

REGIONAL DEVELOPMENT AND INNOVATION IN ROMANIA. CHALLENGES AND PERSPECTIVES

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Abstract: *Regional innovation is considered one of the most important drivers of development at present. Innovation is the tool that can help regions develop regardless of their natural resources and potential. The main purpose of the paper is to foster the innovation at regional level in Romania in order to determine and highlight the need of further measures to increase regional innovation and regional development of Romanian regions in the current context of getting out of the economic crises. Romania is subject of discrepancies not only at European level but at national level as well in terms of economic development and regional innovation. The research undertaken in the present paper is a qualitative research and follows the model proposed by the Group of Applied Economics in the study called Manual of regional competitiveness assessment, and in the study called Romania's reindustrialization: policy and strategy, study commissioned by the Ministry of Economy, Trade and Business, and uses regional indicators of the eight Romanian development regions in order to measure the Competitiveness Index based on three Indexes, namely Economic, Social and Innovation Index. The data used was collected from Romania's National Institute of Statistic, National Centre of Prognosis and from the Eurostat database. The general objective is to enhance the great role of regional level in innovation and to sensitize the policy makers about the need to introduce a regional level in order to enforce regional innovation, the main way of improving regional competitiveness and regional development. The main findings reveal that the Romanian regions that invested more in innovation have a positive evolution in terms of economic growth over time so it is for the best of a region to invest in innovation, an aspect that should be taken into consideration by policy makers and private sector when planning the investments within a region.*

Keywords: *Innovation index, Economic index, regional innovation, regional development, regional competitiveness.*

JEL classification: *P25, R11, R58.*

1. Introduction

Regional innovation is considered one of the most important drivers of development at present. Innovation is the mean through which regions can develop and become more competitive regardless of their natural resources and potential.

Innovation is the solution for some important global challenges as the climate change, the need to limit fossil fuel energy consumption and global economic crisis (Cooke et al., 2011). Even more, there are authors who consider innovation the engine of economic growth (Asheim and Gertler, 2005), who argue that in order to

create a proper socio-economic framework for innovation development regional level has been given great importance.

The concept of innovative regions has been increasingly associated with the so-called knowledge region, a concept specific to the 'New Economy', based on two approaches: the first one is that knowledge emphasizes business competitiveness and the second one considers region as a platform for interaction that encourages accumulation of knowledge (Asheim, B., Cooke, P., Martin, R., 2006; M., Perry, 2010).

In order to enhance the actual position of Romania in terms of regional innovation and economic development, we should bear in mind that at present, in terms of economic development and regional innovation, Romania is subject of regional discrepancies at both European and national level. For example, in terms of economic discrepancies, in 2007 the Bucharest-Ifov region, the region that contains the capital city, registered a GDP/capita almost 4 times higher than North-East region, the poorest at the moment (according to Romanian National Institute of Statistics). However, after 2007, when Romania joined the European Union, started a process of catching-up but it was hindered by the global economic crisis felt in Romania at the end of 2008. How innovative are the Romanian regions? and How does this influence the regional economic development? are the main questions that the paper tries to answer.

2. Methodology

In order to reveal the link between innovation and economic development of the Romanian regions have been investigated the Innovation Index and the Economic Index of Romanian regions in comparison in 2007 and 2011 and their evolution in the period.

The methodology used was proposed by the Group of Applied Economics in the study called Manual of regional competitiveness assessment (2007), and the study Romania's reindustrialization: policy and strategy (2010), study commissioned by the Ministry of Economy, Trade and Business, that uses regional indicators of the eight Romanian development regions such as: growth rate, GDP, net income per capita, percentage of research and development expenditure in total GDP, number of employees in the high technology sector and so on.

The qualitative research undertaken uses data collected from The National Institute of Statistic of Romania, The National Centre of Prognosis and from the Eurostat database.

The model of evaluation selects a set of indicators for the two directions, which it aggregates, by calculating a weighted average, as we can see in Table 1 and Table 2.

2.1. Indicators used for the identification of the Economic Index at regional level

Table 1: The Economic Index

Index		Weight
Economic Index (E _i)		

	E ₁ GDP/capita	10%
	E ₂ GDP growth rate	10%
	E ₃ Labor productivity	30%
	E ₄ Net exports	10%
	E ₅ Gross fixed capital formation (% of GDP)	20%
	E ₆ Net income per capita	20%
Economic Index = 10%* E1+10%* E2+30% E3+10%* E4+20%* E5 +20%* E6		

Source: GEA (2007) - Manual of regional competitiveness assessment, [on-line], http://www.gea.org.ro/documente/ro/proiecte/manual_2007.pdf, accessed on 21.08.2011, p.37;

The aggregate Economic Index weights of each component (according to Table 1) are: GDP per capita - 10%, GDP growth rate - 10%, net exports - 10%, labor productivity - 30%, gross fixed capital formation (% of GDP) - 20%, respectively net income per capita - 20%. Gross fixed capital formation (% of GDP) is not available in national statistics development at regional level; therefore, this lack will be taken into account in the calculation of aggregate economic index.

Table 2: The Innovation Index

Index		Weight
Innovation Index (I_i)		
	I ₁ R&D Expenditure (% of GDP)	40%
	I ₂ Employment in high technology sectors	30%
	I ₃ Tertiary education specializing in advanced research	30%
Innovation Index = 40%* I₁+30%* I₂+30%* I₃		

Source: GEA (2007) - Manual of regional competitiveness assessment, [on-line], http://www.gea.org.ro/documente/ro/proiecte/manual_2007.pdf, accessed on 21.08.2011, p.37;

The distribution of the weights between Innovation Index's components are: R & D Expenditure (% of GDP), accounts for 40%, and Employment in High Technology Sectors as well as Tertiary education specializing in advanced research, that have a weight equal to 30% each, with the observation that for this indicator could be found all sizes.

3. The regional economic development of Romania

Like other Eastern European countries, Romania has experienced in the last 20 years a process of deindustrialization. At national level, according to the data revealed by the National Institute of Statistics, there are relatively low inter-regional disparities compared to the other EU countries. Even so, we notice deepening trends of disparities in terms of GDP/capita between the region containing the capital city and the other regions, the centre-periphery model of development being felt in Romania as well.

There is a general trend of increasing regional disparities regarding employment, industrial production, investments and income between West-and East and from centre to periphery.

Table 3: Regional Economic Index in 2007, compared to 2011

Region	2007	Rank 2007	2011	Rank 2011	Change in Index score 2007-2011
North - East	0.697959	8	0.708029794	7	1,01 %
South - East	0.813539	6	0.845112988	5	3,16 %
South	0.859075	5	0.845318965	4	-1,38 %
South West	0.737657	7	0.698468193	8	-3,92 %
West	0.899428	3	0.880285436	3	-1,91 %
North - West	0.884216	4	0.830732309	6	-5,35 %
Centre	0.963781	2	0.899453286	2	-6,43 %
Bucharest - Ilfov	2.169459	1	2.319737587	1	15,03 %

Source: author's calculation, using Eurostat database

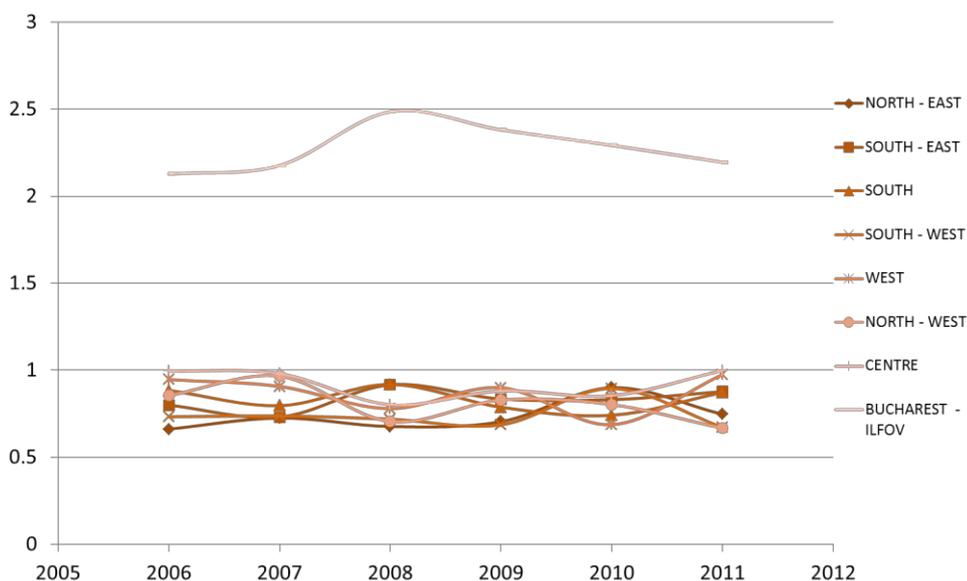


Figure 1: Evolution of Economic Index from 2006-2011

Source: author's calculation, using The Romanian National Commission of Forecasting database.

As Table 3 and Figure 1 reveal, Romanian regions were affected by the crisis and most of them registered a decrease in terms of economic development in 2011 towards 2007.

There were only three regions that managed to increase their economic indicators, namely Bucharest – Ilfov, South-East and North-East. The worst affected regions by the economic crisis were Centre region, followed by North-West and South West. The highest level registered by the Economic Index was registered in Bucharest-Ilfov region in 2008, but after 2008 the general trend is of decrease.

The highest levels of Economic Index are registered in the region containing the capital city (Bucharest - Ilfov) and in the regions situated in the West and Centre of the country, revealing a West-East and centre-periphery pattern of economic development. We notice a general trend of reducing discrepancies between West and East, because while the Economic Index of the regions situated in the Eastern part of Romania increased, the Economic Index of the regions situated in the Western part of Romania decreased, meaning we are facing a convergence tendency regarding Economic Index between Romanian regions except from Bucharest-Ilfov region, that keeps its growing tendency.

4. Regional innovation in Romania

According to the Innovation Union Scoreboard for 2011 (IUS), Romania is one of the modest innovators with a below average performance. However, Romania recorded an average growth of innovation of 5% (IUS, 2011), being one of the catching-up leaders, but the process is slowing down.

Even though according to data revealed by the National Institute of Statistics (NIS), from 2002 to 2008 the share of innovative enterprises raised constantly in the number of total enterprises, from 17% to 33%, our percentage is still very modest compared to other European countries.

Romania has serious problems in attractiveness of research systems, aspect revealed by several indicators: negative share of Non-EU doctorate students, firms do not invest in R&D, there are no innovative SMEs collaborating to others, we do not have PCT patents applications, etc.

Table 4: Regional Innovation Index in 2007 compared to 2011

Region	2007	Rank 2007	2011	Rank 2011	Change in Index score 2007-2011
North - East	0.688987369	5	0.639773243	6	-4.92%
South - East	0.508377613	8	0.510113379	8	0.17%
South	0.73141115	4	0.622063492	7	-10.93%
South West	0.543336237	7	0.685192744	5	14.19%
West	1.227587108	2	1.041428571	2	-18.62%
North West	0.920017422	3	0.948185941	4	2.82%
Centre	0.683930749	6	0.959863946	3	27.59%
Bucharest - Ilfov	2.721620209	1	2.640498866	1	-8.11%

Source: author's calculation, using Eurostat database.

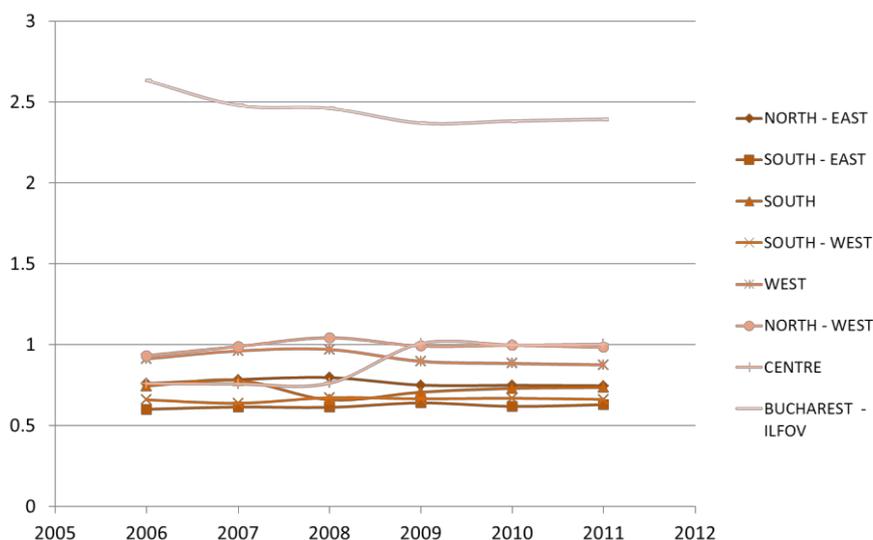


Figure 2: Evolution of Innovation Index from 2006-2011
Source: author's calculation, using Eurostat database.

As we notice from Table 4 and Figure 2, the most developed and innovative region of Romania is Bucharest-Ilfov, mainly because there is a tendency of entrepreneurs to locate in the economic, social and politic centre of the country. On the second place in terms of innovation is situated the West region, placed at the western border of the country, its attractiveness being explained on the fact that it has a more easy access to foreign technology.

The Centre region registered an increase of investment in R&D from 2007 to 2011 and managed to surpass North West and South West regions.

The general trend reveals that the most innovative regions of Romania are situated in the western part of the country and the least innovative in the eastern part. There is also noticed a tendency to reduce the discrepancies between West and East, as the Innovation Index decreased in the central and western regions while the Innovation Index of southern and eastern regions increased.

5. Comparative analysis of Economic and Innovation Index in 2007 and 2011

Table 5: Comparative analysis of Economic and Innovation Index in 2007 and 2011 (1)

Region	Rank in 2007		Rank in 2011	
	Innovation Index	Economic Index	Innovation Index	Economic Index
North - East	5	8	6	7
South - East	8	6	8	5
South	4	5	7	4
South - West	7	7	5	8

West	2	3	2	3
North - West	3	4	4	6
Centre	6	2	3	2
Bucharest - Ilfov	1	1	1	1

Source: author's calculation based on Table 3 and Table 4.

Table 6: Comparative analysis of Economic and Innovation Index in 2007 and 2011 (2)

Region	Evolution of Rank in 2011 comparing with Rank in 2007	
	Innovation Index	Economic Index
North - East	-	+
South - East	0	+
South	- - -	+
South - West	+ +	-
West	0	0
North - West	-	- -
Centre	+ + +	0
Bucharest - Ilfov	0	0

Source: author's calculation based on Table 5.

In order to better observe the impact of innovation on economic development were created comparative Tables, Table 5 and Table 6, that show the evolution of the regions in terms of economic and innovation Index from 2007 to 2011.

The most spectacular evolution was registered by Center region (3 pluses in Innovation rank, 0 in Economic rank) and South region (3 minuses in Innovation rank, plus 1 in Economic rank).

An accelerated increase/decrease of indexes were registered by South-West region (2 pluses in Innovation rank, 1 minus in Economic rank) and North-West region (1 minus in Innovation rank, 2 minuses in Economic rank).

A moderate increase/decrease registered North-East region (1 minus in Innovation rank, 1 plus in Economic rank) while a constant situation registered Bucharest-Ilfov and West region (0 both in Innovation and Economic rank) and South-East region (0 in Innovation rank and 1 plus in Economic rank).

The main findings reveal that the first region in terms of innovation and economic development in 2007 and 2011 is Bucharest-Ilfov region, the region containing the capital city of Romania, that confirms the general trend existing in EU regarding innovation and economic development in capital regions and the regions situated in the Western and in Centre parts of Romania tend to invest more in innovation and tend to be wealthier than those situated in the eastern part or at the periphery of the country, that confirms again the general trend existing in EU regarding central-peripheral type of regional structure and the acceleration of the innovation and economic development direction from West to East.

6. Conclusions and proposals

The regional level plays an important role in evolution of a nation's innovation and economic development and therefore it is important for Romania to increase its investment in innovation with a focus on regions.

The Romanian regions that invested more in innovation had a positive evolution in terms of economic growth over time, aspect that should encourage decision and policy makers to stimulate innovation at regional level.

There has been identified a pattern of investing in innovation from West to East and from centre to periphery, the same pattern being identified for economic development. Bucharest-Ilfov is the first region in terms of economic development and innovativeness and it is followed by a contingent of other seven relatively homogeneous regions between which the differences are not very high.

The effort of increasing innovation should be coordinated at regional level, each region being specialized in a certain field, working in partnership with universities and research centers in the area.

We consider that the private sector should invest more in innovation in order to increase its economic performance, a phenomenon that would determine the increase of the regional economic development as well. The long-term effect of investing in R&D, in creating jobs in high technology sectors and also supporting tertiary education for specialisation in advanced research brings economic development and regional welfare, a welfare that spreads from the firm to the employees whose wages increase, to the local economy and finally to the regional level. It is the case of South and North-East regions, that through investing in innovation and having a good position in 2007 in Innovation Rank, managed to gain a better position in terms of Economic Index in 2011.

The great challenge for decision makers at regional level is to be able to offer facilities for entrepreneurs to encourage them invest in R&D and create workplaces in the sector. In addition to creating industrial parks and knowledge centres the decision makers should focus on communication and partnership at regional level between universities, private actors, interest and lobby groups and civil society, partnership that must be based on trust and lead to information and knowledge exchange that could increase the economic results for both private and public actors and for the region as a whole.

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