

Economic Growth and Improving Regional Disparities Tools of the Enlarged European Union

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Abstract: Trends in regional disparities phenomenon are a major problem in regional economics for many decades. Significant initial differences between regions affect development capacity of each of them and response to external challenges posed by globalization, and also their ability to enhance competitiveness and international trade. Thus, identifying ways to overcome them is essential for regional policy decisions. The challenges of integration and economic development, although defies simple solutions, should not consider a complex guiding principle, but an appropriate mix of policy intervention. At present, the debates on geographical disparities of economic development begin and end with taking into account the spatially targeted interventions, using as instruments: innovation, infrastructure and institutions, in supporting the transition to the “cities of tomorrow”: dynamic, attractive, inclusive and careful about environmental issues. Therefore, this paper aims at analyzing the evolution of the phenomenon from the perspective of the main tools to improve it in the current macroeconomic context that strongly affects the enlarged European Union.

Keywords: regional disparities, enlarged European Union, creativity and innovation, infrastructure, institutional capacity, economic growth, convergence.

Introduction

Previous years of the 2004 enlargement have been appreciated by the European Commission with stable or increasing differences within Member States and with improving disparities across national borders, so that in 2004 the Commission summarized within the frameworks of *third report on economic and social cohesion* trends in the EU: national cohesion countries continues to recover development disparities at regional level, in EU disparities are diminishing and in EU Member States regions disparities continue to grow [1].

In light of progress made by some Member States and regions it remains the absolute disparities caused by the enlargement process and the territorial concentration of EU-27 GDP, lower in the traditional core of Europe but higher at the national level. Latest *report on economic, social and territorial cohesion* in 2010 estimates that 64 NUTS 2 convergence regions (CONV) and 15 transition regions (TRANS) have passed through the crisis better than the EU average while many regions in Ireland, southern Finland and northern and central Italy, being previously in a high stage of development were affected. However, convergence regions performance was highly variable [2].

1. Innovation – Basis of Smart, Sustainable and Inclusive Growth

In a time of budget restrictions to redress public finance states, the continuous growth of global competition, significant demographic change, climate change, limited energy and resources, and so on, the best way to address these major and increasingly urgent challenges of human society is **innovation**, that is why Europe 2020 Strategy gives it a central place.

Disparities in creativity and innovation are still significant at national and regional level in the Member States of the European Union.

At the EU-27 Member States, the image performance in this area is provided by *Summary Innovation Index (SII)*, a composite indicator obtained through appropriate aggregation of 24 indicators included in the *Innovation Union Scoreboard (IUS)* [3]. The Scoreboard is a tool that contributes to monitoring

the implementation of the Innovative Union, one of the seven flagship initiatives of the Europe 2020 Strategy, by providing a comparative assessment of innovation performance of EU-27 Member States and the strengths and weaknesses of research and innovation systems. Based on the SII, IUS 2011 places the EU Member States into four groups:

- (1) *innovation leaders* (countries with innovation performance well above the EU average), like: Denmark, Finland, Germany and Sweden, with achievements that exceed 20% or more on the EU-27;
- (2) *innovation followers* (countries with innovation performance slightly above the EU average), like: Austria, Belgium, Cyprus, Estonia, France, Ireland, Luxembourg, Netherlands, Slovenia and the United Kingdom, with results between 10% and 20% above the EU-27;
- (3) *moderate innovators* (countries with innovation performance slightly below the EU average), like: Czech Republic, Greece, Hungary, Italy, Malta, Poland, Portugal, Slovakia and Spain, with results between 10% and 50% below the EU-27;
- (4) *modest innovators* (countries with innovation performance well below the EU average), like: Bulgaria, Latvia, Lithuania and Romania, with results of over 50% lower than the EU-27.

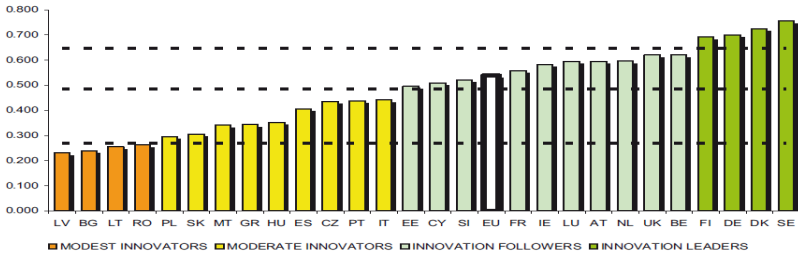


Figure 1. EU-27 Member States Innovation Performance, 2011
 Source: European Commission, Innovation Union Scoreboard 2011.
 Research and Innovation Union scoreboard, 2011, p.12

The absolute improvement in the innovation performance over a five-year period, 2007-2011 in all countries except Luxembourg and the United Kingdom, in contrast with Bulgaria and Romania that have experienced the fastest growth rate (*Figure 2.*), indicates an overall convergence process in innovation performance across the four groups.

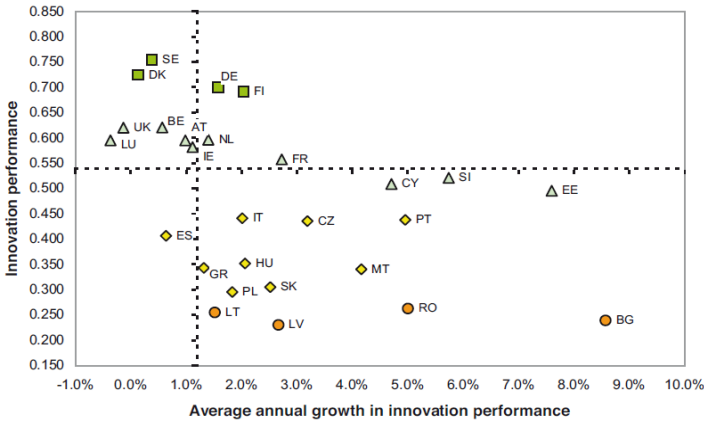


Figure 2. Convergence in innovation performance in EU-27 Member States, 2007-2011
 Source: European Commission, Innovation Union Scoreboard 2011.
 Research and Innovation Union scoreboard, 2011, p.13

The average growth rates shows that the performance of innovation followers has grown faster than those of the innovation leaders, and all Member States with moderate innovation capacity showed increases in performance over the EU-27 average and beyond those of the innovation followers. Conversely, modest innovators recorded slower growth than the moderate innovators, especially because Lithuania has been growing below average (*Table 1*).

Innovation performance growth rate in EU-27 Member States, 2007-2011

Table 1.

Group	Growth Rate in Innovation Performance	Growth Rhythm		
		High	Moderate	Slow
Innovation leaders	1.0 %	Finland	Germany	Denmark, Sweden
Innovation followers	2.4 %	Cyprus, Estonia, Slovenia	Austria, Belgium, France, Ireland, Netherlands	Luxemburg, United Kingdom
Moderate innovators	2.5 %	Malta, Portugal	Czech Republic, Hungary, Italy, Poland, Slovakia	Greece, Spain
Modest innovators	4.4 %	Bulgaria, Romania	Latvia	Lithuania

Source: European Commission, Innovation Union Scoreboard 2011. Research and Innovation Union scoreboard, 2011, p.13

Therefore, we can estimate that the less innovative countries tend to grow faster than countries with high performance in this area, and the speed of innovation process is decreasing, as confirmed by the results of sigma and beta-convergence. The spread in innovation has been reduced over the 2007-2011 period (Fig.2.), situation that indicates a *sigma-convergence process*, but the rate of convergence slowed down.

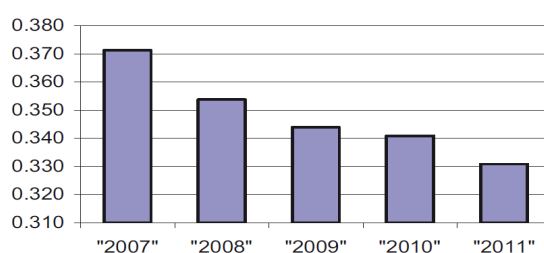


Figure 2. Sigma-convergence in innovation across EU-27 Member States, 2007-2011

Source: European Commission, Innovation Union Scoreboard 2011.

Research and Innovation Union scoreboard, 2011, p.14

Beta-convergence, applies in the case of a less innovative country tends to grow faster than a more innovative one, measured by the partial correlation between growth in innovation performance over time (2011) and its initial level (2007). According to the results of IUS 2011, correlation coefficient of -0.591 indicates the existence of the process across EU-27 Member States, up from the value of -0.421 recorded in the period 2006-2010 according to the IUS 2010. However, intra-group analysis shows that convergence is the dominant phenomenon within 3 of the 4 groups and only within the moderate innovators performance diverges. Convergence appears between the last two performance groups (moderate innovators and modest innovators) and more important, between-group convergence proves to be stronger than within group convergence.

At the regional EU level, the overview of innovation capacity is reflected by *Regional Innovation Performance Index (RIPI)* estimated in the *European Regional Innovation Scoreboard (ERIS)*. ERIS 2009 [4] provides a comparative assessment NUTS 2 region level, absolutely necessary for the design, prioritization and implementation of regional innovation policies and for the regional economic development and monitoring its trends.

The latest results in ERIS 2009, obtained from regional data with limited availability compared with the national one, suggest that between 2004 and 2006:

✓ *all member states have regions with different levels of performance in innovation*. The most heterogeneous countries are Spain, Italy and Czech Republic. This emphasizes the need for policies that reflect regional contexts and better data used in evaluation;

✓ *the most innovative regions are generally located in the most innovative countries*, especially in the innovation leaders group and *low-performing regions are found in countries that have capacity for innovation below the EU average*. However, there is a number of regions which have achieved higher levels than their country, such as: Noord-Brabant, innovation leader region from Netherlands, a country of innovation followers group; Praha from Czech Republic, Pais Vasco, Comunidad Foral de Navarra, Comunidad de Madrid and Cataluna from Spain, Lombardia and Emilia-Romagna from Italy, innovation followers regions of moderate innovators group; *capital regions from Hungary and Slovakia*, with a level of innovation around the EU average, of moderate innovators group and below-average performance in the field;

✓ *the existence of different strengths and weaknesses of the regions*. Different levels of performance on the three dimensions of innovation: facilitators of innovation, companies' activities and innovation results were found between regions. Although the relationship between them and strengths is not straightforward, noted that many regions with moderate degree of innovation have certain vulnerability in terms of innovation facilitators, including human resources;

✓ *regional innovation performance is relatively stable since 2004*, with only few changes in group composition. More specifically, most changes are positive and relate to areas such as Cataluna, Comunidad Valenciana, Illes Balears, and Ceuta (Spain), Bassin Parisien, East and South-Ouest (France), Unterfranken (Germany), Közép-Dunant (Hungary), Algarve (Portugal) and Hedmark og Oppland (Norway).

In terms of innovation by type of region, convergence regions (CONV) showed weaker performance than the transition regions (TRANZ) and RCE for all indicators examined (Table 2.).

Innovation performance by type of region

Indicators	Table 2.			
	CONV	TRANS	RCE	Levels EU-27
EPO patents applications, 2006-2007 (<i>applicants per inhabitant, EU-27=100</i>)	11.30	32.70	153.0	100.00
Total R&D expenditure, 2007 (<i>% of GDP</i>)	0.89	0.99	2.08	1.85
Human resources in S&T, 2008 (<i>% of total employment</i>)	14.70	17.80	18.80	17.60
Employment in high-technology sectors, 2008 (<i>% of total employment</i>)	3.10	3.40	5.10	4.40
	Percentage point change			
	CONV	TRANS	RCE	EU-27
Human resources in S&T, 2000-2008 (<i>% of total employment</i>)	3.90	2.80	3.00	3.30
Employment in high-technology sectors, 2000-2008 (<i>% of total employment</i>)	1.10	0.50	-0.20	0.30

Note: EPO – European Office of Patents; S&T – Science and Technology; RCE – Regional Competitiveness and Employment regions.

Source: Eurostat, in European Commission, Investing in Europe's future. Fifth report on economic, social and territorial cohesion, November 2010, p.49.

The data indicate the existence of a catching-up process within the Convergence regions that recorded higher growth than the other two types of region. This is explained through a variety of factors, including technology transfer from other regions (especially direct investment), changes in their structure towards higher value-added and increased access to EU markets which increases the expected return from innovation process [5]. Particularly useful in estimating performance in regional innovation, the indicators described above also have some *significant limits* [6], such as:

✓ the inability to capture the important inputs into the innovation process (product design, market analysis, training of employees, investments in research infrastructure);

✓ the neglect of innovative activities, often informal, of smaller companies;

- ✓ the regional disaggregation of data, since a company's innovation activity may be reported by the headquarters while, in fact, it appears in many different places;
- ✓ many innovations are not patented or patentable, such as new software systems;
- ✓ most indicators are focused on technological innovation and ignore processing, marketing, organization, particularly the less useful producers innovate by absorbing advanced technologies developed elsewhere, adapting their product to the needs of new markets or by adopting better methods of organizing their operations.

EU has to face challenges and to exploit its great potential in science and innovation by [7]:

- ✓ searching the solutions for unfavorable framework conditions that hinder cross-border cooperation (CBC) on the use and sharing of knowledge and hinder private investment in research and innovation and delivers marketing ideas, such as: lack of funding, costly patenting, market fragmentation, outdated regulations and procedures, slow procedures of standardization and the inability to use public procurement strategically;
- ✓ avoid dispersion of efforts in order to increase the effectiveness of investments necessary for the realization of ideas in a truly European Research Area. The national and regional research and innovation is still operating independently of each other with only a marginal European dimension which generates costly duplication and overlap of efforts unacceptable at a time of tight finances.

2. The Role of Infrastructure in Economic Development

Regional competitiveness, productivity and economic development are positively and strongly influenced by the infrastructure: transport and telecommunications networks.

Transport system is essential for regional economic development as it reduces travel times and hence production costs, increase competitiveness, improve access for consumers, workers and trade activities in markets, increases the attractiveness of a region for potential investors. All these advantages, however, are not sufficient to meet its economic development, and therefore other important factors are necessary for increasing return on investment in infrastructure, such as: human capital and innovation. Hence significant differences across EU regions in terms of quality of infrastructure.

Regarding to the endowment of transport infrastructure, there are some essential elements used as a means of highlighting the differences between regions [8], as follows:

- ✓ *motorway densities* three times the EU-27 average in Luxembourg and the Netherlands, 50% below average in seven member states of which six are in the EU-10 +2 and nonexistent in Latvia and Malta. At the regional EU level, the differences are more pronounced mainly due to the eastern regions that have no highways, for example: 7 of 16 regions in Poland and 6 of 8 regions in Romania;
- ✓ *scenario comparison with the low speed on high speed* shows that most regions of Austria, France and Germany have an extensive network of highways and also that a more uniform distribution of high-speed roads would significantly increase accessibility in northern and eastern Poland and throughout Romania. Investment in highways between 2000 and 2008 focused on the less developed EU regions, so that in 75% of CONV regions and only in 25% of RCE regions motorway densities increased compared to the EU-27 average, in EU-15 the investment was significant in regions of Germany, Spain and Portugal while in EU-10+2 we cannot identify a clear link between investment in highways and initial endowment.
- ✓ *road accidents and deaths*, at high levels in most regions of the EU-10+2, in France, Greece, Italy and Spain and to a lower level in Germany, the Nordic countries and United Kingdom;
- ✓ *connecting urban centers by road network* which ensures a high degree of accessibility is very dense in the center of EU, going from south-east United Kingdom through Belgium, Holland and south-western Germany, good in Spain, France and northern Italy and limited and fragmented in the EU-10+2;
- ✓ *territorial impact of a forecast scenario on improving infrastructure* suggests economic benefits for all EU-27, more pronounced for the EU-10+2 due to potential market growth, regional competitiveness and GDP per capita, situation which could create an economic developed area

including Prague, Krakow, Budapest and Vienna and also considerable potential benefits of EU-15 regions, especially in Spain and Germany;

✓ *railway density* shows regional disparities less pronounced thus: about 37% of CONV regions and 25% of RCE regions have a density less than half of the EU-27 average while in EU-10+2 is more higher than the road density;

✓ *efficiency and average speed rail network* indicates more pronounced differences between regions due to failure of network upgrades and the old and poor condition of most of them. Most regions in France, Germany, Belgium, Spain, Italy, Austria and United Kingdom have high-speed lines while regions of the Baltic States, Bulgaria, Poland, Romania and Slovakia, especially those that include a large city but are located near one, could have significant speed improvement on the railways at least 90 km per hour;

✓ *air traffic density* has increased in the past few years particularly until the onset of the crisis in 2008 and, in particular, in secondary airports mostly used by low-cost airlines in the capital cities in the EU-10+2, but this is much lower than in the EU-15;

✓ *accessibility to airports* is different across regions, so that around 5% of the EU population lives more than 90 minutes from an airport and 51% have access to 10 and 500 flights per day within 90 minutes. Also, in the EU-15, especially in the core part, the availability is much higher than in EU-10+2.

Europe 2020 strategy considers **information and communication technology** (ICT) as a factor of smart and sustainable European economy growth and for exiting the current crisis. Strengthening Europe's digital economy is expanding more than the economy and all areas, as evidenced by favorable economic impact of ICT on EU productivity between 1995 and 2004. According to the last Digital Competitiveness Report results [9] the contribution of ICT was approximately 600 billion (5% of GDP) in 2007. European digital economy continued to grow in size and scope, the average national level DSL network coverage in the EU increased from 87% of the population in 2005 to 94% of the population in 2009.

At Member State level, disparities have been reduced considerably during 2005 and 2009, with increasing coverage rates in countries where they were most modest: in Greece it increased from 12% up to 91%, in Cyprus from 70% up to 96%, in Poland from 55% up to 75%, in Slovenia from 55% up to 93%, in Slovakia from 61% up to 82%. However, differences remain pronounced between thinly and densely populated areas, so that in Bulgaria, Greece, Poland, Cyprus, Romania and Slovakia coverage between 48% and 67% for thinly populated areas require additional efforts, while in Germany, Italy, Slovenia and Sweden the efforts focused on reducing disparities between the thinly and densely populated were much improved. In the case of Ireland, Estonia and Austria mobile technologies have played a key role in bridging the gap. The objective of Europe 2020 and the EU Digital Agenda to achieve universal coverage of broadband by 2013 and to increase speed to 30 Mbps by 2020, for all and to 100 Mbps for one in two households, will require a significant investment [10].

In EU regions, despite recent progress, the levels are generally lower in less developed regions such as southern Europe (especially in Spain, Greece, Italy and Malta, Ireland and Latvia), than in more developed ones. Also, the new investments in core and advanced regions of the EU increases the risk that peripheral areas and thinly populated to lag behind, creating a new digital gap between developed and less developed EU regions.

3. The Quality of Institution

A necessary condition for sustainable economic growth is macroeconomic stability framework. The main reason for why the macroeconomic affects growth is uncertainty manifested through two *channels* [11]: the reduction in the price mechanism to ensure an efficient allocation of resources which, in turn, reduce productivity and investment by making it more difficult to estimate yield and high interest rates.

In the context of EU macroeconomic situation strongly affected by the crisis and uncertainty which led to the postponement or cancellation of investment, cohesion policy and measures adopted in the

European economic recovery plan can be instrumental in facilitating strategic investments by the quality of institutions. Institutions with a lower level of quality may affect the effectiveness of regional development strategies which is why the World Bank pointed out in the *World Development Report* of 2009 the need to improve institutional capacity and governance by the selection, monitoring and replacing governments, by government capacity to formulate and implement sound policies effectively and by respect for citizens and state institutions that govern economic and social interactions among them [12].

World Bank Report results indicate a general EU governance quality. Although some Member States especially the Baltic countries have improved governance after the 1990s some significant differences between persists between them.

More efficient services and transparent public administrations are facilitated by the e-government. *European Digital Competitiveness Report* that monitors service availability of 20 basic e-governments and share of population and companies using them indicates the following situations in 2009:

- ✓ Austria, Malta, Portugal, United Kingdom have provided all the 20 services online;
- ✓ in all Member States except Romania at least one of two companies interacted online with public authorities;
- ✓ 30% of the population and 72% of companies have interacted online with public authorities;
- ✓ Luxembourg, Nordic Member States and Netherlands were the only countries that have recorded at least one of two people who interacted online with public authorities.

Only with a high level of institutional quality, a country or a region can take advantage of economic growth [13]. Cooperation between regions and Member States of the EU-15 and EU-10+2 may significantly increase the institutional capacity of the latter. Evidence for this is improving governance quality in Estonia supported by strong relations with Germany, Finland and Sweden and their consistent support given by sharing knowledge, experience, examples of policies, best practices and by introducing radical reforms. Also Jihozápad region in Czech Republic is part of CBC Jihočeský Kraj program with Austrian and Bavarian regions that has contributed to improving transport links, increasing German investments in local industries and improving institutional capacity of the region, considered one of the strongest in the Czech Republic [14]. Furthermore, new EU Member States have received before and after accession funding through the Cohesion Policy as support to strengthen public administration and institutions.

Conclusions

The relevance of the innovation capacity for technologically advanced regions is explained by the need to maintain the advanced position and for peripheral ones by the need to reduce disparities in the context of different innovation strategies. However, the common aspect for all regions is the necessity to move from policies based on the technological incentives to those focused on stimulating the demand. But to make the most of innovation – the main source of regional economic growth is necessary to implement appropriate infrastructure and institutions.

Disparities in **innovation and creativity, transport infrastructure along with information and communication technology and institutional capacity**, all drivers for smart and sustainable European economy growth in the frame of the current crisis, remain significant in Member States and at the regional level. Consequently, the enlarged EU has to face challenges and to exploit its great potential in science and innovation by seeking solutions for unfavorable framework conditions that hinder cross-border cooperation on the use and sharing of knowledge and hinder private investment in research and innovation and delivers marketing ideas and avoid dispersion of efforts in order to increase the effectiveness of investments necessary for the realization of ideas in a truly European Research Area.

Even given the current major macroeconomic turbulence, general regional disparities have not changed significantly. Although the economic crisis was characterized by an extreme impact in the

regions, overall it was not stronger in less developed regions than in highly developed ones. In general, convergence regions of EU-10+2 were affected less than those in southern EU-15.

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