis and Recessionary Shocks, *Papers in Evolutionary Economic Geography* # 10.18, Utrecht University, Urban&Regional Research Centre Utrecht, November 2010.

Martin, R. Regional Economic Resilience, Hysteresis and Recessionary Shocks, *Journal of Economic Geography*, 2012, 12, 1-32.

Martin, P., Mayer, T., Mayneris F., Are Clusters more resilient in crises? Evidence from French exporters in 2008-2009, CEPR discussion paper, No 9667, 2013, London.

Martin, R., Sunley, P., Tyler, P., Local growth evolutions: recession, resilience and recovery, *Cambridge Journal of Regions, Economy and Society*, 2015, 8(2): 141-148.

Martin, R. L., Sunley, P. J., On the notion of regional economic resilience: conceptualisation and explanation, *Journal of Economic Geography*, 2015, 15: 1–42.

Melchior, A., Regional Inequality and Convergence in Europe, 1995-2005, CASE Network Studies and Analyses No. 374, 2008.

Miron, D., Tatomir, F. Alexe, I., Do Central and Eastern European Countries become more similar in terms of sectoral structures as their real convergence with the Euro Area increases? Analysis on the last decade, Economic Computation & Economic Cybernetics Studies & Research, 2013, Vol. 47 Issue 1, pp. 5-26.

Monfort, P., Convergence of EU regions. Measures and evolution, Working Papers, 2008, No. 1, European Union, Regional Policy.

Mora, T., Factors conditioning the formation of European regional convergence clubs, Annals of Regional Science, 2008, 42:911-927.

Quah, D.T., Regional convergence clusters across Europe. Eur Econ Rev, 1996, 40:951-958.

Quineti, A., Matejkova, E., Pietrikova, M., Serences, R., Toth, M., Dvorak, M., Looking for the evidence of socio-economic convergence within the European Union, Agricultural Economy - Czech, 2011, 57 (8), 384-393.

Peiro-Palomino, J., European regional convergence revisited: the role of intangible assets, Annals of Regional Science, 2016, 57:165-194.

Răileanu Szeles, M., Marinescu N., Real convergence in the CEECs, euro area accession and the Role of Romania, *The European Journal of Comparative Economics*, 2010, Vol. 7, No. 1, pp. 181-202.

Rodriguez-Pose, A., Tselios, V., Toward Inclusive Growth: Is There Regional Convergence in Social Welfare? *International Regional Science Review*, 2015, Vol. 38(1) 30-60.

Sala-i-Martin, X., Regional Cohesion: Evidence and Theories of Regional Growth and convergence, *European Economic Review*, 1996, 40, 1325-1352.

Simmie, J., Martin, R., The Economic Resilience of Regions: Towards an Evolutionary Approach,” *Cambridge Journal of Regions, Economy and Society*, 2010, 3, 27-43.

Simionescu, M., The Assessment of Income Convergence Hypothesis in Romanian Counties Using the Panel Root Approach, *Studia Universitatis Babes Bolyai-Oeconomica*, 2014, No. 2, pp. 57-67.

Tselios, V., Growth and Convergence in Income Per Capita and Income Inequality in the Regions of the EU, *Spatial Economic Analysis*, 2009, 4:347-70.

Zaman, G., Reziliența economică la criză, 2014, IEN, Bucharest, manuscript.

Zaman, G., Goschin, Z., Economic Downfall and Speed of Recovery in Romanian Counties. A Spatial Autoregressive Model, *Economic Computation and Economic Cybernetics Studies and Research*, 2015, Volume 49, No. 3, pp. 21-40.

Appendix 1. Resilience and convergence indicators concerning the situation of the New Member States of the European Union over the ante-crisis (2000-2007), crisis (2008-2010) and post-crisis (2011-2013/2015) periods, percentage points modification per year, except for EMP (in thousand persons)

	GDP per capita, ante-crisis period	CPSE, ante-crisis period	GVAE, ante-crisis period	EMP, ante-crisis period	EMPR, ante-crisis period	GDP per capita, crisis period	CPSE, crisis period	GVAE, crisis period	EMP, crisis period	EMPR, crisis period	GDP per capita post-crisis period	CPSE, post-crisis period	GVAE, post-crisis period	EMP, post-crisis period	EMPR, post-crisis period
Bulgaria	1.6	0.4	0.8	47.5	1.8	0.0	1.2	0.8	-59.1	-0.9	0.5	1.5	-0.1	-8.7	0.9
Severna i yugoiztochna Bulgaria	0.6	-0.2	0.4	17.5	1.3	-0.7	0.7	0.5	-39.1	-0.8	0.8	1.0	0.2	-5.9	0.9

Severozapaden	0.4	-1.2	0.2	3.1	1.4	-0.7	0.9	0.5	-12.3	-1.3	0.5	0.7	0.1	-5.6	0.3
Severen (sentralen)	0.8	-0.4	0.4	3.3	1.0	-0.3	1.1	0.5	-12.5	-0.8	1.0	1.1	0.2	-0.6	1.1
Severoiztochen	1.0	0.0	0.6	6.5	1.8	-0.7	0.4	0.4	-8.7	-1.6	0.5	0.8	0.0	3.7	1.8
Yugoiztochen	0.5	0.3	0.5	4.6	1.0	0.0	0.8	0.5	-5.6	0.0	0.8	1.4	0.4	-3.5	0.2
Yugozapadna i yuzhna tsentralna Bulgaria	2.8	0.7	1.1	29.6	2.0	0.3	1.4	1.0	-20.0	-1.0	0.0	1.9	-0.4	-2.7	0.8
Yugozapaden	3.8	1.2	1.5	20.8	2.9	0.7	1.9	1.0	-1.7	-0.6	0.0	2.6	-0.2	-4.1	0.4
Yuzhen (sentralen)	1.1	-0.1	0.5	9.1	1.5	0.0	0.5	0.8	-18.4	-1.7	0.0	0.9	-0.4	1.4	1.4
Czech Republic	1.4	1.3	2.3	30.9	-0.5	0.0	-0.2	-0.4	-12.3	0.0	0.3	0.1	-1.7	31.3	0.6
Praha	5.0	2.5	5.1	3.2	-0.7	-0.7	0.9	-2.2	8.1	1.0	-0.3	0.0	-3.8	-1.4	0.3
Strední Čechy	0.9	0.7	2.0	8.3	-0.6	-1.3	0.4	-1.4	6.9	0.2	0.5	0.2	-1.3	9.4	0.7
Jihozápad	0.8	0.9	1.7	2.9	-0.6	0.7	-0.2	0.4	-3.2	-0.5	1.0	0.5	-1.1	3.4	0.5
Severozápad	0.6	0.5	1.5	3.0	-0.8	0.0	-0.3	-0.4	-0.7	0.1	0.0	-0.3	-1.6	0.8	0.3
Severovýchod	0.5	1.6	1.8	2.0	-0.9	0.3	-1.0	-0.1	-4.8	0.0	0.5	0.3	-1.5	4.9	0.8
Jihovýchod	1.4	1.5	1.9	2.9	-0.3	0.3	-0.8	-0.4	-3.5	0.2	1.0	-0.1	-1.4	7.2	1.0
Střední Morava	0.8	0.6	1.5	5.0	0.0	0.0	-0.2	0.3	-12.0	-1.1	0.8	-0.1	-1.1	5.5	0.9
Moravskoslezsko	1.8	0.8	2.3	3.6	-0.3	-0.3	-0.7	-0.4	-3.3	-0.4	-0.3	-0.5	-2.0	1.5	0.6
Estonia	3.1	2.6	2.7	9.0	1.4	-1.7	-0.1	-0.1	-29.9	-3.6	1.8	1.1	1.1	14.6	1.6
Croatia	1.5	1.5	0.9	26.6	0.8	-1.3	-1.3	-0.5	-14.5	-0.4	0.0	-0.1	-0.8	-20.2	-0.3
Jadranska Hrvatska	1.6			0.0		-2.0		-1.0	-2.5	0.1	0.0		-1.0	-5.4	0.0
Kontinentalna Hrvatska	1.4			0.0		-1.3		-0.3	-12.0	-0.6	-0.3		-0.7	-14.7	-0.4
Cyprus	1.0		0.1	10.5	0.0	-1.0		-0.3	5.8	0.1	-3.5		-1.7	-7.4	-2.3
Latvia	3.0	2.2	3.1	14.5	1.5	-2.7	-1.9	-1.6	-68.9	-5.0	2.0	1.0	0.8	9.1	1.8
Lithuania	2.8	2.8	2.5	4.0	0.1	-1.0	-0.8	-0.4	-67.9	-2.8	2.5	1.1	0.6	17.4	1.9
Hungary	1.0	1.3	1.4	11.9	-0.4	0.7	-0.4	-1.3	-56.5	0.1	0.8	-0.6	-1.1	95.6	2.2
Közép-Magyarország	2.3	2.0	2.3	7.8	-0.1	1.0	0.2	-1.3	-17.3	-0.5	0.3	-1.6	-1.9	30.5	1.8
Közép-Magyarország	2.3	2.0	2.3	7.8	-0.1	1.0	0.2	-1.3	-17.3	-0.5	0.3	-1.6	-1.9	30.5	1.8
Dunántúl	0.3	0.7	0.9	0.8	-0.7	0.3	-0.5	-1.2	-20.9	0.0	1.0	0.0	-0.8	27.2	2.1
Közép-Dunántúl	0.6	0.7	1.4	1.9	-0.3	-0.3	-0.7	-1.3	-11.9	-0.7	0.8	0.4	-0.7	11.9	2.2
Nyugat-Dunántúl	-0.1	0.5	0.4	0.8	-1.0	1.0	-0.8	-0.5	-10.1	-0.7	1.3	0.2	-0.7	10.1	1.8
Dél-Dunántúl	0.1	0.9	1.0	-2.0	-0.8	0.3	-0.6	-1.7	1.1	1.6	0.3	0.0	-1.1	5.1	2.2
Alföld és Észak	0.4	0.8	0.7	3.4	-0.4	0.3	-1.2	-1.3	-18.3	0.5	0.5	0.0	-0.8	37.9	2.5
Észak-Magyarország	0.6	0.6	1.0	0.4	-0.6	0.0	-0.7	-1.4	-8.5	0.1	0.8	-0.2	-0.7	11.6	2.9
Észak-Alföld	0.4	1.0	0.7	3.8	-0.2	0.7	-0.9	-1.1	-6.2	0.4	0.3	-0.6	-1.1	17.2	2.5
Dél-Alföld	0.0	0.8	0.5	-0.8	-0.5	0.0	-0.9	-1.6	-3.7	0.8	0.8	0.3	-0.5	9.0	2.1
Malta	-0.8	-1.1	-0.3	1.5	-0.6	2.0	0.4	0.8	2.4	1.0	0.5	-1.3	0.5	4.7	1.2
Poland	0.8	-0.1	1.5	90.4	0.7	2.7	2.0	0.1	77.5	0.7	1.0	0.9	0.2	122.2	0.5
Region Centralny	1.3	-0.6	1.3	27.5	0.8	4.3	4.1	1.5	4.4	0.3	1.5	0.7	-0.2	85.2	0.7
Lódzkie	0.9	-0.5	0.9	4.9	0.9	2.0	2.5	0.6	-7.8	0.7	1.0	0.0	0.0	4.0	0.4
Mazowieckie	1.3	-0.9	1.4	22.6	0.7	5.0	4.9	1.8	12.2	0.0	1.5	1.2	-0.4	81.3	0.8
Region Południowy	0.6	0.0	1.4	45.9	0.5	2.3	2.3	0.0	6.0	0.5	0.5	0.5	0.2	-5.6	0.3
Małopolskie	0.6	0.4	1.7	-9.3	-0.5	1.7	3.0	0.2	-5.2	0.6	0.8	0.8	0.3	2.0	0.4
Śląskie	0.8	-0.5	1.1	55.2	1.2	2.7	1.8	-0.2	11.2	0.4	0.3	0.4	0.2	-7.6	0.2

Region Wschodni	0.5	-0.5	1.0	5.7	0.3	1.3	1.1	-0.3	24.6	0.5	0.5	1.0	0.3	-2.0	-0.1
Lubelskie	0.4	-0.1	0.9	-3.1	-0.1	1.3	1.0	-0.4	4.6	1.0	0.5	0.6	0.1	8.1	-0.1
Podkarpackie	0.4	-0.5	1.0	2.0	-0.2	1.3	1.7	0.1	3.6	0.9	0.8	0.9	0.9	-7.7	-0.6
Swietokrzyskie	0.6	-1.4	0.8	6.5	1.8	1.0	0.5	-1.0	10.0	-0.1	0.0	0.8	0.1	-4.2	0.2
Podlaskie	0.6	-0.1	1.5	0.3	0.1	1.7	1.7	0.4	6.4	-0.5	0.5	1.0	0.3	1.8	0.7
Region Północno-Zachodni	0.5	0.5	2.0	-10.1	1.0	2.3	1.1	-0.7	15.3	1.5	1.3	0.7	0.7	-12.9	0.7
Wielkopolskie	0.8	0.7	2.5	-15.3	0.7	2.7	0.8	-0.7	11.4	1.8	1.3	1.1	1.0	-8.4	0.6
Zachodniopomorskie	0.1	0.8	2.0	-4.6	0.9	1.3	1.1	-0.7	7.4	1.0	0.8	-0.1	-0.2	-1.7	1.0
Lubuskie	0.6	-0.3	0.8	9.8	1.8	1.7	1.3	-0.7	-3.5	1.2	1.0	0.7	0.8	-2.8	0.5
Region Południowo-Zachodni	1.0	-0.8	1.2	14.3	1.1	3.0	2.6	0.5	-2.9	1.0	0.5	1.9	0.2	5.3	1.2
Dolnoslaskie	1.3	-1.0	1.2	20.9	1.3	3.7	2.2	0.7	-2.1	0.9	0.8	2.1	0.3	-0.4	1.3
Opolskie	0.8	-0.6	1.3	-6.7	0.3	1.3	2.7	-0.3	-0.8	1.1	0.5	1.2	-0.1	5.7	0.8
Region Północny	0.6	0.3	1.7	7.1	0.8	2.0	1.1	-0.5	30.1	1.3	0.5	-0.1	-0.3	52.1	0.9
Kujawsko-Pomorskie	0.5	1.1	2.2	-5.6	0.4	1.3	0.2	-1.3	12.7	1.4	0.5	0.5	0.0	12.8	0.8
Warmińsko-Mazurskie	0.4	-0.9	0.5	1.2	1.8	1.7	1.2	0.0	3.6	1.2	0.5	0.0	0.1	1.3	0.1
Pomorskie	0.8	-0.2	2.0	11.5	0.7	2.3	1.3	-0.1	13.7	1.3	0.5	-1.3	-0.9	38.0	1.3
Romania	2.0	1.2	2.4	193.0	-1.2	0.7	-1.6	-0.5	213.5	0.8	1.0	0.8	0.5	-35.5	0.1
Macroregiunea unu	2.0	1.1	2.5	-47.2	-1.8	0.7	-1.4	-0.5	-44.9	0.6	1.3	0.5	0.4	6.6	0.6
Nord-Vest	2.1	1.4	2.4	-24.5	-1.5	0.3	-2.0	-1.0	-7.1	2.2	1.0	0.2	0.4	4.5	0.5
Centru	1.9	0.9	2.6	-22.7	-2.0	0.7	-0.6	0.2	-37.8	-1.1	1.3	0.8	0.5	2.1	0.7
Macroregiunea doi	1.1	0.9	1.6	-62.8	-1.4	0.7	-1.2	-0.1	101.1	1.4	1.5	1.1	0.6	8.6	0.7
Nord-Est	1.0	0.9	1.3	-34.9	-1.5	0.3	-1.4	-0.2	-60.1	1.9	1.0	0.9	0.3	18.8	1.3
Sud-Est	1.4	0.8	2.0	-27.8	-1.3	0.7	-0.4	0.1	-41.1	0.8	2.3	1.4	1.3	-10.2	0.0
Macroregiunea trei	3.1	1.6	3.5	-33.4	-0.1	0.3	-1.3	-1.4	-17.1	0.6	0.5	-0.5	0.4	-16.1	0.4
Sud - Muntenia	1.6	1.2	1.9	-39.2	-0.8	0.7	-0.3	-0.3	-32.7	0.0	0.3	-0.7	0.0	-20.0	0.5
Bucuresti - Ilfov	5.1	1.5	5.5	5.7	1.0	-0.3	-3.4	-3.9	15.6	1.5	-0.5	0.5	1.2	3.9	0.2
Macroregiunea patru	1.9	1.2	2.1	-49.6	-1.5	0.7	-1.4	-0.2	-50.4	0.4	0.5	1.2	0.3	-34.6	-1.8
Sud-Vest Oltenia	1.4	1.0	1.7	-37.0	-2.5	0.7	-1.2	-0.1	-27.9	0.8	0.5	0.6	0.3	-26.9	-2.7
Vest	2.6	1.4	2.6	-12.7	-0.5	1.0	-1.6	-0.4	-22.5	-0.1	0.5	1.8	0.2	-7.7	-0.8
Slovenia	1.0	0.4	0.6	11.5	0.0	-2.0	-0.1	-0.8	-6.4	-0.2	0.0	-0.8	-0.4	-9.7	-0.5
Vzhodna Slovenija	0.5	0.7	0.3	4.0		-1.7	-0.2	-0.6	-6.6		0.0	-0.5	-0.6	-5.4	-0.5
Zahodna Slovenija	1.5	-0.2	1.0	4.9		-2.7	-0.3	-1.0	0.2		-0.3	-1.4	-0.2	-4.3	-0.5
Slovakia	2.3	0.9	2.9	34.3	0.6	0.7	1.7	1.0	-13.4	-1.0	1.0	0.9	0.0	21.3	0.7
Bratislavský kraj	6.5	1.5	6.7	1.7	0.6	4.3	3.1	3.8	-1.0	-1.0	1.5	1.4	0.6	-0.6	-0.3
Západné Slovensko	2.3	0.7	2.6	16.3	1.2	0.0	1.1	0.7	-8.5	-1.6	0.8	0.7	-0.1	3.3	0.4
Stredné Slovensko	1.5	0.9	2.2	6.7	0.3	0.3	1.0	0.6	-2.6	-0.8	1.0	1.0	0.2	9.2	1.0
Východné Slovensko	1.1	0.7	1.9	9.6	0.2	0.0	1.3	0.2	-1.3	-0.5	1.0	1.0	-0.1	9.4	1.0

Note: Data in italics show that the levels of indicators exceed the EU averages.

Source: Authors' computations based on Eurostat data.