Overview on Regional Economic Development Gaps across the EU

Mihaela ONOFREI [*], Elena CIGU [**]

Abstract

Despite existing policies of regional development and cohesion at the national and the EU level, economic regional inequalities or disparities stay relatively high or decrease too slowly. In this context, policies to reduce economic regional disparities in the European Union are a constant concern both for policy-makers and for theoretical and empirical research because of the strong impact on sustainable development in general. In this study we combine elements of theoretical and policy discussions with the empirical assessment of economic regional development in the European Union in order to identify the state of regional disparities, what factors are favouring unbalanced growth in different regions of the EU and to find an appropriate theoretical setting to understand, explain and reduce with regional inequality in the EU.

Keywords: regional economic development, regional disparities, cohesion policy

Introduction

The European Union regions are characterized by diversity in terms of social structures, economic growth, institutional profiles, urban-rural relationships, unemployment levels, environmental state and challenges, etc. Embracing this diversity implies a need of policy-makers to adapt analytical approaches to social, economic and environmental phenomena correspondingly.

Regional economic development is a responsibility of the complex structure consisting of the EU authorities, national and regional authorities of countries, and more often local authorities. However, the EU develop regional policies based on convergence and cohesion issues, find instruments and apply different measures to achieve them, and the central government of each country offers a general framework for regional development and has additional measures to finance development projects in less-developed regions. In terms of regional policy, the strategies usually are recommended to focus on main drivers for development, respectively infrastructure and local policy-making, as well as sustainability and special economic zones for ultra-periphery regions. In terms of

[*] Mihaela ONOFREI is Professor, Ph.D. at 'Alexandru Ioan Cuza' of Iasi, Iasi, Romania; e-mail: onofrei@uaic.ro.
[**] Elena CIGU is Assistant Professor, Ph.D. at 'Alexandru Ioan Cuza' of Iasi, Iasi, Romania; e-mail: elenacigu@yahoo.com.

urban policy, the strategies usually are recommended to focus on the urban and territorial development dimension through targeted urban investments; accessibility, mobility and transport; urban governance; and social cohesion. In practice, there are endogenous and exogenous factors that can influence the implementation of regional strategies, conducting to regional development gaps.

However, regional economic policy is designed to stimulate public and private investment in the regions by improving accessibility, providing good quality services from both public and private sectors, control and preserving the environment, encouraging innovation and entrepreneurship and the creation of jobs.

The scope of this study is to emphasize economic regional development gaps and the state of inequalities/disparities between the all EU regions on the NUTS2 level, whether they are increasing or decreasing over the period of time 2000-2015. The approach of the research paper will be first on the background offered by literature regarding regional development, second will present the main instruments of economic regional development policy and third we will identify the gaps of regional development in the European Union using quantitative analysis based on processed data from the international data bases (e.g. Eurostat, Word Development Indicators), that are particularly useful for to discover the state of regional disparities for EU regions at NUTS2 level over the period of time 2000-2015, looking at social trends, or policy implications. In our discussion of findings we will use the qualitative data to understand the patterns in the quantitative analysis. In interpreting results and formulating public policy recommendations, the analysis has permanently related to the legal framework in work over the considered period of time.

1. The state of knowledge

The theoretical debate on regional inequalities was subject of different schools of economic thought in time. The neoclassical school (Solow, 1956; Swan, 1956) predicts convergence among advanced and less advanced regions on the basis of constant returns of scale in the production system and three different equilibrating mechanisms, such as: (i) diminishing capital productivity, (ii) inter-regional trade and (iii) inter-regional migration. The divergence school of thought (Rosenstein-Rodan, 1943; Perroux, 1955; Myrdal, 1957; Hirschmann, 1958) shows that growth is a spatially selective and cumulative process, which is likely to increase regional inequalities/disparities.

The major aspect that divides the two schools of economic thought is the relation of regional inequality to national development. The convergence school predicts that higher levels of

development are eventually associated with lower levels of inequality, while the divergence group claims the opposite.

Recently, a number of authors (Artelaris *et al*., 2008; Artelaris, 2011; Petrakos *et al*., 2008; Giannetti, 2002; Dobson *et al.*, 2006; Petrakos *et al*., 2005) find that both processes of convergence and divergence coexist in all levels of development, but in different proportions and with different strength. However, the balance between convergence and divergence forces changes with development levels.

Reducing regional disparities was one of the key means of promoting the *harmonious development* within Europe stipulated in the EEC Treaty of 1957. According to Article 158 of the Treaty, the EU "shall aim at reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions or islands, including rural areas." From the perspective of the European Union, the phenomenon of convergence is the guiding principle in the Maastricht Treaty (1992) where it is clearly established. The European Union has increasingly strengthened and the EU-15 Member States have followed a process of harmonization that has reached a very high level in 2004. Although there were disparities between regions, these were not very high. The last two waves of the EU with countries from Central and Eastern Europe – CEE (2004, 2007) have a strong impact and appear to have increased regional inequality dramatically. In this context, it was the duty of policy-makers and researchers to identify mechanisms to reduce imbalances until they are cancelled and to create a harmonized Europe. One of the main instruments to reduce the disparities between regions is considered the complex package of Structural Funds of the EU and authors (Palevičienė and Dumčiuvienė, 2016; Arcalean *et al*., 2012; Kutan and Yigit, 2007; Pellegrini *et al*., 2013) discuss in their papers about the real effect of Structural funds on regional economic growth and cohesion. Kutan and Yigit (2007) based on a stochastic endogenous growth model investigate the impact of European Union (EU) integration on convergence and productivity growth finding that Cohesion and Structural funds help the new members catch up with the core-EU members' standard of living. Arcalean *et al*. (2012) have developed a two-region model that allowed to study the short and long run effects of regional redistribution policies such as the European Structural Funds, finding that increasing the size of the structural funds allows the poorer regions to catch up faster with the richer regions. Pellegrini *et al*. (2013) assess Regional Policy effects through a non-experimental comparison group method, the regression discontinuity design, and a novel regional dataset finding a positive impact of EU Regional Policy on economic growth. Palevičienė and Dumčiuvienė (2016) consider that despite long lasting purposeful structural funds

allocations there are still big regional development gaps between European Union member states and the biggest gap between NUTS2 regions is in GDP per head and GDP per employed person.

2. EU Cohesion Policy

"Cohesion policy" is defined by the European Commission as the policy for "reducing disparities between the various regions and the backwardness of the least-favoured regions". The Lisbon Treaty adds another facet to cohesion, referring to "economic, social and territorial cohesion", promoting more balanced, more sustainable "territorial development".

EU regional policy address regional disparities and solidarity between regions, strengthening the competitiveness and attractiveness of the all member state of EU, obtain economic and social cohesion by diminishing discrepancies between level of regional development and by diffusion the advantages of the common market across the European territory.

In the programming period 2000-2006, the regional policy instruments mainly focused on two objectives: O1: the European regions lagging behind; and O2: the regions that were undergoing structural change. For this financial exercise, a total of EUR 15.307 billion were allocated for the EU's regions for 758 projects. During this period were eligible seventeen countries of Europe (see Table 1) for both Cohesion Fund (CF) and Instrument for Structural Pre-Accession (ISPA) funding that provided a significant contribution to countries need and compliance with the environmental acquis.

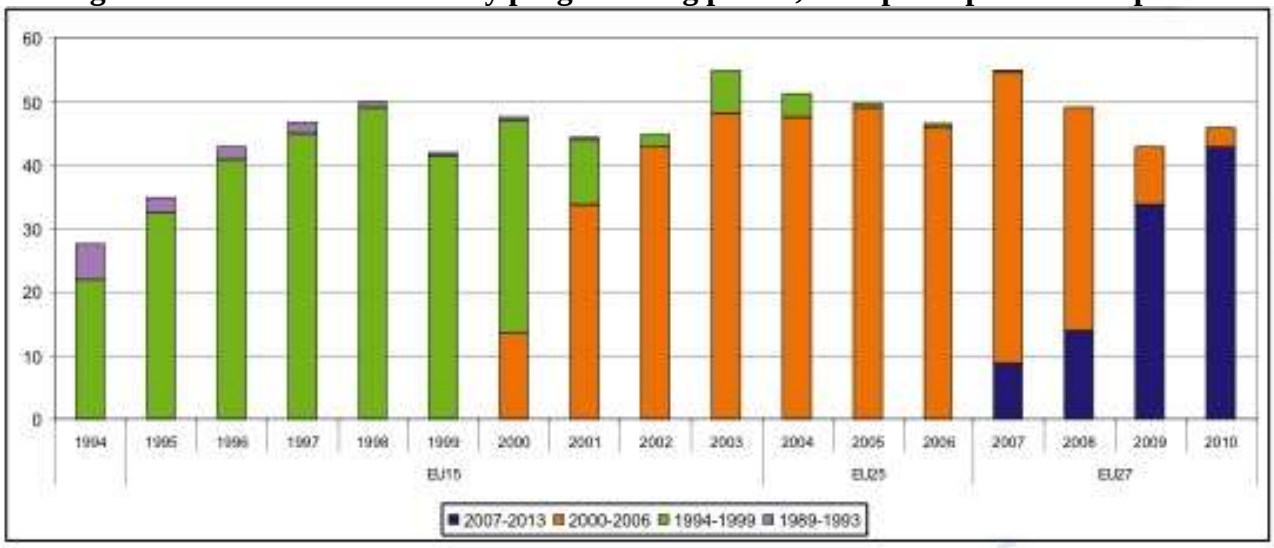
Table 1. Number of projects funded by the Cohesion Fund and ISPA

Country	No. of Projects	Total Projects Cost (€m)	CF (ISPA) Contribution (€m)
Bulgaria	21	501.42	372.31
Croatia	2	48.27	28.5
Cyprus	1	53.97	30.97
Czech Rep.	38	974.83	596.51
Estonia	19	231.03	219.66
Greece	73	1508.35	1154.65
Hungary	24	1271.55	714.2
Ireland	4	561.71	307.52
Latvia	21	479.11	290.15
Lithuania	27	592.25	374.72
Malta	1	34.83	11.72
Poland	86	4525.64	2785.21
Portugal	65	2369.29	1470.65
Romania	36	1398.88	968.17
Slovakia	24	641.16	365.11
Slovenia	16	285.42	129.45
Spain	300	7827.74	5488.04
TOTAL	758	23305.45	15307.54

Source: European Commission (2011), *EU and Countries Final Report*

Financial execution by programming period reveals that at aggregate level (Figure 1) the amount of payments over multiple periods is significantly less variable than the payments related to a single programming period. There is a clear stability in the trend of Cohesion Policy's investments on the ground, without 'gaps' even for programming periods characterised by a slow or delayed start of Cohesion Policy.

Figure 1. Financial execution by programming period, euro per capita at 2000 prices



Source: Bubbico and De Michelis, 2011

Over the budgetary period 2007-2013, the main instruments of cohesion policy were the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the Cohesion Fund (CF). The first instrument, European Regional Development Fund (ERDF), aims to strengthen regional economic and social cohesion by investing in growth-enhancing sectors to improve competitiveness and create jobs. The ERDF also finances cross-border cooperation projects. European Social Fund (ESF) invests in people, with a focus on improving employment and education opportunities. Another scope is to help disadvantaged people at risk of poverty or social exclusion. Cohesion Fund (CF) invests in green growth and sustainable development, and improves connectivity in Member States with a GDP below 90% of the EU-27 average.

A total of EUR 346.5 billion were set for cohesion policy measures in the EU member countries covering the following priorities:

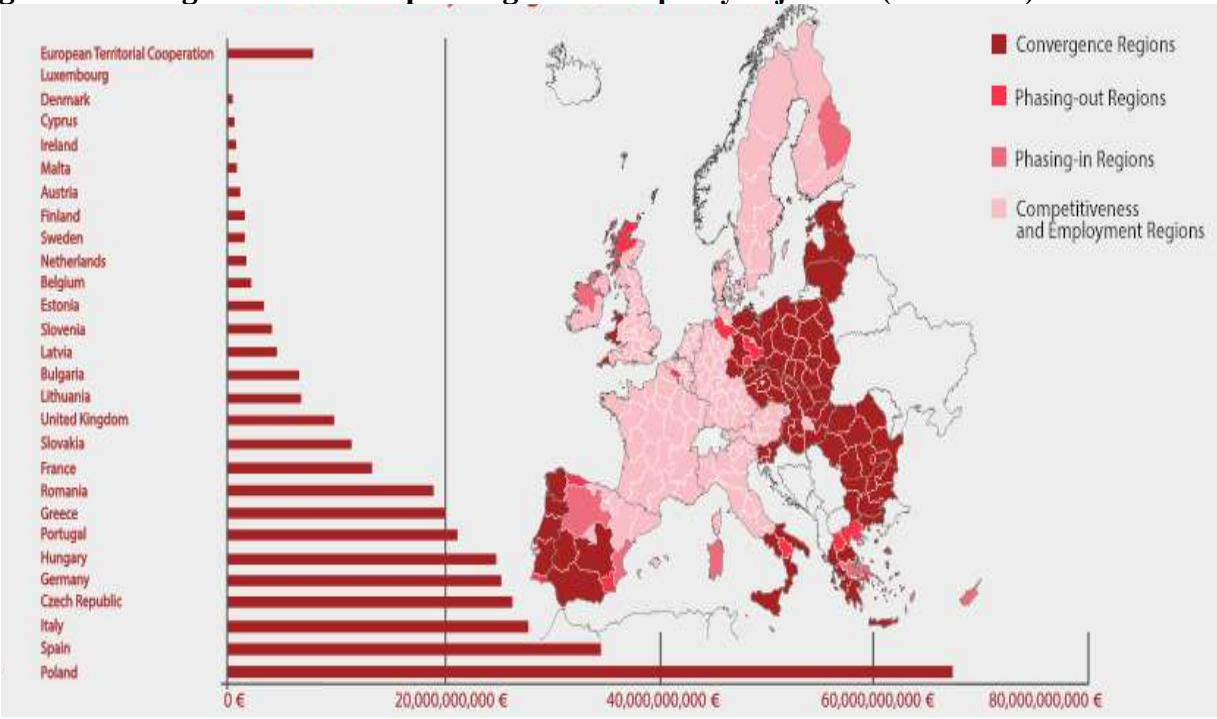
a) *'Convergence objective' (81.5%),* that meant promotion of growth-enhancing conditions and factors leading to convergence of the least-developed Member States and regions, the EU co-financing being between 75% to 85% of the eligible costs of projects for the ERDF and the ESF, and to 85% for the Cohesion Fund;

b) *'Regional competitiveness and employment objective' (16%)* that intended to prepare for economic and social change, promote innovation, entrepreneurship, and environmental protection, the EU co-financing being between 50% to 85% for the ERDF or the ESF; and

c) *'European territorial cooperation objective' (2.5%)* which aimed to strengthen cooperation at cross-border, trans-national and inter-regional levels in the fields of urban, rural and coastal development, the EU co-financing rate being 75% under the ERDF.

The largest part of Structural Funds (approximately 82% for Programme 2007-2013) was concentrated on the poorest regions of the EU countries. The eight poorest regions in the EU are in two countries, respectively Bulgaria and Romania.

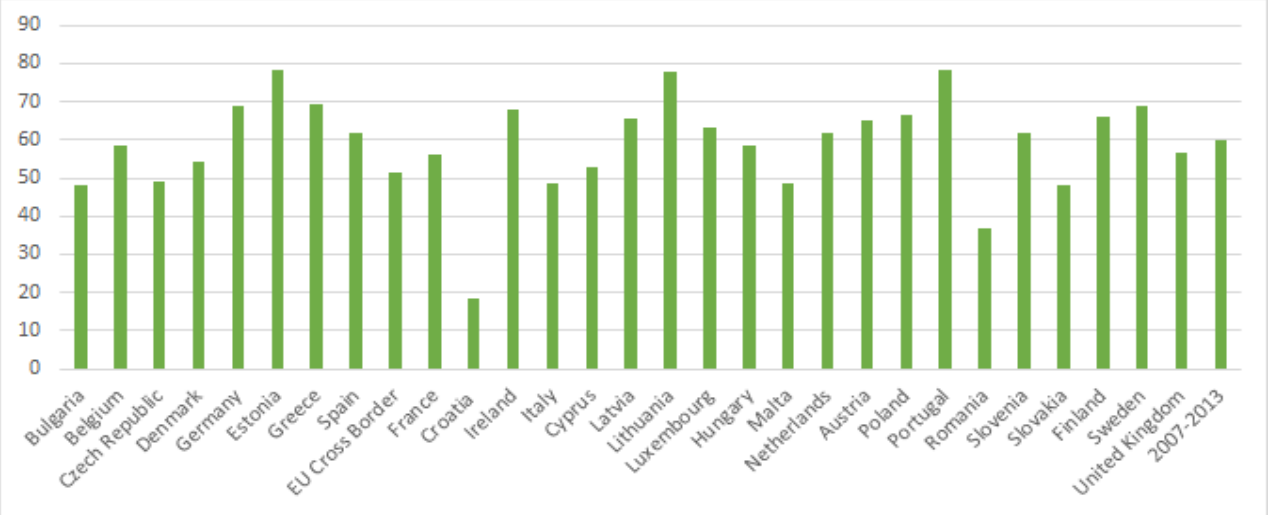
Figure 2. EU regions and corresponding Cohesion policy objectives (2007-2013) at NUTS 2 level



Source: European Commission, 2017

Absorption of EU Structural Funds is diverse, some of countries have recorded higher absorption rates, up of 60% (e.g. Germany, Greece, Spain, Ireland, Latvia, Lithuania, Luxembourg, Netherlands, Austria, Poland, Portugal, Slovenia, Finland, and Sweden), and other have recorded lower absorption rates, under 40%, (e.g., Romania). Financial execution of Structural Fund Programming Period 2007-2013 registered a rate of 60.11%.

Figure 3. Absorption rate of EU Structural Funds Programming Period 2007-2013



Source: computed by authors using DG for Regional and Urban Policy data

Specialists often associate a low level of financial absorption with difficulties in administrative capacities, an insufficient strategic vision or different obstacles in implementation system. The main reasons for the low absorption over the period 2007-2013 are considered, on the one hand, the late agreement on the EU's Multiannual Financial Framework (MFF) for the same period, and on the other hand, consequent delays in the negotiations of the National Strategic Reference Frameworks (NSRF) and the Operational Programmes (OP). Moreover, the late start of the programmes then coincided with the economic and financial crisis that affected all the European Union countries with varying degrees of intensity. Another reason can be consider the own capacity of each member state to absorb the funds taking into account their endogenous factors (e.g. legal system, institutional architecture, traditions, mentality, etc.).

The EU's regional policy for financial exercise 2014-2020 seeks to help every region to achieve its full potential especially visible on economic regional development, through improving competitiveness inside regions and between regions, and raising the living standards both for developed regions, but more of the poorest regions towards the EU average (convergence).

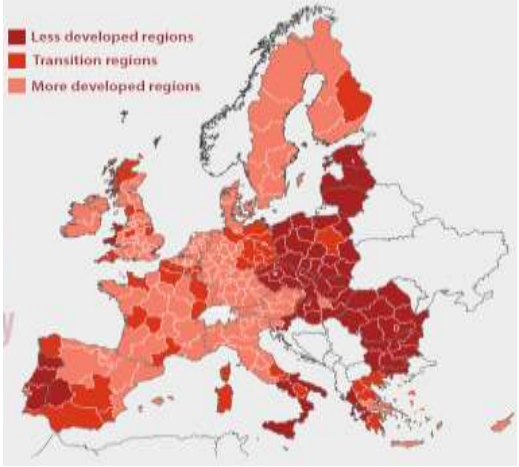
In the budgetary period 2014-2020, other two instruments respectively the European Agricultural Fund for Rural Development (EAFRD), and the European Maritime and Fisheries Fund (EMFF) strengthen coordination and coherence between cohesion policy and the other EU policies contributing to regional development. All five funds together (the European Regional Development Fund - ERDF; the European Social Fund - ESF; the Cohesion Fund - CF; the European Agricultural Fund for Rural Development - EAFRD; and the European Maritime and Fisheries Fund - EMFF) are known as the European Structural and Investment (ESI) Funds for this financial exercise.

For the financial exercise 2014-2020, cohesion policy was redefined on its goals by EU authorities towards maximising impact on growth and jobs, capturing the varying development strands within states of the EU and within each State. In this context, Cohesion Policy has set eleven thematic objectives supporting growth for the period 2014-2020:

1. Strengthening research, technological development and innovation (R&D);
2. Enhancing access to, and use quality of, information communication technologies;
3. Enhancing the competitiveness of SMEs;
4. Supporting the shift towards a low-carbon economy;
5. Promoting climate change adaptation, risk prevention and management;
6. Preserving and protecting the environment and promoting resource efficiency;
7. Promoting sustainable transport and improving network infrastructures;
8. Promoting sustainable and quality employment and supporting labour mobility;
9. Promoting social inclusion, combating poverty and any discrimination;
10. Investing in education, training and lifelong learning;
11. Improving the efficiency of public administration.

Investment from the European Regional Development Fund will support all 11 objectives, but the first four objectives (1 to 4) are the main priorities for investment. Main priorities for the European Social Fund are the last four objectives (8 to 11), though the Fund also supports the first four objectives (1 to 4). The Cohesion Fund supports objectives 4 to 7 and 11.

Figure 4. EU regions and corresponding Cohesion policy objectives (2014-2020) at NUTS 2 level



Source: European Commission, 2017

A total of EUR 351.8 billion were allocated for the EU's regions. Eligible for these funds are the EU regions according to the following classification: (i) less developed regions (EUR 182.2 billion means 51.7% of total funds), where GDP is less than 75% of the EU-27 average; (ii)

transition regions (9.94% = EUR 35 billion) where GDP is between 75% and 90% of the EU-27 average; and, (iii) more developed regions (15,34% = EUR 54 billion) where GDP is higher than 90 % of EU-27 average.

The system of cohesion policy funding 2014-2020 at NUTS 2 level is presented in details in table 2.

Table 2. Total EU allocations of Cohesion Policy 2014-2020 (million EUR, current prices) at NUTS 2 level

Country	Cohesion Fund	Less Developed Regions	Transition Regions	More Developed Regions	Outermost and northern sparsely populated regions	European Territorial cooperation		Youth Employment Initiative (additional allocation)	TOTAL
						Cross-border cooperation	Transnational cooperation		
AT	0	0	72.3	906.0	0	222.9	34.4	0	1235.60
BE	0	0	1039.70	938.6	0	219	44.2	42.4	2283.90
BG	2278.30	5.089.30	0	0	0	134.2	31.5	55.2	7588.40
CY	269.5	0	0	421.8	0	29.5	3.3	11.6	735.6
CZ	6258.90	15282.50	0	88.2	0	296.7	43	13.6	21982.90
DE	0	0	9771.50	8498.00	0	626.7	338.7	0	19234.90
DK	0	0	84	329.2	0	106.3	33.8	0	553.30
EE	1073.30	2461.20	0	0	0	49.9	5.5	0	3590.00
EL	3250.20	7034.20	2306.10	2528.2		185.3	46.4	171.5	15521.90
ES	0	2040.40	13399.50	11074.40	484.1	430	187.6	943.5	28559.50
FI	0	0	0	999.1	305.3	139.4	21.9	0	1465.80
FR	0	3407.80	4253.30	6348.50	443.3	824.7	264.6	310.2	15852.50
HR	2559.50	5837.50	0	0	0	127.8	18.3	66.2	8609.40
HU	6025.40	15005.20	0	463.7	0	320.4	41.4	49.8	21905.90
IE	0	0	0	951.6	0	150.5	18.3	68.1	1188.60
IT	0	22324.60	1102.00	7692.20	0	890	246.7	567.5	32823.00
LT	2048.90	4628.70	0	0	0	99.9	13.9	31.8	6823.10
LU	0	0	0	39.6	0	18.2	2	0	59.70
LV	1349.40	3039.80	0	0	0	84.3	9.3	29	4511.80
MT	217.7	0	490.2	0	0	15.3	1.7	0	725.00
NL	0	0	0	1014.6	0	321.8	67.9	0	1404.30
PL	23208.00	51163.60	0	2242.4	0	543.2	157.3	252.4	77567.00
PT	2861.70	16671.20	257.6	1275.50	115.7	78.6	43.8	160.8	21465.00
RO	6935.00	15058.80	0	441.3	0	364	88.7	106	22993.80
SE	0	0	0	1512.40	206.9	304.2	38.1	44.2	2105.80
SI	895.4	1260.00	0	847.3	0	54.5	8.4	9.2	3074.80
SK	4168.30	9483.70	0	44.2	0	201.1	22.3	72.2	13991.70
UK	0	2383.2	2617.40	5767.60	0	612.3	253.3	206.1	11839.90
Interregional cooperation									571.6
Urban innovative actions									371.9
Technical assistance									1217.6
EU28	**63399.7**	**182171.8**	**35381.1**	**54.50.5**	**1555.4**	**7548.4**	**2075.0**	**3211.2**	**351854.2**

Source: European Commission, 2015

Member States use the funds to finance thematic programmes covering the whole country (e.g. on the environment, transport, infrastructure, education, etc.) or regional programmes channelling funds to a particular part of the country. The changes occurred for the actual programming period (2014-2020) is determined by the Community interest to diminish losses or inefficient allocations from public funds (national or Structural Funds) and are in accord with the Europe 2020 Strategy.

2. Stylized facts on economic regional disparities in the EU

Regional inequalities tend to follow a pro-cyclical pattern. Developed and developing regions grow faster in periods of expansion and more slowly in periods of recession. However, since the 2008/09 crises this relationship has been less clear. Some regions are stagnating relative to others, both within and between member states, whilst others have benefited from an influx of educated labour. For poor or developing regions, inequalities can identified in social deprivation, poor housing, poor education and healthcare, higher unemployment or inadequate infrastructure provisions.

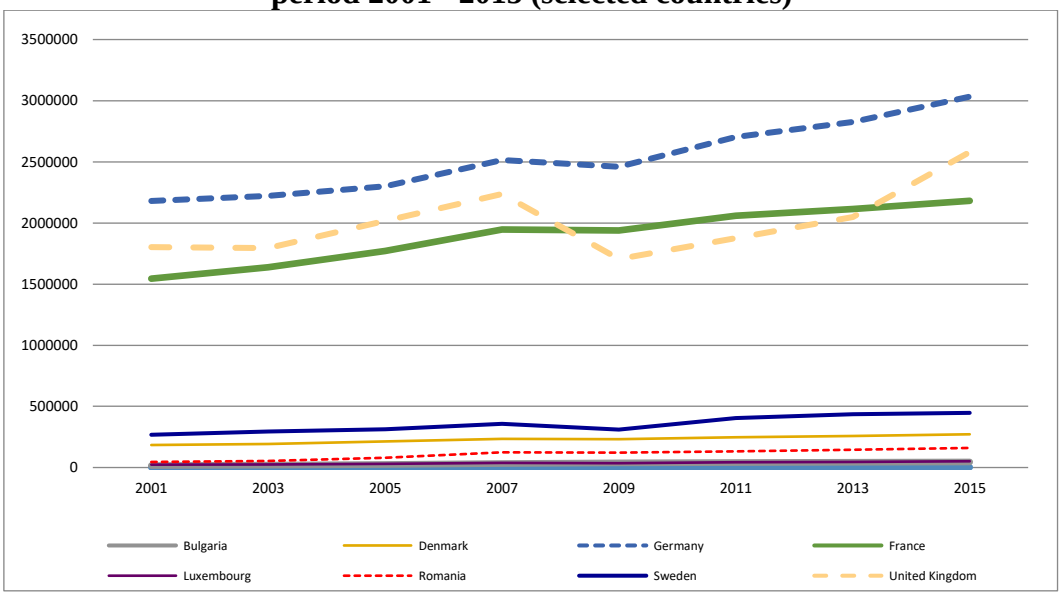
Although researchers, policy-makers and international institutions have proposed different indices or/and indicators to measure regional development, the most used one, as socio-economic indicator is per capita GDP. Thus, economic development is most commonly expressed in terms of GDP, which in the regional context may be used to make comparisons between regions or to measure macroeconomic activity and growth.

Most analyses (Cheshire and Carbonaro, 1996; Geppert, Happich, and Stephan, 2004) on regional development in Europe use NUTS-1 (from 3 million to 7 million inhabitants) or NUTS-2 (from 800 000 to 3 million inhabitants) regions or even a mixture of both. In our research we put priority on NUTS-2 because to this level is easier to capture regional growth process and to identify the disparities between regions than on NUTS-1. However, both level are rather heterogeneous in terms of size and the degree of self-containment and autonomy. The EU is comprised of many diverse regions where some are highly urbanized with a knowledge-intensive economic activity (e.g. Inner London -UK), but others are rural, relatively undeveloped, and reliant on low technology and even subsistence agriculture (e.g. North-East Region – Romania). Regional disparities are stronger than disparities between states, and in this context, a very important role belongs to cohesion policy. As many policies are delivered at a regional level, they are also important for service delivery.

The leading regions with strong discrepancies between states in the ranking of NUTS-2 regional GDP over the period 2001-2015 based on odd years are shown in Figure 5. The figure shows an overview of the overall GDP in EU-28, highlighting the countries with the highest GDP in the EU-28 and the countries with the lowest GDP. These countries were selected to show that as the main macroeconomic aggregate of the national accounts system, expressing the gross added value of goods and services at the final stage of the economic cycle that were produced within a country by economic agents, is not sufficient to reflect the possible level of discrepancies between member states of the EU. For example, Luxembourg and Bulgaria are countries whose GDP is small compared to other EU states, but in terms of population, we find that the tiny Luxembourg is the most advanced country

with a GDP per capita equal to € 89,900 (in 2015), which is more than 14 times the GDP per capita of Bulgaria, the least advanced EU country having a figure equal to € 6,300 in 2015 (Figure 7).

Figure 5. Dispersion of GDP at current market prices (million Euro) NUTS 2 Level over the period 2001 - 2015 (selected countries)



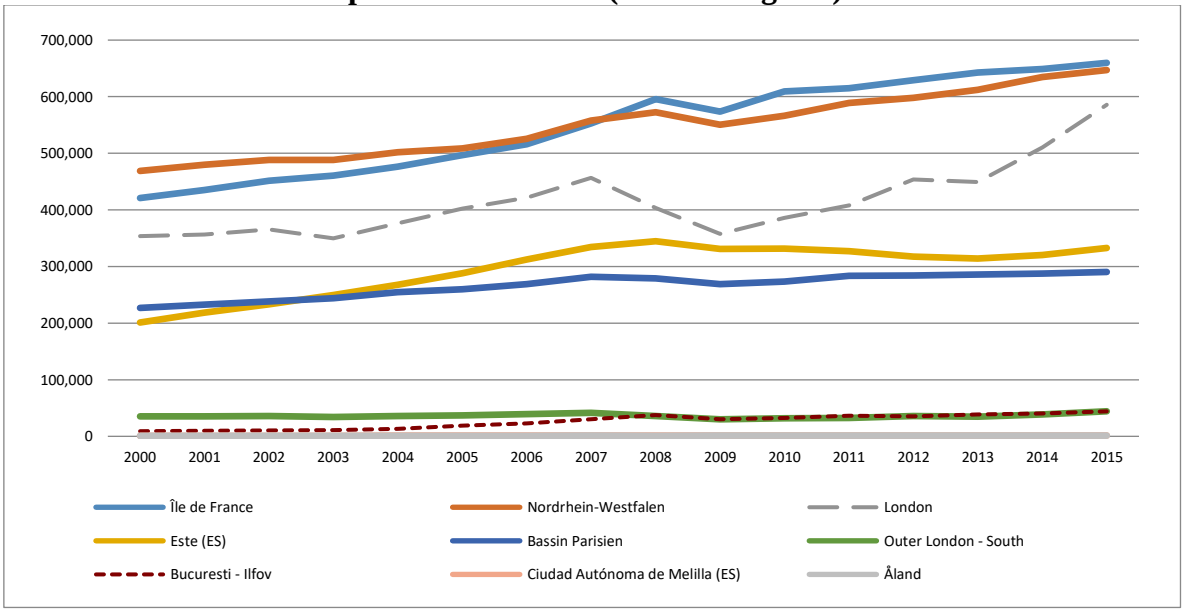
Source: computed by author using data provided by Eurostat [online data codes: nama_10r_2gdp]

GDP at market prices in the EU-28 was valued at EUR 14.714 trillion in 2015. The top three countries with the highest GDP are Germany, the United Kingdom and France. From the GDP perspective what is of interest is the level of fluctuations at the country level in the case of the selected countries. The most fluctuated GDP was recorded in the United Kingdom where a sharp increase was recorded between 2001-2007, and in 2008-2009 there was a very high decrease, under the level of 2001, with a return to 2007 level only in 2014. The most rapid economic growth relative to the EU-28 countries selected during the period 2001–2015 across NUTS-2 regions of the EU was recorded in Germany, but it also records slight fluctuations during the crisis.

From the GDP perspective on regions (see Figure 6), it can be seen that the top three regions with the highest GDP are registered in Île de France (FR) (659796 million Euro in 2015), Nordrhein-Westfalen (DE) (647067 million EUR in 2015) and London (GB) (585746 million Euro in 2015). The two regions having the half GDP of the top-3 GDP size are Este (ES) (332787 million EUR in 2015) and Bassin Parisien (FR) (290413 million EUR in 2015). Two middle regions on the total number of the EU regions have the GDP between 44241 million EUR and 44154 million Euro in 2015, and are Outer London – South GB) (35443 million EUR in 2000 vs. 44241 million EUR in 2015) and Bucharest – Ilfov (RO) (9117 million EUR in 2000 vs. 44154 million EUR in 2015). One can observe the gap of 250 million Euros between the regions with GDP by half compared to the

regions with the highest GDP and the middle regions as GDP in the total regions. Also, it can be seen that the two middle regions have a different GDP growth; more weighted in Outer London - South (GB) and much more pronounced in Bucharest – Ilfov (RO). The regions with the lowest GDP are Ciudad Autónoma de Melilla (ES) (1444 million EUR in 2015) and Åland (FI) (1346 million EUR in 2015). The London region, which is in the top three regions as GDP, presents the highest fluctuations in GDP. These fluctuations occur especially during the crisis (2008-2009), when the GDP level dropped significantly. Until 2015, GDP is well above the peak reached in 2007 by about 120.000 million Euro. Region Este (ES) registered the highest GDP in 2008, showing slight fluctuations in the analysed period, especially declining after 2008, but recovery in years does not reach the level of the mentioned year

Figure 6. Dispersion of GDP at current market prices (million Euro) NUTS 2 Level over the period 2001 - 2015 (selected regions)



Source: computed by author using data provided by Eurostat [online data codes: nama_10r_2gdp]

In theory, GDP per capita is often regarded as a proxy indicator for overall living standards. Per capita GDP is considered the best indicator of the degree of development in the EU-28 regions, as it is the most widely available and reliable of all indicators. For a more accurate analysis, it is considered that while GDP per capita in euro measures the competitiveness of each country in the international economy, when measured in PPS (Purchasing Power Standard) it takes into consideration price levels and intends to provide a better estimate of national living standards. During the period of time 2000-2015, GDP per capita of EU-28 average at NUTS 2 level fluctuated, between a minimum of 19.8 thousand PPS in 2000 and 28.9 thousand PPS in 2015.

The leading regions with strong discrepancies between states in the ranking of NUTS-2

regional GDP per inhabitant over the period 2001-2015 based on odd years are shown in Table 3 and Figure 7.

Table 3. GDP per capita at current market prices (million Euro) of NUTS 2 Level over the period 2001 - 2015 (selected countries)

GEO/TIME	2001	2003	2005	2007	2009	2011	2013	2015
EU-28	20.600	21.500	23.400	26.000	24.500	26.100	26.700	28.900
Bulgaria	2.000	2.400	3.100	4.300	5.000	5.600	5.800	6.300
Denmark	34.400	35.900	39.300	42.700	41.900	44.500	46.100	47.800
Germany	26.700	27.200	28.300	31.000	30.600	33.700	35.000	37.100
France	25.200	26.300	28.100	30.400	30.000	31.500	32.100	32.800
Romania	2.000	2.500	3.800	6.000	5.900	6.600	7.200	8.100
Sweden	30.100	32.800	34.700	39.000	33.300	42.900	45.400	45.600
United Kingdom	30.500	30.100	33.400	36.500	27.400	29.600	32.000	39.600
Luxembourg	53.200	57.200	63.800	76.500	72.800	82.500	85.000	89.900

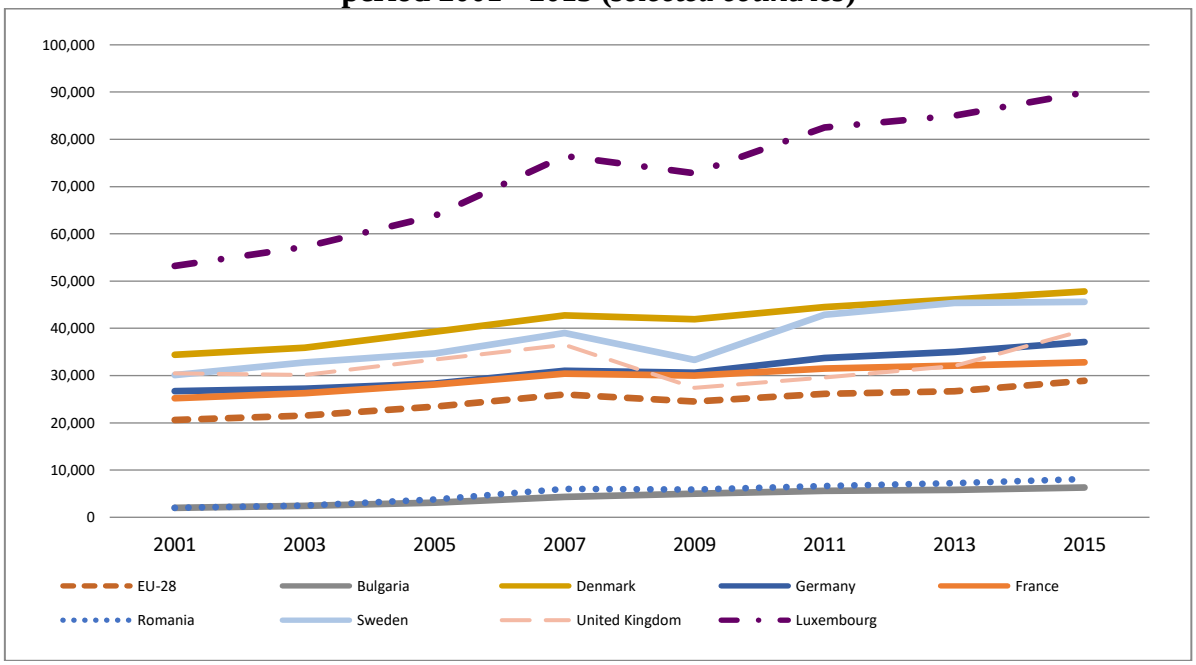
Source: computed by author using data provided by Eurostat [online data codes: nama_10r_2gdp]

The analysis of variation in GDP per capita from 2001 to 2015 (odd years) for selected countries shows that disparities between the regions at NUTS 2 level of the EU-28 are evident.

The 'strongest' European Union country at NUTS 2 level is Luxemburg (89.900 million Euro per capita in 2015). Denmark (47.800 million Euro per capita) and Sweden (45.600 million Euro) have over slightly more than half of GDP per capita in Luxembourg at NUTS 2 level. United Kingdom, Germany, and France at NUTS 2 level have GDP per capita over the EU average with very little. The 'weakest' European Union countries at NUTS 2 level are Bulgaria (e.g. Severozapaden Region) and Romania (e.g. North-East Region), with 6.300 million Euro GDP per capita, respectively 8.100 million Euro.

Luxembourg at NUTS 2 level recorded the highest GDP growth per capita, respectively from 53.2 thousand PPS in 2001 to 89.9 thousand PPS in 2015. Significant fluctuations that revolve around the crisis are recorded over time. However, it is noticed that the economic crisis has led to a GDP per capita in Luxembourg that decrease in 2009 (76.5 thousand PPS) comparative with 2007 (72.8 thousand PPS). The most significant decline in GDP per capita as we notice also on overall GDP (Figure 5 and Figure 6) was recorded in the UK at NUTS 2 level from 36.5 thousand PPS in 2007 to 27.4 thousand PPS in 2009. Significant fluctuations that revolve around the crisis have also been recorded in the regions of Sweden (at NUTS 2 level). The other states showed insignificant fluctuations in the analysed period in terms of GDP per capita. Including EU average at NUTS 2 level is quite less fluctuating.

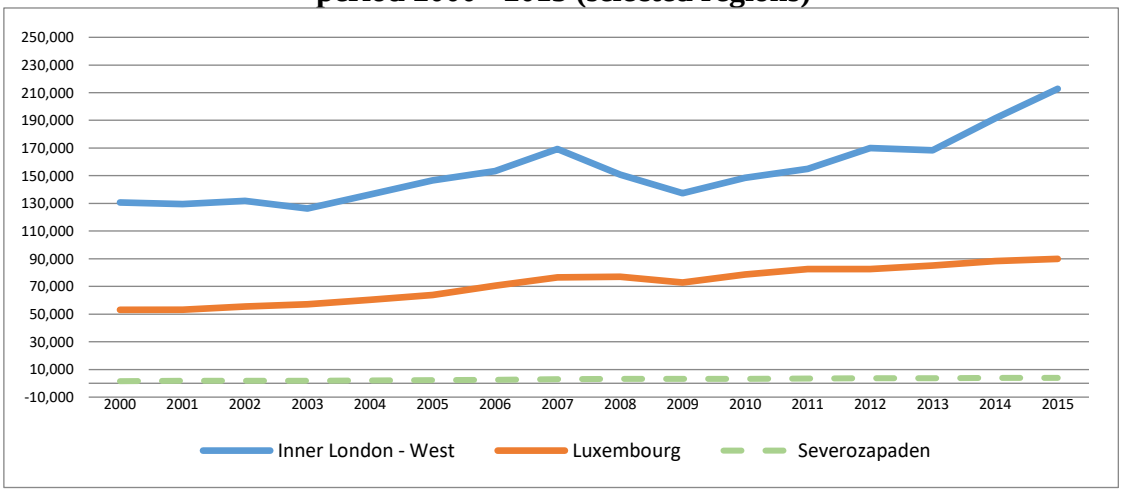
Figure 7. Dispersion of GDP per capita at current market prices of NUTS 2 Level over the period 2001 - 2015 (*selected countries*)



Source: computed by author using data provided by Eurostat [online data codes: nama_10r_2gdp]

To show as clearly as possible the discrepancies between the EU-28 regions, we will present in Figure 9 the extreme regions at NUTS 2 level, the first two regions with the highest GDP per capita at NUTS 2 level and the region with the lowest living standard at NUTS 2 level.

Figure 9. Dispersion of GDP per capita at current market prices of NUTS 2 Level over the period 2000 - 2015 (selected regions)



Source: computed by author using data provided by Eurostat [online data codes: nama_10r_2gdp]

An overview of the EU-28 regions shows that the region with the highest GDP per capita (212.800 million EUR) is Inner London region (GB). The second region with GDP per capita the highest in the EU regions is Luxembourg region with 89.900 million EUR. The poorest region is

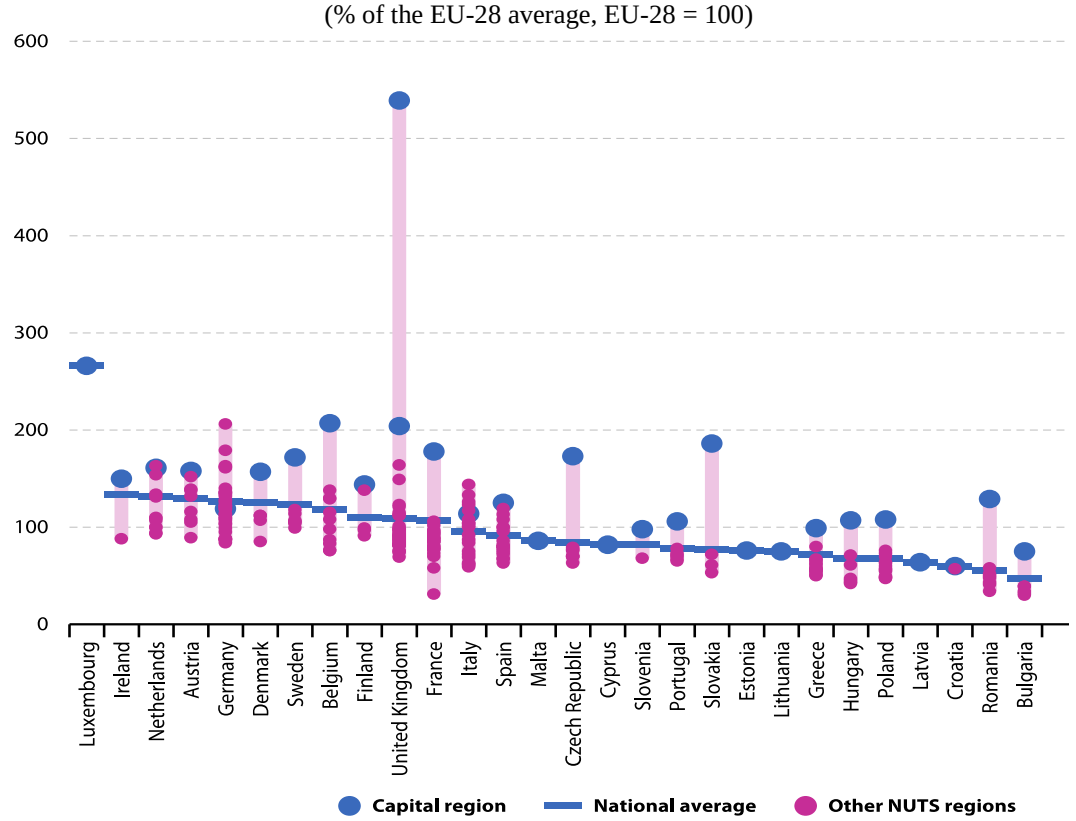
recorded in Bulgaria, namely Severozapaden region, with 3.900 million EUR. The disparities between the richest and the poorest regions are very high, so the poorest region has a GDP per capita of about 55 times lower (Severozapaden region in Bulgaria vs. Inner London region in United Kingdom).

The GDP per capita evolution in the Inner London region (GB) is highly fluctuating, with an upward trend in general but with significant declines over the crisis. Much more balanced is the pace of growth in the Luxembourg region.

The reasons for the discrepancies in GDP per capita in the regions are multiple. One of the most significant reasons for our analysis is that in some regions, where GDP per inhabitant appears very high (e.g. Luxembourg, Inner London, etc.) can be artificially inflated by commuters who do not live in these regions.

Figure 8. GDP per capita in purchasing power standard (PPS) in relation to the EU-28 average, by NUTS 2 regions, 2015

(% of the EU-28 average, EU-28 = 100)



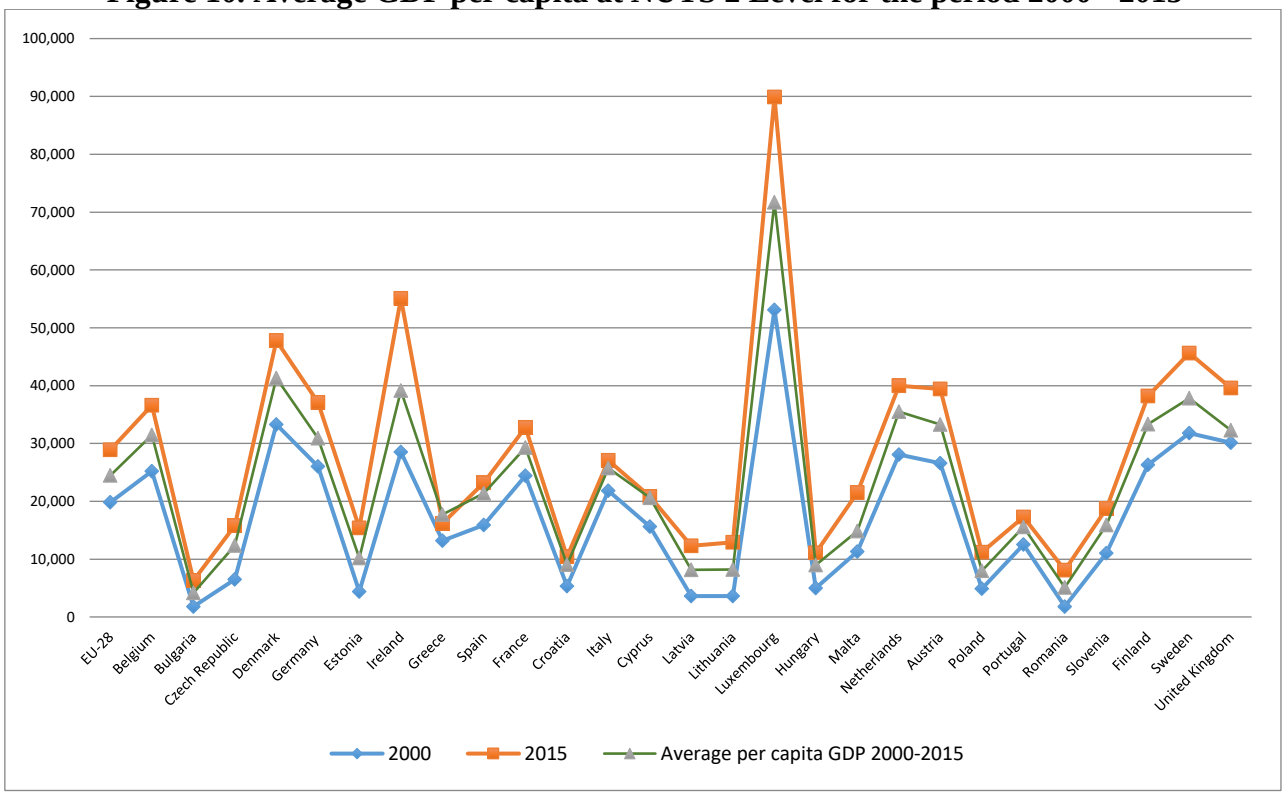
Source: computed by author using data provided by Eurostat [online data codes: nama_10r_2gdp and nama_10_pc]

In most countries of the EU, the spatial patterns of growth have favoured the capital city regions, which have increased their dominance. Capital city regions in most the European Union countries have a GDP per capita figure which is significantly higher than the national and the EU average. In some countries (e.g. Bulgaria, Belgium, Croatia, the Czech Republic, Denmark, France, Greece,

Hungary, Ireland, Poland, Portugal, Romania, Slovenia, Slovakia and Sweden), the capital city regions are the only regions from each of these EU Member States where per capita GDP is higher than the national average in 2015. The only exceptions to this trend are Germany, Italy and the Netherlands.

Figure 10 provides a reasonably accurate idea of the existing inter-EU28 disparities through details of per capita GDP for selected years 2000-2015.

Figure 10. Average GDP per capita at NUTS 2 Level for the period 2000 - 2015



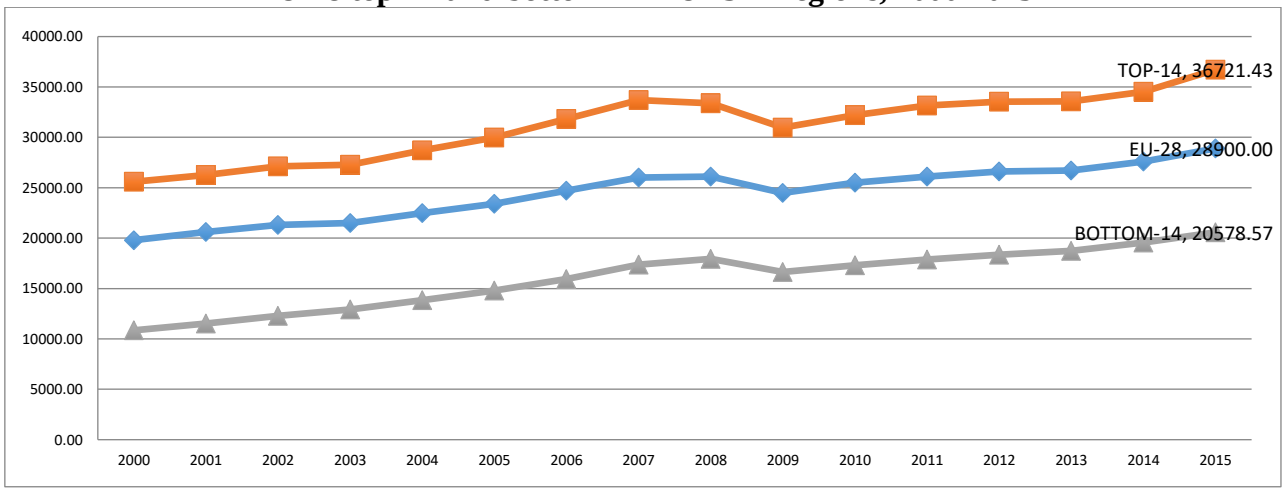
Source: computed by author using data provided by Eurostat [online data codes: nama_10r_2gdp]

Data on per capita GDP clearly establishes that in terms of average for 2000-2015, the gaps between the European Union regions are approximately the same and not only have the inequalities between States sharpened, there is also wide disparity between regions. Data suggests that regions of Central and East European countries including Baltic countries regions have a smaller per capita GDP compared to the West Europe and this trend remain over years. On average, western and northern regions are more advanced than eastern and southern regions respectively (Petrakos *et al*., 2004a and 2004b; Barrios and Strobl, 2005).

During the beginning of the financial and economic crisis, GDP per capita in the EU-28 peaked in 2008 at 26.1 thousand PPS. There was a rapid reduction in activity in 2009, with a slight increase in 2010. In 2011 the average level of GDP per capita had returned (slightly) above its pre-crisis peak

(26.1 thousand PPS). The pace at which GDP per capita was increasing slowed in 2012 and 2013 when an average of 26.65 thousand PPS of GDP was generated per capita, before accelerating again in 2014 to 27.5 thousand PPS per capita and in 2015 to 28.9 thousand PPS per capita.

Figure 11. Inequality among the EU-28 countries measured by GDP per capita in PPS for the EU-28 top-14 and bottom-14 NUTS II regions, 2000-2015



Source: computed by author using data provided by Eurostat [online data codes: nama_10r_2gdp]

In Top-14 NUTS II regions are included regions of Luxembourg, Ireland, Netherlands, Austria, Denmark, Sweden, Germany, Belgium, Finland, United Kingdom, France, Italy, Spain, and Cyprus. Among the countries mentioned, only Cyprus is a country in the wave of 2004, the rest being the EU-15 countries. In Bottom-14 NUTS II regions are included regions of Greece, Slovenia, Malta, Czech Republic, Portugal, Slovakia, Estonia, Hungary, Lithuania, Poland, Croatia, Latvia, Romania, and Bulgaria. Among them Portugal and Greece are countries in the EU-15, the remaining 12 countries entered the EU in 2004 and 2007. We find that Top-14 NUTS II regions with a GDP per capita equal to € 36721 (in 2015), which is almost double the GDP per capita of Bottom-14 NUTS II regions equal to € 20578 in 2015.

The EU top-14 NUTS II regions have improved their relative position in terms of GDP per capita over the 2000-2015 period of time. They have experienced a relative decline of their GDP per capita levels in crisis period, the recovery of 2007 year being in 2014. Only 2015 year registered GDP per capita levels higher than previous period. The same pattern was followed by EU-28 average and the EU bottom-14 regions, but with a slightly decline of their GDP per capita levels in the same period of crisis. Although progress is made at both ends of the EU scale, success is more obvious in the leading regions, rather than in the lagging ones (Figure 11).

Some authors (Petrakos, 2009) consider that a significant part of regional

inequalities/disparities is due to the inability of the least advanced regions to close the development gap and converge towards the national average.

The expansion in 2004 and 2007 of EU to Central and Eastern Europe has increased intra-EU regional inequalities because new entered countries had significantly lower levels of development and led to a doubling of regional inequalities, as we can see in Figure 11, where the dominant in Bottom-14 NUTS II regions are new entrants. When we take into consideration the regional GDP per capita measured in Purchasing Power Systems (PPS) that adjust for price levels, it becomes clear that regional inequalities in the EU based on productivity are considerably higher.

Conclusions

Our results support the view that the scale of regional disparities in GDP per capita differ from country to country and are still higher between the regions of the EU-28. GDP per capita is one of the instruments/criteria of the real convergence process, which allows us to conclude that regional real convergence within the EU-28 is still slow. This point of view is substantiated it if we take into account the others real convergence criteria, such as structure of national economy branches, foreign trade, although they have not been subjected to our analysis.

The nominal convergence process is continuous, without being interrupted or considered to be uniform at least at the level of the euro area countries. In this respect, a tool to support the convergence process is even European Structural Funds. Taking into account the particularities of each country, we can conclude that the convergence criteria are differently achieved by each state.

A huge deadlock in meeting or maintaining the nominal and real convergence criteria was the global economic and financial crisis, but the prospect of the EU states continues to achieve the convergence process, as well as meeting the targets set by the 2020 Strategy. Our analysis highlights that there are states whose regions have been significantly affected by the economic crisis from the perspective of GDP per capita.

It is noted that for each EU region there are increases, but each region has its own rhythm of growth, even if the structural funds tried to reduce regional disparities over the period analysed. In this context, Governments have a crucial role to play in reducing regional disparities and promoting balanced development in which all areas and regions are enabled to develop. Also, the involvement of sub-national/regional authorities and regional stakeholders implies to focus on local and regional realities to identify and remove gaps in the provision of human development and basic services and infrastructure with a view to ensuring that all regions or sub-regions and groups have equitable access

to the benefits of development. Starting with these realities and values, the authorities should use them as a basis for policy making.

Our point of view is that the European Union should develop a territorially differentiated approach to Regional policy, adapted to the particular structural needs and socio-economic profiles of each region. In this context, Cohesion policy needs to be diversified. Cohesion policy can be designed as a framework within which local and regional authorities are guided and encouraged in the formulation of policies seeking to overcome contradictions between the different dimensions of sustainable and economic development.

We also believe that eligibility criteria for regions for funds need to be reassessed and adapted. A more dynamic and comprehensive outlook on regional economic development would provide a more nuanced picture of regional structural disparities in Europe that will then be attenuated or in a very optimistic scenario, will be eliminated.

References

Arcalean, C., Glomm, G. and Schiopu, I. (2012), Growth effects of spatial redistribution policies, *Journal of Economic Dynamics & Control*, 36, pp. 988–1008, doi: 10.1016/j.jedc.2012.01.004

Artelaris, P. (2011), Convergence patterns in the world economy: exploring the non-linearity hypothesis, *Journal of Economic Studies*, 38 (3), pp. 236-252.

Artelaris, P., Arvanitides, P. and Petrakos, G. (2008), *Convergence patterns in the world economy: exploring the non-linearity hypothesis*, Economic and Social Research Institute (ESRI).

Barrios, S. and Strobl, E. (2005), *The Dynamics of Regional Inequalities*, European Commission Economic Papers, 229.

Bubbico, R. and De Michelis, N. (2011), The financial execution of Structural Funds, *Regional Focus*, 3, pp. 1-8.

Cheshire, P. and Magrini, S. (2000), Endogenous Processes in European Regional Growth: Convergence and Policy, *Growth and Change*, 31 (Fall), pp. 455-479.

Dobson, S., Ramlogan, C. and Strobl, E. (2006), Why do Rates of B-Convergence Differ? A Meta-Regression Analysis, *Scottish Journal of Political Economy*, 53(2), pp. 153-173

European Commission (2011), *EU and Countries Final Report*, retrieved from http://ec.europa.eu/regional_policy/sources/docgener/evaluation/expost2006/wpa_en.htm

European Parliament (2007), *Regional disparities and Cohesion: What strategies for the future.*

Eurostat regional yearbook (2016), Luxembourg: Publications office of the European Union.

Eurostat (2017), http://ec.europa.eu/eurostat/data/database

Geppert, K., Happich, M. and Stephan, A. (2004), *Regional Disparities in the European Union: Convergence and Agglomeration,* European Regional Science Association Conference paper.

Giannetti, M. (2002), The Effects of Integration on Regional Disparities: Convergence, Divergence or Both?, *European Economic Review*, 46, pp. 539-567

Hirschmann, A. (1958), *The Strategy of Economic Development*, New Haven: Yale University Press.

Kutan, M., A. and Yigite M., T. (2007), European integration, productivity growth and real convergence, *European Economic Review*, 51, pp. 1370–1395, doi:10.1016/j.euroecorev.2006.11.001

Myrdal, G. (1957), *Economic Theory and Underdeveloped Regions*, London: Hutchinson.

Palevičienė, A. and Dumčiuvienė, D. (2015), Socio-Economic Diversity of European Regions: Finding The Impact for Regional Performance, *Procedia Economics and Finance*, 23, pp. 1096 – 1101, doi: 10.1016/S2212-5671(15)00431-1

Pellegrini, G., Terribile, F., Pellegrini, G., Tarola, O., Muccigrosso, T. and Busillo, F. (2013), Measuring the effects of European Regional Policy on economic growth: A regression discontinuity approach, *Regional Science*, 92(1), pp. 217–233, doi: 10.1111/j.1435-5957.2012.00459.x

Perroux, F. (1955), Note Sur La Notion De Pole De Croissance, *Economie Appliquee*, 7, pp. 307-320.

Petrakos, G. (2008), Regional inequalities in Europe: Evidence, theory and policy, *Town Planning Review*, forthcoming.

Petrakos, G. (2009), *Regional growth and inequalities in the European Union*, Discussion Paper Series, 15(2), pp. 23-44.

Petrakos, G., Kallioras D. and Anagnostou A. (2008), *Regional Growth and Convergence in Europe,* Discussion Paper Series, 14(15), 273-298.

Petrakos, G., Psycharis, Y. and Kallioras D. (2004a), Regional Inequalities in the EU Accession Countries: Evolution and Challenges, in: Bradley, J., Petrakos, G. and Traistaru, I. (eds.), *Integration, Growth and Cohesion in an Enlarged European Union*, New York: Springer, pp. 45-64.

Petrakos, G., Rodriguez-Pose, A. and Anagnostou, A. (2004b), Regional Inequalities in the European Union, in: Bradley, J., Petrakos, G. and Traistaru, I. (eds), *Integration, Growth and Cohesion in an Enlarged European Union*, New York: Springer, pp. 29-43.

Petrakos, G., Rodriguez-Pose, A. and Rovolis, A. (2005), Growth, Integration and Regional Disparities in the European Union, *Environment and Planning A*, 37(10), pp. 1837-1855.

Rosenstein-Rodan, P. (1943), Problems of Industrialization of Eastern and Southeastern Europe, *Economic Journal*, 53, pp. 202-211.

Solow, R. (1956), A Contribution to the Theory of Economic Growth, *Quarterly Journal of Economics*, 70 (1), pp. 65-94.

Swan, T. (1956), Economic Growth and Capital Accumulation, *Economic Record*, 32 (2), pp. 334-361.

World Development Indicators, http://data.worldbank.org/data-catalog/world-development-indicators