

Bulgarian and Romanian regions competitiveness: a synthetic overview

Eduard MARINOV¹

Abstract: *The Regional competitiveness index is the first measure of the degree of competitiveness at regional level covering all EU countries and their regions. The paper presents briefly the methodological frame of the RCI and then applies it to Bulgarian and Romanian NUTS 2 regions. The results achieved show the relative ranking of the two countries and their regions in the EU and allow for a broad comparison between them as well as for conclusions to be drawn about their strengths and weaknesses regarding the overall regional development and all 11 fields covered by the RCI.*

Keywords: *Regional development, Regional competitiveness index (RCI), Bulgarian and Romanian regions*

JEL Classification: O18, R11, R58

Introduction

A broad definition of competitiveness includes the skills to compete, to win and to retain a position in the market, to increase market share and profitability, and eventually to consolidate commercially successful activities (Filó, 2007). The World Economic Forum produces one of the best known competitiveness indices – the Global Competitiveness Index (GCI). The Forum defines national competitiveness as the “set of institutions, policies and factors that determine the level of productivity of a country” (Schwab and Porter, 2007). The WEF definition links micro- (firm-level) to macro- (country-level) competitiveness. The framework describing a firm’s capacity to compete, grow and be profitable (Martin, Kitson and Tyler, 2006) is relatively clear and accepted, but applying it to countries or regions is a hard task. The implicit analogy between firms and nations

¹ Assistant Professor, Economic Research Institute at BAS; 3 Aksakov Str., Sofia, Bulgaria; eddie.marinov@gmail.com

has been widely criticized because a country cannot go out of business and because competition between countries can benefit both, while competition between companies in the same sector is more likely to be a zero sum game (Krugman, 1996).

The competitiveness of a territory is the ability of a locality or region to generate high and rising incomes and improve the livelihoods of the people living there (Krugman, 1996). In contrast to the WEF definition focused on the concept of productivity, this definition is based entirely on the benefits to people living in a region. It assumes a close link between competitiveness and prosperity. It characterizes competitive regions not only by using output-related terms such as productivity but also by determining the sustained or improved level of comparative prosperity (Bristow, 2005). Regional competitiveness can be defined as the ability to offer an attractive and sustainable environment for firms and residents to live and work (Dijkstra, Annoni, Kozovska, 2011).

Several well-established studies measure competitiveness at the country level. The Global Competitiveness Index (GCI), published annually by the World Economic Forum (Schwab and Porter, 2007; Schwab and Sala-i-Martin, 2012), and the World Competitiveness Yearbook by the Institute for Management Development (IMD, 2008) are the most influential and best known indices.

The 5th Report on Social, Economic and Territorial Cohesion introduces a new regional competitiveness index (RCI) for all NUTS 2 regions (EC, 2010). RCI represents the first measure of the level of competitiveness at the regional level covering all EU countries and their regions (Dijkstra, Annoni, Kozovska, 2011). Therefore it could be used as a very general assessment of the region in all aspects of comparison, as the index goes beyond the economy in the narrow sense. The index and its components are assessed in relation to all the other EU regions thus indicating the respective strengths and weaknesses of a region in an EU perspective.

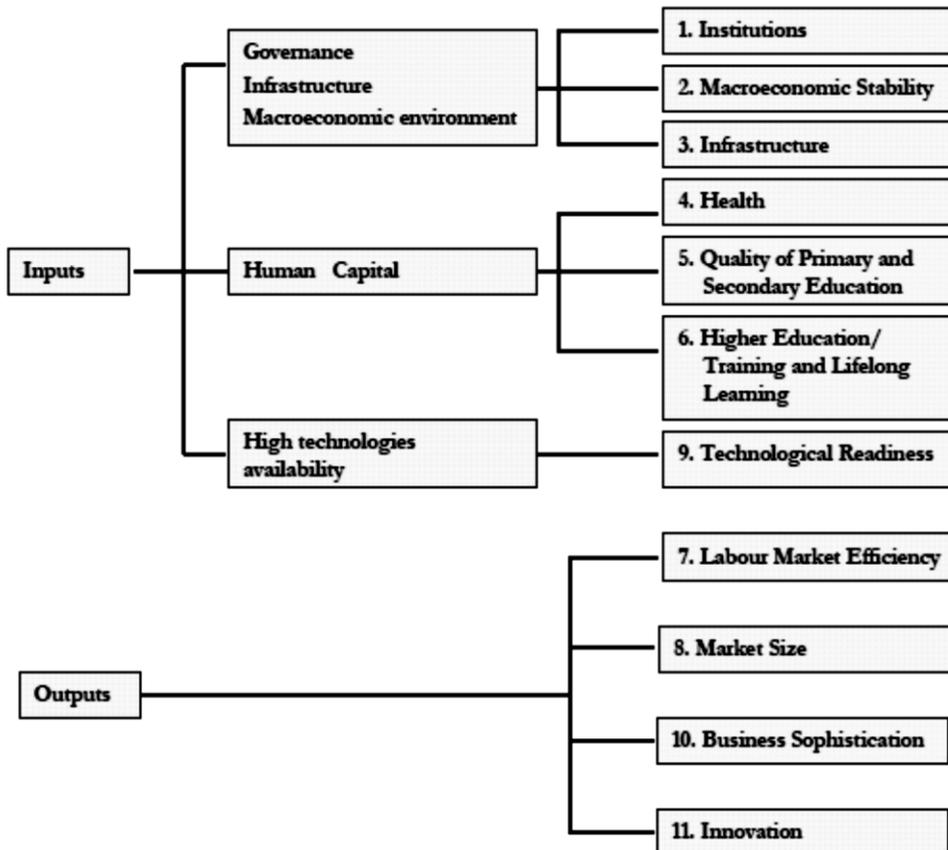
The RCI offers the first comprehensive picture on the situation of all NUTS 2 regions of the EU, allowing for a cross-regional comparison among EU Member States (Dijkstra, Annoni, Kozovska, 2011). It to a large extent adopts and builds upon the methodology developed by the WEF for the Global Competitiveness Index – GCI.

RCI methodology

The two versions of the RCI (2010, 2013) are developed by the Joint Research Centre for the European Commission (EC) for the purpose to synthetically assess regional development of EU regions. The World Economic Forum Global Competitiveness Index has been the main reference framework for the construction of the RCI. RCI consists of

eleven pillars organized into three groups based on a total of 69 indicators for RCI 2010 and 73 indicators for RCI 2013.¹ In the choice of the indicators, some modifications are implemented in RCI 2013 to cope with the lack of most recent data for some indicators and the availability of more reliable indicators.

Figure 1. Interpretation of the pillars included in the ideal framework for RCI



Source: Annoni and Kozovska, 2010 (p. 30).

¹ For a detailed description of the methodology of RCI 2010, see Annoni and Kozovska, 2011, and for RCI 2013, see Annoni and Dijkstra, 2013.

Indicators

The **basic group** of components represents the key drivers of all types of economy:

Institutions. Measured at national level for RCI 2010 and on both national and regional level for RCI 2013. The pillar Institutions aims at measuring the quality and efficiency of institutions, the level of perceived corruption and the general regulatory framework within countries. It tries to give an insight into how favorable is the institutional climate for enterprises, how easy it is to open a new business, how much trust people have in their national legislative and regulatory systems and its effectiveness. Indicators at regional level: Perception of corruption in public services; Quality and fairness of local police force; Quality and fairness of local public school and healthcare systems; Fairness of elections and neutrality of massmedia. Indicators at national level: Corruption as a major problem at the national level; Corruption as a major problem at the regional level; Voice and accountability; Political stability; Government effectiveness; Regulatory quality; Rule of law; Control of corruption; Ease of doing business; Property rights; Intellectual property rights; Efficiency of legal framework; Transparency of government policymaking; Business costs of crime and violence; Organized crime; Reliability of police services.

Macroeconomic stability. Measured at national level. Macroeconomic stability measures the quality of the general economic climate. Economic stability is essential for guaranteeing trust in the markets both for consumers and producers of goods and services. Stable macroeconomic conditions lead to higher rate of long-term investments and are essential ingredients for maintaining competitiveness. Indicators: General government deficit (-) and surplus (+); National savings as % of GDP; Long term bond yields; General government gross debt.

Infrastructure. High-quality infrastructure guarantees easy access to other regions and countries, contributes to better integration of peripheral and lagging regions, and facilitates the transport of goods, people and services. The pillar describes different dimensions of infrastructural quality such as infrastructure density, connectivity and accessibility. Indicators: Motorway potential accessibility; Railway potential accessibility; Number of passenger flights accessible with 90' drive.

Health. This pillar is devoted to the description of human capital in terms of health condition and well-being, with special focus on the workforce. Good health conditions of the population lead to greater participation in the labour force, longer working life, higher productivity and lower healthcare and social costs. Indicators: Road fatalities; Healthy life expectancy; Infant mortality; Cancer disease death rate; Heart disease death rate; Suicide death rate.

Basic education (Quality of primary and secondary education). Measured at national level. High levels of basic skills and competences increase the ability of individuals to subsequently perform well in their work and to continue to tertiary education. To capture this dimension RCI focuses on compulsory education outcomes as an indication of effectiveness and quality of the educational system. Indicators: % of pupils, 15 year old, with proficiency level 1 or lower in reading; % of pupils, 15 year old, with proficiency level 1 or lower in math; % of pupils, 15 year old, with proficiency level 1 or lower in science.

The **efficiency group** represents aspects which become more important as a region develops:

Higher education and lifelong learning. Knowledge-driven economies based on innovation require well-educated human capital, capable to adapt, and education systems which successfully transmit key skills and competences. Indicators: Population 25-64 with higher education (ISCED 5-6); Lifelong learning; Accessibility to universities.

Labor market efficiency. The efficiency of the labour market gives an important indication as to the economic development of a region. Efficient and flexible labour markets contribute to efficient allocation of resources. Indicators: Employment rate; Long-term unemployment; Unemployment rate; Labour productivity; Gender balance of unemployment; Gender balance of employment; Female unemployment; Share of population aged 15-24 not in education, employment or training.

Market size. The pillar aims at describing the size of the market available to firms which directly influences their competitiveness. Larger markets allow firms to develop and benefit from economies of scale and could potentially give incentive to entrepreneurship and innovation. Indicators: Disposable income per capita; Potential market size in GDP; Potential market size in population.

The **innovation group** includes the drivers of advanced regional economies:

Technological readiness. Measured at national and regional level. The sub-pillar Technological Readiness of households aims at measuring the level at which individuals and households are using and adopting existing technologies. Indicators: Households with access to broadband; Individuals who ordered goods or services over the Internet for private use; Households with access to Internet. The Enterprises sub-pillar includes the following indicators: Availability of latest technologies; Firm-level technological absorption; Technological adoption; FDI and technology transfer; Enterprises having purchased on line at least 1% of the time; Enterprises having received orders online (at least 1%); Enterprises with fixed broadband access.

Business sophistication. The level of business sophistication within an economy gives a

sign as to the level of its productivity and its potential for responding to competitive pressures. Specialization in sectors with high value added contributes positively to the competitiveness of regions. Indicators: Employment in 'sophisticated' sectors (NACE sectors K-N); Gross Value Added in 'sophisticated' sectors.

Innovation. The pillar tries to capture as much as possible both the regional potential to innovate as well its actual performance in innovative activities (outcomes). Indicators: Innovation patent applications; Total patent applications; Core Creative class employment; Scientific publications; Total intramural R&D expenditure; Human resources in Science and Technology (HRST); High-tech patents; ICT patents; Biotechnology patents; Share of employees in strong clusters among high-tech clusters; share of total payroll in strong clusters among high-tech clusters.

Other methodological notes

All indicators selected for the RCI framework are of quantitative type (hard data) and the preferred data source is Eurostat. When some information has been unavailable or inappropriate at the required territorial level, other databases are used such as: World Economic Forum (a novelty of the 2013 release), OECD-PISA and OECD-Regpat, the World Bank and Cluster Observatory, etc. Some of the determinants and indicators are "national" by nature and in fact in some cases national values were used to calculate the scores (Institutions national dimension, Macroeconomic stability, Quality of Primary and secondary education, Enterprises in Technology pillar).

RCI and its components are calculated and presented using z-scores, allowing to convert the diverse indicators to a common scale with a mean of 0.

By calculating the index the approach used for the Global Competitiveness index is applied, i.e. assigning different weights to the pillars groups depending on the level and stage of development. For the RCI 2010 three groups of regions are applied – medium, intermediate and high stage on the basis of their GDP value – with thresholds at 75 and 100% of EU average, while in the framework of RCI 2013 regions are classified into 5 stages on the basis of their GDP value (see Table 1).

Table 1. Classification and assessment of regions

GDP p.c. (compared to EU average)	Stage	Sub-indice weight		
		Basic	Efficiency	Innovation
under 50	1	35.00%	50.00%	15.00%
50-75	2	31.25%	50.00%	18.75%
75-90	3	27.50%	50.00%	22.50%
90-110	4	23.75%	50.00%	26.25%
over 110	5	20.00%	50.00%	30.00%

Source: Annoni and Dijkstra, 2013, p. 16.

The basic idea behind this weighting is that as regions move along their development paths, their socio-economic conditions change and different determinants become more important for their competitiveness. Accordingly, the best way to improve competitiveness of a more developed region may not be the same as for a less developed one.

Regional competitiveness index of Bulgarian and Romanian regions

Bulgaria is divided into 6 NUTS 2 regions – Severozapaden (Northwest, BG31), Severen tsentralen (North central, BG32), Severoiztochen (Northeast, BG33), Yugoiztochen (Southeast, BG34), Yugozapaden (Southwest, BG41), Yuzhen tsentralen (South central, BG42).

Figure 2. Bulgarian and Romanian NUTS 2 regions



In Romania the NUTS 2 regions are 8 - Nord-Vest (Northwest, RO11), Centru (Central, RO12), Nord-Est (Northeast, RO21), Sud-Est (Southeast, RO22), Sud-Muntenia (South Muntenia, RO31), Bucuresti-Ilfov (Bucharest-Ilfov, RO32), Sud-Vest Oltenia (Southwest Oltenia, RO41) and Vest (West, RO42).

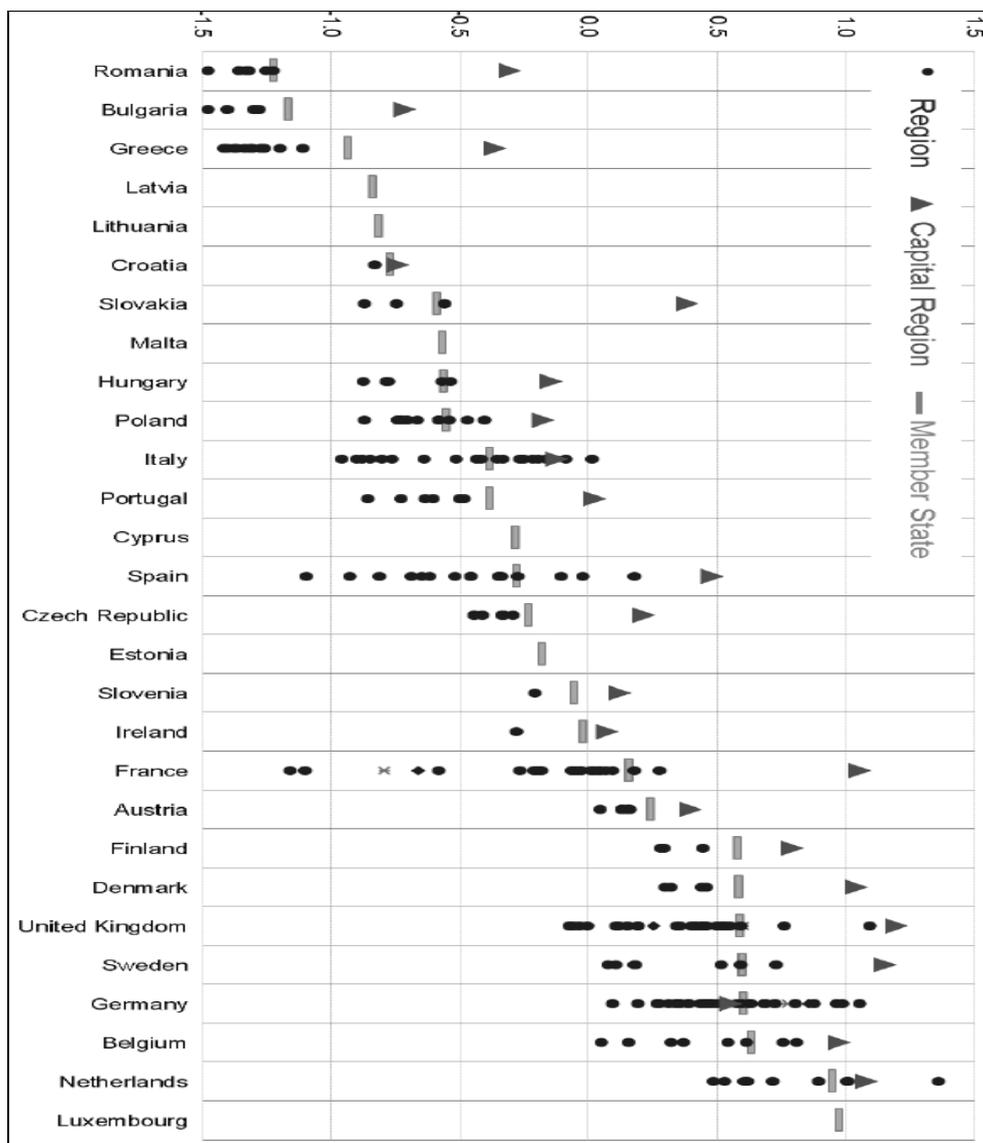
For the purposes of the study, first the overall performance of the regions will be analyzed (total RCI scores, sub-pillar scores), followed by a comparison of the performance of each region in the different pillars, showing the regions' inherent strengths and weaknesses. After that a benchmarking on the national and EU level will reveal the relative performance of the regions in the EU. For all these data of the RCI 2013 will be used. Finally, a comparison of the regions' RCI 2010 and RCI 2013 will be made to reveal how the situation has changed and whether one could speak of a catch-up of Bulgarian and Romanian regions within the EU.

Overall RCI

All Bulgarian regions fall into the first stage of development (with a GDP p.c. of under 50% of the EU average) except the capital Yugozapaden which is in stage 2 (with a GDP p.c. of 50-75% of the EU average). Thus all regions receive higher weight in the basic pillars at the expense of the innovation ones. For 2012 5 of the Bulgarian regions have a GDP p.c. of under 40% of the EU average while most developed is capital Yugozapaden region with a relative GDP of 78%. Similar is the situation in Romania – all regions are in the first stage of development (with a GDP p.c. of under 50% of the EU average) except for Vest which is in stage 2 and the capital Bucuresti-Ilfov which is in stage 4 (with a GDP p.c. close to the EU average). For 2012 4 of the Romanian regions have a GDP p.c. of under 40% of the EU average while the capital Bucuresti-Ilfov has a relative GDP p.c. of 122%. The eight regions with lowest GDP p.c. in the EU are all in Bulgaria and Romania (Eurostat, 2014), with the lowest figures recorded in Severozapaden in Bulgaria and Sud-Est in Romania (both 29% of the average), followed by Severen tsentralen in Bulgaria (31%) and Yuzhen tsentralen in Bulgaria (32%).

On average country scores of RCI, Bulgaria and Romania are the weakest of all EU member states with scores of respectively -1.17 and -1.23. However, territorial competitiveness in the EU has a strong regional dimension, which national level analysis does not properly capture (Figure 2). Thus a further analysis on each region's performance is necessary.

Figure 3. RCI 2013 scores by country

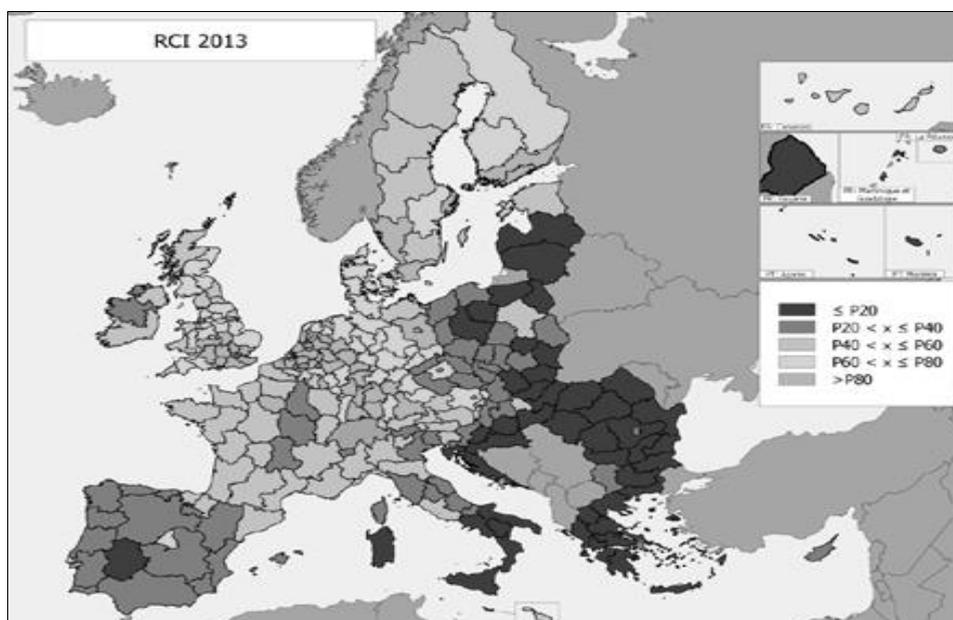


Source: Annoni and Dijkstra, 2013 (p. 138)

Both Bulgarian and Romanian regions perform relatively weak in terms of overall RCI. All Bulgarian regions have an overall RCI of under -1.25, the only exception being

Yugozapaden with -0.715, which ranks it 208th of all 262 EU regions. Similar to it are some less developed Polish regions as well as some marginal regions in Spain and Portugal. Compared to the EU all other regions are within the last 20 in the EU – Severozapaden (with a RCI of -1.481) takes the last 262nd place, Yugoiztochen (-1.403) is 259th, and Yuzhen tsentralen (-1.302), Severoiztochen (-1.292) and Severen tsentralen (-1.279) are respectively 248th, 247th и 246th. The situation in Romania is similar – all regions except the capital Bucuresti-Ifov with a RCI of -0.309 (165th in the EU) have a score of under -1.22, thus ranking in the last within the EU – Sud-Est (with a RCI of -1.479) is the second worst 261st, Centru (-1.362), Sud-Vest Oltenia (-1.36), Sun-Muntenia (-1.336) and Nord-Est (-1.319) are respectively 255th, 254th, 252nd and 251st, while Vest (-1.254) and Nord-Vest (-1.226) perform relatively better – 242nd and 241st in the EU. All Bulgarian and Romanian regions except for the capital ones are in the last 20 in the EU with just the Greek regions (again, except for the capital one) having similar scores.

Figure 4. RCI 2013 in the EU (% of EU average)



Source: Annoni and Dijkstra, 2013, p. 134.

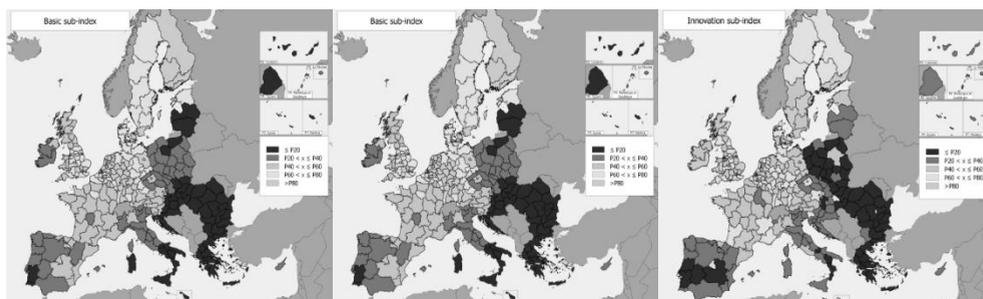
By the basic sub-index Bulgarian and Romanian regions are ranked very weak and together with all Greek regions they form the last 26 within the EU. Among Bulgarian regions the best performing is again Yugozapaden (-1.203, 237th), followed by Yuzhen tsentralen (-1.263, 243rd), Severoiztochen (-1.36, 251st), Severen tsentralen (-1.402,

252nd), Severozapaden (-1.442, 254th) and Yugoiztochen (-1.558, 260th). In Romania Bucuresti-Ilfov has a score of -1.356 (250th) while the rest regions hold the last 7 positions in the EU with scores of under -1.48. Given that almost all regions in both countries are at the 1 stage of development, their low scores on the basic sub-index add on to their already low assessment in terms of overall RCI. The low scores in the basic sub-index bring to the conclusion that these regions lack in the key drivers of economic development, thus lagging from the rest of the EU.

In the group of effectiveness the situation is quite different – here there are great disparities among the Bulgarian and Romanian regions. In Bulgaria best performing is the capital region (-0.55, 189th), followed by Severen tsentralen (-1.141, 237th), Severoiztochen, Yugoiztochen and Yuzhen tsentralen with scores of around -1.24 (ranking respectively 242nd, 244th and 245th) and again Severozapaden is last (-1.486, 259th). Most Romanian regions rank higher – Bucuresti-Ilfov is 113th (with a positive score of 0.11), Nord-Vest and Vest are 221st and 222nd (-0.97 and -0.99), Nord-Est is 229th (-1.028), Sun-Muntania is 234th (-1.107), Sud-Vest Oltenia and Centru are 240th and 241st (-1.2) and the worst performer is Sud-Est which is 251st with a score of -1.33. The effectiveness sub-pillar shows the disparities in the development perspective of Bulgarian and Romanian regions, given that it indicates for great differences in their market size and structure. Special attention to the pillars within this group will be paid both in the intraregional and the EU and national comparisons.

In the innovation sub-index with scores of under -1.35 all Bulgarian and Romanian regions except the capital ones are among the last 15 in the EU, the score being under -1.6 for the last 5 (the Romanian Nord-Est, Sud-Muntania, Sud-Est, Sud-Vest Oltenia and Centru). Bulgarian Yugoizapaden is 158th in the EU (-0.341) and Romanian Bucuresti-Ilfov is 143rd (-0.159) indicating that at least in the capitals of both countries there is a strive for the development of the driving forces of advanced knowledge-based economies. The scores of all other regions however are pretty disappointing thus indicating bleak prospects for the successful catching-up development of those regions.

Figure 5. RCI 2013 sub-indexes



Source: Annoni and Dijkstra, 2013, pp .121-123.

Intraregional comparisons

To understand the underlying sources of region's competitiveness the individual index components (pillars) are analyzed. All pillars of the RCI 2013 will be presented for each region (the RCI scores in all pillars are presented in Annex 1). Regions will be ordered according to the Eurostat NUTS 2 classification. All data used is compiled on the basis of Annoni and Dijkstra, 2013. The results are summarized in Table 2 while an illustration of each region's performance is presented in Annex 2.

Table 2. Intraregional comparisons – summarized results

	RCI	1a Institutions (regional)	1b Institutions (national)	3. Infrastructure	4. Health	6. Higher Education/ Training and Lifelong Learning	7. Labour Market Efficiency	8. Market size	9a. Technological readiness - households	9b. Technological readiness - enterprises (national)	10. Business sophistication	11. Innovation
Severozapaden	-1.48	--	-	+	-	-	+	0	-	0	0	0
Severen tsentralen	-1.28	--	-	0	-	+	+	0	-	-	0	0
Severoiztochen	-1.29	0	-	0	-	0	+	-	--	-	+	0
Yugoiztochen	-1.40	-	-	+	--	0	+	0	-	-	0	0
Yugozapaden	-0.72	--	-	0	0	+	+	0	0	-	+	+
Yuzhen tsentralen	-1.30	+	-	+	-	0	+	0	--	-	0	0
Nord-Vest	-1.226	0	-	0	-	-	+	0	--	-	-	+
Centru	-1.362	0	0	+	-	0	+	0	--	-	0	0
Nord-Est	-1.319	-	0	+	-	0	+	0	--	-	-	0
Sud-Est	-1.479	-	0	+	-	-	+	0	--	-	0	0
Sud-Muntenia	-1.336	-	0	+	--	0	+	+	-	-	-	0
Bucuresti-Ilfov	-0.309	--	-	0	-	+	+	0	-	-	+	+
Sud-Vest Oltenia	-1.36	0	0	0	-	-	+	0	--	-	-	+
Vest	-1.254	--	0	+	-	0	+	0	-	-	0	+

Legend: + higher than the region's RCI, 0 close to RCI, - lower, -- the region's weakest pillar.

Source: Compiled on the basis of Annoni and Dijkstra, 2013.

As both countries have high scores in the nationally measured pillar Macroeconomic stability (0.78 for Bulgaria and 0.05 for Romania) and very low scores in the nationally measured pillar Basic education (respectively -2.93 and -2.98) which are respectively the highest and lowest score in most of the regions, they will not be commented in the within the region analysis. Based on the scores pillars will be divided into 3 groups for each region – significantly above the overall RCI (strengths), close to the overall RCI and significantly below the overall RCI (weaknesses).

As one could see from Table 2, the performance of Bulgarian and Romanian regions in the different pillars compared to their overall RCI shows some similarities which allows us to make some conclusions:

First, the greatest strength of all regions is in the efficient and flexible labour markets – all regions score higher than their RCI on Labour Market Efficiency.

Second, Bulgarian and Romanian regions perform relatively well in terms of innovative potential and performance as well as in ease of access to other regions and countries of goods, people and services – pillars Innovation and Infrastructure have either higher or close to the regions' RCI values.

Third, all regions perform mediocre in pillar Market size with scores close to the overall RCI.

Fourth, regions show mixed results in pillars Business sophistication and Higher education.

Fifth, almost all Bulgarian and Romanian regions are weak in in terms of the quality and efficiency of institutions, the health condition and well-being of human capital and adoption and use of existing technologies – scores of the regional and national sub-pillars of Institutions are slightly or greatly weaker than the overall RCI, while in pillars Technological readiness – both of households and of enterprises, and Health almost all regions score significantly lower.

EU and national comparison

The EU and national comparison of the results of Bulgarian and Romanian regions indicates that even if it seems that the regions perform well in a intraregional perspective, their comparative scores within the EU show different results (see Table 3). First an analysis of the nationally measured pillars will be presented, followed by a region-by-region discussion on Bulgarian and Romanian strengths and weaknesses in terms of the EU and national benchmarking. Again, all data used is compiled on the basis of Annoni and Dijkstra, 2013. Nationally measured pillars are for 28 member states, excluding Basic education (26), while all regionally measured pillars include 262 EU regions.

In the national sub-pillar of pillar Institutions Bulgaria is at the last 28th (-1.7) place, only Romania having such a low score (1.56). This could be regarded as a sign for a high level of perceived corruption and a poor functioning regulatory framework within both countries – phenomena that are also noticed by the European Commission in its regular country reports. Similar is the situation but with Bulgaria outmatching Romania in pillars Basic education (respectively -2.93 and -2.98) indicating that the basic skills and competences in both countries are very low, as well as in the Enterprise sub-pillar of Technological readiness (respectively -1.66 and -1.78). Radically different is the performance in pillar Macroeconomic stability. The strict macroeconomic policy pursued by both countries ranks them higher in the EU with positive scores – Bulgaria is 7th with a score of 0.78 (similar are the scores of Finland, Germany, Austria and the

Netherlands), while Romania is 15th with a score of 0.05 in the company of Belgium, France and Poland. However, despite the high positive scores of both countries on this indicator, the weak national performance in the rest of the nationally measured pillars reflects in the low overall RCI of Bulgarian and Romanian regions.

Table 3 - Bulgarian and Romanian regions – EU and national comparison

	RCI	1a Institutions (regional)	1b Institutions (national)	2. Macroeconomic stability (national)	3. Infrastructure	4. Health	5. Basic education (national)	6. Higher Education/ Training and Lifelong Learning	7. Labour Market Efficiency	8. Market size	9a. Technological readiness - households	9b. Technological readiness - enterprises (national)	10. Business sophistication	11. Innovation
Average scores														
EU 28	-0.09	0.19	-0.03	0.15	-0.24	-0.07	0.03	-0.07	0.00	-0.23	-0.01	0.02	-0.29	-0.15
Bulgaria	-1.25	-1.76	-1.70	0.78	-1.14	-1.84	-2.93	-1.24	-0.76	-1.46	-1.94	-1.66	-0.97	-1.13
Romania	-1.21	-1.87	-1.56	0.05	-1.08	-1.80	-2.98	-1.35	-0.33	-1.22	-1.93	-1.78	-1.44	-0.98
Rank in the EU														
Severozapaden	262	257	28	7	234	250	25	257	234	258	260	27	230	255
Severen tsentralen	246	254	28	7	236	246	25	225	229	251	247	27	237	247
Severozitochen	247	234	28	7	226	257	25	229	232	259	261	27	191	245
Yugoiztochen	259	253	28	7	232	261	25	241	220	261	258	27	231	261
Yugozapaden	208	249	28	7	199	228	25	187	130	231	227	27	29	143
Yuzhen tsentralen	248	235	28	7	215	243	25	238	228	256	249	27	245	254
Nord-Vest	241	237	27	15	233	251	26	246	136	250	250	28	254	222
Centru	255	244	27	15	223	247	26	243	223	247	257	28	248	252
Nord-Est	251	251	27	15	237	249	26	248	154	254	262	28	255	259
Sud-Est	261	250	27	15	238	256	26	254	226	252	259	28	253	262
Sud-Muntenia	252	248	27	15	187	254	26	249	212	218	248	28	259	260
Bucuresti-Ilfov	165	258	27	15	143	223	26	121	87	115	199	28	77	45
Sud-Vest Oltenia	254	245	27	15	246	245	26	252	201	248	256	28	258	240
Vest	242	255	27	15	221	255	26	239	164	253	246	28	251	191
National rank														
Severozapaden	6	6			5	4		6	6	4	5		3	5
Severen tsentralen	2	5			6	3		2	4	2	2		5	3
Severozitochen	3	1			3	5		3	5	4	6		2	2
Yugoiztochen	5	4			4	6		5	2	6	4		4	6
Yugozapaden	1	3			1	1		1	1	1	1		1	1
Yuzhen tsentralen	4	2			2	2		4	3	3	3		6	4
Nord-Vest	2	1			5	5		4	2	5	4		5	3
Centru	7	2			4	3		3	7	3	5		2	5
Nord-Est	4	6			6	4		5	3	8	8		6	6
Sud-Est	8	5			7	7		8	8	6	7		4	8
Sud-Muntenia	5	4			2	6		5	6	2	3		8	7
Bucuresti-Ilfov	1	8			1	1		1	1	1	1		1	1
Sud-Vest Oltenia	6	3			8	2		7	5	4	5		7	4
Vest	3	7			3	7		2	4	7	2		3	2

Source: Compiled on the basis of Annoni and Dijkstra, 2013.

Severozapaden is the worst performing Bulgarian region, last in the EU in overall RCI. The pillars where the region stands relatively well are Business sophistication (230th in the EU), Infrastructure (234th in the EU) and of Labour market efficiency (234th in the EU). In Bulgaria, the region holds the last two places in all components with the exception of Labour market efficiency (3rd), Health and Market size (4th).

Although second in Bulgaria in general RCI (246 EU), Severen tsentralen region is the weakest in the country in terms of Institutions and Infrastructure (236th on both components in the EU). The strengths of the region at the national level are Higher education, Technological readiness and Market size, where the region is second in the country and Innovation and Health, where it is third. At the European level, however, on all these pillars with the exception of Higher education (225th), Severen tsentralen is among the 15 weakest regions.

The strengths of Severoiztochen region, which is the third in Bulgaria and 247th in the EU on general RCI are the regional sub-pillars of Institutions on which the region is a leader in the country at regional level, Innovation and Business sophistication (2nd place) in the latter the region being 191st in the EU, along with many regions of Greece, Poland, Spain and the UK. The region performs worst both nationally and at European level in the areas of Technological readiness (6th in Bulgaria, 260th in the EU) and Health (5th in Bulgaria, 257th in the EU).

Yugoiztochen is the worst performing region in the country in terms of Health, Market size and Innovation, holding the last place in the EU on all three indicators. The only pillar in which the region performs relatively well is Labor market efficiency on which the region is second in Bulgaria and 220th in the EU, while in all other pillars it is among the last three regions in the country and the last 30 in the EU.

The capital Yugozapaden region is the best performing region on all regionally measured components except for the regional dimension of the Institutions pillar where it is third. The region has a score above the EU average in pillars Labour market efficiency (130th in the EU) and Business sophistication, where it is 29th in the EU, along with some regions of Germany, the UK and Italy. Relatively well at European level the region performs also in pillars Innovation (143rd), Higher education (187th) and Infrastructure (199th). The region is weakest in the European context in Institutions at regional level (249th) and Technological readiness of households (244th).

Yuzhen tsentralen is last in Bulgaria and 245th in the EU in Business sophistication. The greatest strengths of the region where it is second in Bulgaria are Health and Infrastructure, for the latter the region is 215th in the EU, as well as Labour market efficiency (3rd in Bulgaria and 228th in the EU).

At national level Nord-Vest is doing quite well - the region is second on RCI, holding the first place in Institutions, second – in Labour market efficiency, and 3rd to 5th place in all other pillars. Compared on an EU basis the region's greatest strength is again Labour market efficiency (130th), followed by Innovation (222nd), Infrastructure (233rd) and

Institutions (237th). In the rest of the pillars Nord-Vest scores low at EU level, being in the last 15 regions with lowest rank in Business sophistication (254th).

Centru region shows mixed results at national level – its RCI ranks 7th, as well as the Labour market efficiency pillar. The region is second in Romania on Institutions and Business sophistication and third in Health, Higher education and Market size. Compared to all EU regions Centru stands relatively well in Labour market efficiency and Infrastructure, but on all other indicators the region is among the last 20 in the EU, the greatest weakness being Technological readiness of households (257th).

Nord-Est is 4th in Romania on overall RCI, holding respectively 3rd, 4th and 5th place in Labour market efficiency, Health and Higher education. The region is last in Market size and Technological readiness of households, while on all other pillar it is at the 6th place in Romania. At the EU level Nord-Est ranks high in Labour market efficiency (154th) and relatively well in Infrastructure (237th), while in all other indicators the region is among the last 15 in the EU, the worst ranks being in Technological readiness of households where the region is last in the Union.

Sud-Est region is the worst performer in Romania, its RCI ranking 261st in the EU. The region scores relatively higher nationally in Business sophistication – 4th in Romania and 253rd in the EU. Mediocre are the scores in Institutions and Market size – respectively 4th and 5th in Romania and 250th and 252nd in the EU. The region holds either last or second last place in Romania in all other pillars, but in the EU Sud-Est holds a relatively high place in Labour market efficiency (226th) and Infrastructure (238th) but is last in the EU in Innovation and in the last 12 EU regions in all other pillars.

Sud-Muntenia is fifth in Romania and 252nd in the EU on overall RCI. The strengths of the region at national level are Infrastructure, Market size (2nd) and Technological readiness of households (3rd), and as EU ranking – again Infrastructure (187th) and Market size (218th), as well as Labour market efficiency (212th). The region scores low both in Romania and the EU in Business sophistication (respectively 8th and 259th) and Innovation (7th and 260th). In all other pillars Sud-Muntenia is among the worst 15 performers in the EU.

The capital Bucuresti-Ilfov region is the best performer both at national and EU level. It is first in Romania on all indicators, except for Institutions, where it is last. In the EU the region stands well in Innovation (45th), Business sophistication (77th) and Labour market efficiency (87th), lower in Market size (115th), Higher education (121st) and Infrastructure (143rd). Here again it ranks worst in the regional dimension of pillar Institutions (258th) with the lowest score of all Bulgarian and Romanian regions.

Sud-Vest Oltenia is sixth in Romania, doing relatively well in Health (2nd), Institutions (3rd), Market size and Innovation (4th) and worst in Higher education, Business sophistication (7th) and Infrastructure (8th) at national level). The region is among the last 20 performers in the EU on all pillars, the only indicator where the region ranks higher being the nationally strong Labour market efficiency (201st).

Vest region stands relatively well in Romania – second in Innovation, Technological readiness of households and Higher education, and third in Business sophistication and Infrastructure, however being 7th in Institutions, Health and Market size. In European perspective the region performs well in Labour market efficiency (164th), Innovation (191st) and Infrastructure (221st), while on all other pillars it is among the 25 worst performers in the EU.

The analysis shows that in a comparative perspective Bulgarian and Romanian regions are weakly competitive. Nevertheless regions could be divided into three groups based on their ranks:

Both capital regions are the best performers both within the respectful country and in the EU in almost all pillars.

The regions with scores around or slightly below the national average are Severen tsentralen, Severoiztochen and Yuzhen tsentralen in Bulgaria and Nord-Vest, Vest, Nord-Est, Sud-Muntenia and Sud-Vest Oltenia in Romania.

Severozapaden and Yugoiztochen in Bulgaria and Sud-Est and Centru in Romania are the worst performing regions, being among the lowest ranking regions in the EU.

Another conclusion arising from the analysis is that although differences exist, one could not make an explicit distinction between the competitiveness in Bulgaria and Romania, as regions in both countries show mixed, but similar results in all pillars of the RCI, with the exception of Labour market efficiency where Romanian regions stand better and Business sophistication, where the situation is the opposite.

The comparative analysis also confirms the conclusions of the intraregional analysis that the strengths of Bulgarian and Romanian regions are mainly in Labour market efficiency and Infrastructure, while the main weaknesses are in Institutions, Health and Technological readiness of households. The greatest difference with the results of the intraregional analysis is in pillar Innovation – 10 regions (except for Yugoiztochen, Nord-Vest, Bucuresti-Ifov and Vest) are among the lowest ranking in the EU.

Timeline comparison

The comparison of RCI 2013 with RCI 2010 scores is not feasible because RCI 2013 implements some improvements and modifications that, even if not affecting the overall index structure, make the direct score comparison not meaningful. Ranking comparability over time is also troublesome as ranks are mutually dependent. A pillar by pillar analysis is instead provided here that is based on the set of raw (neither standardized, nor transformed) indicators which are simultaneously included in the two RCI editions. Again, all data used is compiled on the basis of Annoni and Dijkstra, 2013.

For each pillar, the average growth rate across indicators included in both RCI editions is computed via a geometric mean, by properly taken into account different indicators orientation. The indicators that are discarded from the time comparison are:

the regional sub-pillar is a new entry for the 2013 edition;

only one indicator in the Infrastructure pillar is in common between the two RCI editions;

the enterprise sub-pillar of Technological readiness includes new, different indicators;

for the Business sophistication pillar NACE sectors have been changed between the two RCI releases and full comparability between Employment and GVA by sector in the two editions is not granted.

**Table 3 - Pillar by pillar time comparison
(2010-2013, average change, %)**

	1b Institutions (national)	2. Macroeconomic stability (national)	4. Health	5. Basic education (national)	6. Higher Education/ Training and Lifelong Learning	7. Labour Market Efficiency	8. Market size	9a. Technological readiness - households	11. Innovation
EU average	1.5	0.3	8.7	1.9	10.3	-6.6	0.1	22.7	-9.1
Severozapaden	-5.6	24.0	-0.4	15.7	16.1	-32.2	-3.5	49.2	17.2
Severen tsentralen	-5.6	24.0	-7.7	15.7	16.1	-37.6	0.5	123.8	0.7
Severoiztochen	-5.6	24.0	-6.8	15.7	7.8	-15.1	-1.6	26.6	-1.6
Yugoiztochen	-5.6	24.0	-3.3	15.7	10.4	-39.2	1.2	47.5	-21.2
Yugozapaden	-5.6	24.0	4.2	15.7	17.4	-55.5	5.5	34.6	-20.6
Yuzhen tsentralen	-5.6	24.0	0.3	15.7	21.3	-51.3	0.6	73.8	6.9
Nord-Vest	-4.1	-3.9	2.0	18.9	23.1	-8.6	-2.7	41.9	11.1
Centru	-4.1	-3.9	3.2	18.9	5.8	-7.9	-2.9	62.7	37.0
Nord-Est	-4.1	-3.9	-0.9	18.9	16.6	-4.4	-1.1	-0.4	82.3
Sud-Est	-4.1	-3.9	-5.2	18.9	33.3	-15.8	1.2	-8.0	0.6
Sud-Muntenia	-4.1	-3.9	-4.8	18.9	25.1	-9.7	4.0	56.9	-8.8
Bucuresti-Ilfov	-4.1	-3.9	-4.4	18.9	20.3	9.6	6.7	37.8	12.9
Sud-Vest Oltenia	-4.1	-3.9	-2.5	18.9	0.5	-14.2	-3.6	76.5	26.7
Vest	-4.1	-3.9	0.9	18.9	28.3	-3.3	1.9	13.9	22.3

Source: Compiled on the basis of Annoni and Dijkstra, 2013.

With an EU average increase of 1.5% the nationally measured sub-pillar of Institutions both in Bulgaria and Romania decreases, indicating that despite their efforts both countries continue to face regulatory and corruption issues.

The high score of Bulgaria in Macroeconomic stability for the 2013 RCI is due to an average increase of 24%, while in Romania a slight decrease is observed.

The low scores that Bulgarian and Romanian regions show in Health are even more disturbing as all regions show an average change below the EU average. Just five of the regions show a positive trend (highest for Yugozapaden and Nord-Vest, but still lower than the EU average), while the situation seems worst in Severen tsentralen, Severoiztochen, Sud-Est and Sud-Muntenia.

Both countries are improving in terms of Basic education with almost equal rates that are significantly higher than the EU average, which is a sign for the improvement of the quality of primary and secondary education. Despite this increase however, Bulgaria and Romania remain the worst performers in the EU on this indicator.

All Bulgarian and Romanian regions show a positive trend in Higher education and in almost all (except Sud-Vest Oltenia, Centru and Severoiztochen) this trend is higher than the EU average, which is a positive indication for the development of human capital.

Although being the strongest pillar of Bulgarian and Romanian regions, Labour market efficiency decreases in all regions except Bucuresti-Ilfov, with Bulgarian regions scoring a significantly stronger decline (reaching over 50% in Yugozapaden and Yuzhen tsentralen). The EU average is also negative, however just three Romanian regions (the capital one, Vest and Nord-Est) outpace it.

Bulgarian and Romanian regions show mixed development in terms of Market size, with almost all regions being close to the EU average of almost no change. Just the two capital regions show a slightly higher positive trend indicating a positive development in terms of the possibilities for enterprise competitiveness.

Despite the relative low scores in Technological readiness of households, all Bulgarian and Romanian regions except Sud-Est and Centru show a positive development in this field that is extremely higher than the EU average in Sud-Muntenia, Centru, Yugozapaden and Sud-Vest Oltenia (around 3-3.5 times) and especially in Severen tsentralen that outmatches the EU average almost 6 times.

Just two of regions have a lower than the EU average change in Innovation – Yugoiztochen and Yugozapaden, another two have a negative change – Sud-Muntenia and Severoiztochen, while all other Bulgarian and Romanian regions show a positive development in this pillar, being highest in Nord-Est and Centru. The average changes

in this pillar indicate that (with some exceptions) Romanian regions develop their innovative potential and outcomes better than Bulgarian ones.

The timeline comparison between the RCI 2010 and RCI 2013 pillars reveals mixed results but in most of the indicators except for Institutions, Health and Labour market efficiency Bulgarian and Romanian regions show positive trends that in many cases outmatch by much the EU average.

Conclusion

The economic crisis has not only changed the global economic landscape, it has also highlighted the fact that in many countries sources of growth were not sufficiently robust, thus emphasizing the need for better measures of economic performance that incorporate the critical elements of sustainable economic growth. The regional competitiveness index has been created for all NUTS 2 regions. The EU Regional Competitiveness Index is the first composite indicator which provides a synthetic picture of territorial competitiveness for each of the NUTS 2 regions of the 28 EU Member States. It takes into account the level of development of the region by emphasizing basic issues in less developed regions, and innovative capacity in more developed regions. Its pillars measure not only issues relevant to firms but also those relevant to residents of the regions in question and their quality of life.

When applying the RCI to Bulgarian and Romanian regions it is obvious that they are weakly competitive in a European perspective ranking in the last places in the EU on overall RCI. On averaged country competitive scores, Bulgaria and Romania are the weakest of all EU member states. Both Bulgarian and Romanian regions perform relatively weak in terms of overall RCI and with the exception of the capital ones form the last 20 in the EU together with all Greek regions. On the basic sub-index Bulgarian and Romanian regions are ranked very weak and together with all Greek regions they form the last 26 within the EU. In the group of effectiveness the situation is quite different – here there are great disparities among the Bulgarian and Romanian regions. In the innovation sub-index all Bulgarian and Romanian regions except the capital ones are among the last 15 in the EU. Again, the results in all three sub-indexes exclude the capital regions that perform relatively better.

The intraregional analysis made reveal some specifics in the regions' performance. The greatest strength of all regions is in the efficient and flexible labour markets – all regions score higher than their RCI in Labour Market Efficiency. Bulgarian and Romanian regions perform relatively well in terms of innovative potential and performance as well as in ease of access to other regions and countries of goods, people and services – pillars Innovation and Infrastructure have either higher or close to the regions' RCI

values. Almost all Bulgarian and Romanian regions are weak in terms of the quality and efficiency of institutions, the health conditions and well-being of human capital and adoption and use of existing technologies – scores of the regional and national sub-pillars of Institutions are slightly or greatly weaker than the overall RCI, while in pillars Technological readiness – both of households and of enterprises, and Health almost all regions score significantly lower.

The comparative analysis also confirms the conclusions of the intraregional analysis that the strengths of Bulgarian and Romanian regions are mainly in Labour market efficiency and Infrastructure, while the main weaknesses are in Institutions, Health and Technological readiness of households. The greatest difference with the results of the intraregional analysis is in pillar Innovation – 10 regions (except for Yugozapaden, Nord-Vest, Bucuresti-Ifov and Vest) are among the lowest ranking in the EU.

Based on their ranks in the EU both capital regions are the best performers both within the respective country, as well as compared with the rest of the Bulgarian and Romanian regions in a EU perspective in almost all pillars.

The regions with scores around or slightly below the national average are Severen tsentralen, Severoiztochen and Yuzhen tsentralen in Bulgaria and Nord-Vest, Vest, Nord-Est, Sud-Muntenia and Sud-Vest Oltenia in Romania. Severozapaden and Yugoiztochen in Bulgaria and Sud-Est and Centru in Romania are the worst performing regions, being among the lowest ranking regions in the EU.

Another conclusion arising from the analysis is that although differences exist, one could not make an explicit distinction between the competitiveness in Bulgaria and Romania, as regions in both countries show mixed, but similar results in all pillars of the RCI, with the exception of Labour market efficiency where Romanian regions stand better and Business sophistication, where the situation is the opposite.

The timeline comparison between the RCI 2010 and RCI 2013 pillars has mixed results but in most of the indicators except for Institutions, Health and Labour market efficiency Bulgarian and Romanian regions show positive trends that in many cases outmatch by much the EU average.

Bibliography

- Annoni, P., K. Kozovska. 2010. *EU Regional Competitiveness Index 2010*. European Commission.
- Annoni, P., L. Dijkstra. 2013. *EU Regional Competitiveness Index 2013*. Joint Research Centre, European Commission.
- Bristow, G. 2005. "Everyone's a 'winner': problematising the discourse of regional competitiveness." *Journal of Economic Geography*, 5: 285-304.
- Dijkstra, L, P. Annoni, K. Kozovska. 2011. "A New Regional Competitiveness Index: Theory, Methods and Findings." *European Union Regional Policy Working Papers No2/2011*

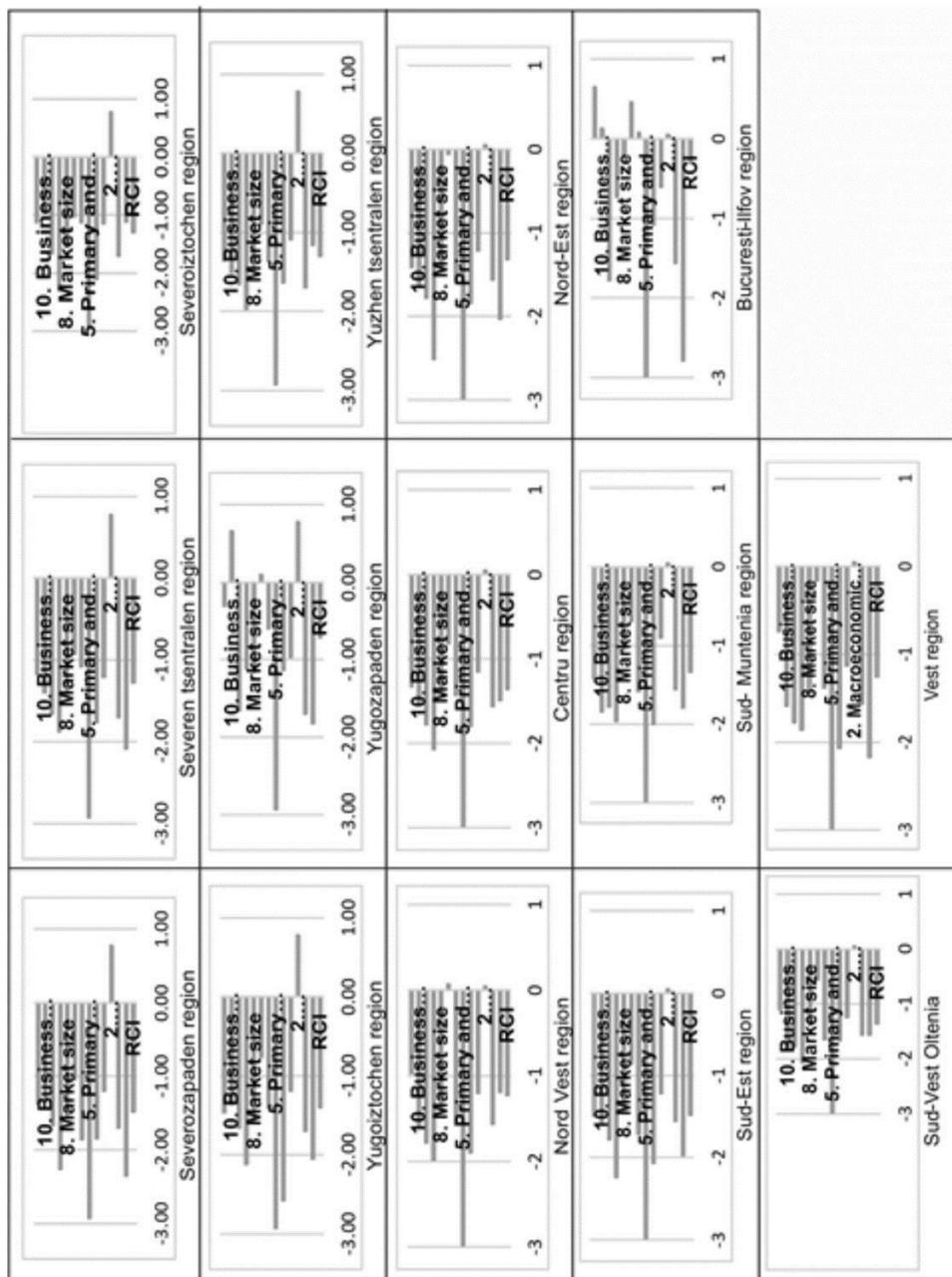
-
- EC. 2010. *Investing in Europe's future. 5th report on economic, social and territorial cohesion*. Preliminary draft. November 2010. European Commission
- Eurostat. 2014. Regional GDP. Eurostat Newsrelease, 27 February 2014. Eurostat Press Office.
- Filó, C. 2007. "Territorial Competitiveness and the Human Factors." *Proceedings of the International Conference of Territorial Intelligence, Huelva 2007 (CAENTI)*.
- IMD. 2008. *World Competitiveness Yearbook 2008*. Institute for Management Development. Lausanne, Switzerland.
- Krugman, P. 1996. "Making sense of the competitiveness debate." *Oxford Review of Economic Policy* 12(3), pp. 17-25.
- Martin, R., Kitson, M. and P. Tyler. 2006. *Regional Competitiveness*. London: Routledge.
- Meyer-Stamer, J. 2008. "Systematic Competitiveness and Local Economic Development." In Shamin Bodhanya (ed.) *Large Scale Systemic Change: Theories, Modelling and Practices*.
- Schwab, K. 2009. *The Global Competitiveness Report 2009-2010*. World Economic Forum. Geneva, Switzerland.
- Schwab, K. and Porter, M. E. 2007. *The Global Competitiveness Report 2007-2008*. World Economic Forum. Geneva, Switzerland.
- Schwab, K., & Sala-i-Martin, X. 2012. *The Global Competitiveness Report 2012-2013*. (K Schwab, Ed.). World Economic Forum.

Annex 1. RCI scores of Bulgarian and Romanian regions

EU 28	-0.09	-0.03	-0.11	-0.13	0.12	0.19	-0.03	0.15	-0.24	-0.07	0.03	-0.07	0.00	-0.23	0.03	-0.01	0.02	-0.29	-0.15
Bulgaria	-1.25	-1.37	-1.15	-1.30	-1.14	-1.76	-1.70	0.78	-1.14	-1.84	-2.93	-1.24	-0.76	-1.46	-1.80	-1.94	-1.66	-0.97	-1.13
Romania	-1.21	-1.51	-0.97	-1.42	-1.71	-1.87	-1.56	0.05	-1.08	-1.80	-2.98	-1.35	-0.33	-1.22	-1.86	-1.93	-1.78	-1.44	-0.98
Severozapaden	-1.48	-1.44	-1.49	-1.55	-1.20	-2.35	-1.70	0.78	-1.20	-1.84	-2.93	-1.86	-1.04	-1.55	-1.96	-2.26	-1.66	-1.33	-1.37
Severen tsentralen	-1.28	-1.40	-1.14	-1.45	-1.21	-2.09	-1.70	0.78	-1.21	-1.76	-2.93	-1.08	-0.93	-1.42	-1.77	-1.88	-1.66	-1.40	-1.18
Severozidichen	-1.29	-1.36	-1.23	-1.33	-1.15	-1.11	-1.70	0.78	-1.15	-2.10	-2.93	-1.12	-1.03	-1.55	-1.98	-2.30	-1.66	-0.90	-1.12
Yugozidichen	-1.40	-1.56	-1.25	-1.57	-1.19	-2.05	-1.70	0.78	-1.19	-2.58	-2.93	-1.41	-0.76	-1.57	-1.89	-2.12	-1.66	-1.36	-1.46
Yugozapaden	-0.72	-1.20	-0.55	-0.34	-0.97	-1.82	-1.70	0.78	-0.97	-1.13	-2.93	-0.60	0.10	-1.16	-1.38	-1.11	-1.66	0.66	-0.31
Yuzhen tsentralen	-1.30	-1.26	-1.25	-1.56	-1.09	-1.16	-1.70	0.78	-1.09	-1.64	-2.93	-1.37	-0.90	-1.48	-1.81	-1.97	-1.66	-1.51	-1.36
Nord-Vest	-1.226	-1.479	-0.971	-1.487	-1.37	-1.19	-1.56	0.05	-1.2	-1.9	-2.98	-1.57	0.07	-1.41	-1.88	-1.98	-1.78	-1.61	-0.97
Centru	-1.362	-1.48	-1.208	-1.601	-1.52	-1.49	-1.56	0.05	-1.15	-1.8	-2.98	-1.43	-0.82	-1.38	-1.93	-2.07	-1.78	-1.55	-1.33
Nord-Est	-1.319	-1.555	-1.028	-1.738	-1.79	-2.03	-1.56	0.05	-1.21	-1.84	-2.98	-1.58	-0.06	-1.45	-2.15	-2.51	-1.78	-1.65	-1.41
Sud-Est	-1.479	-1.596	-1.33	-1.702	-1.76	-1.97	-1.56	0.05	-1.22	-2.07	-2.98	-1.71	-0.86	-1.42	-2.01	-2.24	-1.78	-1.6	-1.49
Sud - Muntenia	-1.336	-1.501	-1.107	-1.711	-1.67	-1.79	-1.56	0.05	-0.9	-2	-2.98	-1.58	-0.69	-1.05	-1.87	-1.96	-1.78	-1.84	-1.42
Bucurestii-Ilfov	-0.309	-1.356	0.11	-0.159	-2.17	-2.79	-1.56	0.05	-0.61	-1.08	-2.98	0.08	0.46	-0.21	-1.26	-0.73	-1.78	0.13	0.65
Sud-Vest Oltenia	-1.36	-1.481	-1.199	-1.615	-1.56	-1.56	-1.56	0.05	-1.25	-1.67	-2.98	-1.65	-0.56	-1.39	-1.93	-2.07	-1.78	-1.82	-1.1
Vest	-1.254	-1.597	-0.99	-1.384	-1.86	-2.17	-1.56	0.05	-1.13	-2.07	-2.98	-1.38	-0.16	-1.43	-1.82	-1.86	-1.78	-1.59	-0.74

Source: Compiled on the basis of Annoni and Dijkstra, 2013.

Annex 2. Intra-regional comparisons



Source: Compiled on the basis of Annoni and Dijkstra, 2013.