

REGIONAL ANALYSIS OF FINANCIAL RESOURCES INVOLVED IN RESEARCH DEVELOPMENT AND INNOVATION (RDI) SECTOR IN ROMANIA IN THE LAST DECADE –STUDY DONE ON MACROREGIONS

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The present paper present a study done on the Financial Resources in Research Development and Innovation (RDI) sector in Romania during 2000-2010 . The present paper analyze Regional Systems of Financial Resources of the research development and innovation sector in Romania in the last decade. In the present paper is done an analysis on the Macro Regions and Regions in Romania.

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Key words: Educational Finance, Higher Education and Research Institutions , Education and Research Institutions, Management of Technological Innovation and R&D , Technological Change: Choices and Consequences; Diffusion Processes; Monetary Systems; Standards; Regimes; Government and the Monetary System; Payment Systems ; Budget; Budget Systems;

JEL code : I22 ,I23 , I2, O18, O32, O33, E42,H61.

1. Introduction

The present paper analyze Regional Systems of Financial Resources of the Research Development and Innovation (RDI) sector in Romania in the last decade in Romania. In the present paper is done an analysis on the Macro Regions and Regions in Romania.

It suggests that for conceptual and methodological reasons, mostly concerning problems of scale and complexity, that approach may be complemented in important ways by a sub national focus Taking an evolutionary economics standpoint, the paper specifies the concepts of ‘region’, ‘innovation’ and ‘system’ as the prelude to an extended discussion of the importance of financial capacity, institutionalized learning and productive culture to RDI. The notion of regions as occupying different positions on a continuum referring to processes constituting them was builded. (Cooke, 1997).

2. Literature review

Studies on the firm’s investments in RDI, as a way to develop technological capabilities were done before too (Cazurra and Un 2007). Technological capabilities are the ability to develop and exploit technological know-how, which is the application of scientific knowledge for commercial purposes (Pisano, 1990). The firm can develop its technological capabilities using several learning approaches (Malerba, 1992). Studies on the investments in RDI were done because of its importance in generating new knowledge, which can help the firm achieve an advantage that is difficult to replicate by competitors (Helfat, 1994,1997).

The companies can invest in RDI internally or externally (Cazurra and Un 2007) . **Internal RDI expenses** are expenditures on personnel and assets in the firm dedicated to the creation of new scientific or technological knowledge or to the development of commercially-viable innovations.

External RDI expenses are expenditures paid to other firms, to universities, or to other entities dedicated to scientific or technological research, to create new scientific or technological knowledge or to develop commercially-viable innovations for the firm. Internal and external RDI investments are directly comparable concepts (Cazurra and Un 2007). Both of them are monetary expenditures. These not include the acquisition of firms or alliances with other companies in these external RDI investments as done in other studies (Capron et al., 1998; Vanhaverbeke et al., 2002; Cazurra and Un 2007).

In the existing literature concerning the impact of environmental changes on the firm's investment in RDI activities is discussed the impact of technological discontinuities. These studies indicate that radical changes in the technological environment which make the firm to realise a more intensive use of external providers of technology.

Economists paid attention very much to the role played by knowledge in explaining countries growth differentials and diffusion across countries and regions (Barrios and Strobl, 2009; Jones, 2004; Klenow and Rodriguez-Clare, 2005). Knowledge should give rise to substantial scale effects in productivity stemming from their non-rival nature. Knowledge and technological progress are seen as the main engines of economic growth in the long run. Latter may increase rather than decrease regional inequalities, and these elements are very unlikely to be evenly spread across time and space. As a consequence, economic growth may foster divergence rather than convergence across spatial units, suggesting that convergence may evolve non-linearly. When consider the theoretical literature on growth and convergence, a wide array of arguments arise advocating either for the long term reduction or for the persistence and self-reinforcing nature of economic inequalities across countries and regions (Galor, 1996; Pritchett, 1997; Lucas, 2000; Canova, 2004).

Interestingly, the idea that regional inequalities are likely to evolve in a non-linear way can be traced back in the 1950s. The evolution of regional inequalities was usually linked to national economic development paths and the process of industrialisation. In an analysis of income disparities who suggest the existence of a "long swing" in regional income inequalities, where there is first a rise and then a subsequent fall of income differentials caused by the industrialization process accompanying national development and the decline of agriculture.

Several authors have built on this idea in a regional context suggesting the existence of a bell-shaped curve of spatial development where inequalities should first increase as developed areas benefit from external economies, location of decision-makers, political power, and capital and labour mobility. While a non-linear relationship between regional inequality and national income per capita, clearly has important implications for economic theory and policy, there is to the best of our knowledge no explicit econometric study that has set out to investigate its existence, although a number of works have been suggestive of its possibility. In the current paper we explicitly test this hypothesis using data for EU countries. The EU economy arguably makes for a particularly suitable case study given the sizeable disparities in economic development both across regions and countries compared to, for instance, the US (Barrios and Strobl, 2009).

3. Research methodology

Research methodology in this paper is based on the simulation of the data's from 2000 to 2009 for RDI sector in Romania.

The financial resources in RDI activities were analyzed concerning occupation and sex. Data's were taken from the Romanian National Institute of Statistic updated database Tempo online at 15.11.2011. Data used in this study, for this simulation was taken in April 2012. This research is based on the real data of financial resources from RDI area, as a case study for Romania.

(Sources:

http://www.insse.ro/cms/files/Anuar%20statistic/13/13%20Stiinta,%20tehnologie%20si%20inovare_ro.pdf)

The central objective was to see what was happened in the period indicated (2000-2010) with financial resources in RDI sector.

4. Descriptive statistics and results

Total expenditure in RDI activities were recorded from 2002 to 2008. Data were taken from Statistical Yearbook of Romania 2009 and 2010. In this material they will be presented on macro-regions and regions respectively.

From financial resources studies done on RDI in total on the macro region we can draw some conclusions:

The study was conducted during 2002-2008 period, when the minimum expenditure registered was in 2002 as 574386.1 RON and the maximum value of 2980674 was registered in 2008.

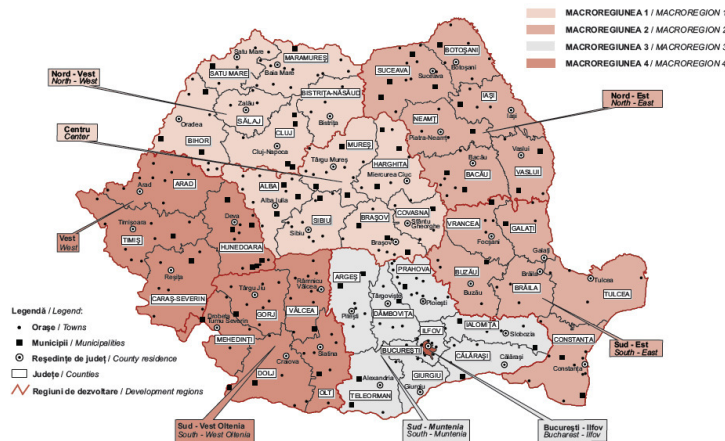


Figure 1: Map of Romania with Macro Regions, Regions and Counties.

In terms of expenditure, the variations on Macro Regions and Regions for RDI sector in Romania is as follows:

In the Macro Region 1 the financial resources had a minimum value recorded in 2002 as 77169.7 RON and maximum value of 333868 RON recorded in 2008. It seems that spending RDI values were

up from 2002 to 2008.

In the Macro Region 2, the minimum value of 55429.4 RON for the expenses in RDI sector were recorded in 2002 and the maximum values were 313830 RON recorded in 2008.

In the Macro Region 3, the minimum value for expenses in RDI sector was 393611 RON value recorded in 2002 and the maximum values was 2091512 RON recorded in 2008.

In the Macro Region 4, the minimum value of expenses were 48176 RON, value recorded in 2002 and maximum values were 241464 RON, recorded in 2008.

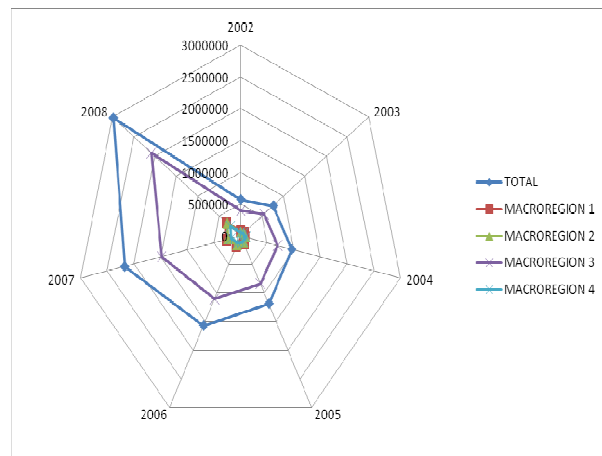


Figure 2: Financial resources from RDI system in Romania represented in total and for the 4-th Macroregions

[Source: graphics are from authors results based on the data took from <https://statistici.insse.ro/shop/index.jsp?page=tempo2&lang=ro&context=26:>]

It seems that Macro regions showed the highest value of RDI expenditure activity in 2002 and the expenditure was minimal and in 2008.

Making a Study on the variations of financial resources in Romania in RDI activities we can draw the following conclusions :

Macro region 1 is composed of **North-West** Region on which belongs the 6 counties components: Bihor, Bistrita Nasaud, Cluj, Maramures, Salaj and Satu Mare and on the **Central region** belongs the next counties: Alba, Brasov, Covasna, Harghita, Mures and Sibiu. Performing a study on a macro regions we can draw the following conclusions:

In the **North West Region** the financial resources from RDI sector represent 50.13% of values recorded in a Macro region 1.

In the **Central Region** were recorded values for financial resources in RDI sector between 24.04% recorded in 2008 from the values recorded in Macro region 1 and the maximum value of 49.87% from 2002. (Although the maximum expenses were recorded in 2008 and the minimum in 2002). Percentage presented here is the ratio value of the recorded value from that year in the centre region values from a Macro region.

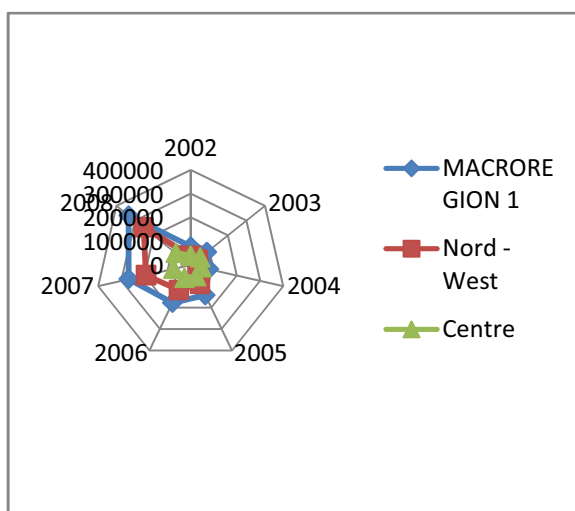


Figure 2: Expenses in RDI system in Romania: the values for the expenses from RDI registered in Macroregion 1 and Regions Nord-West and Centre;

[Source: graphics are from authors results based on the data took from [https://statistici.insse.ro/shop/index.jsp?page=tempo2&lang=ro&context=26: \]](https://statistici.insse.ro/shop/index.jsp?page=tempo2&lang=ro&context=26:)

Macro region 2 is composed of **North Eastern regions** to the next 6 counties: Bacau, Botosani, Neamt, Iasi, Suceava, Vaslui and **South East regions** with the following Counties: Braila, Buzau, Galati, Constanta, Tulcea and Vrancea.

In **North Eastern** region the values recorded for financial resources in RDI sector represented 52.4% of the values recorded in Macro region 2 in 2002 respectively 68.39% in 2008.

In the **South East** region were recorded values that represent 47.60% from the values recorded in 2002 in Macro region 2 and 231.61% respectively in 2008.

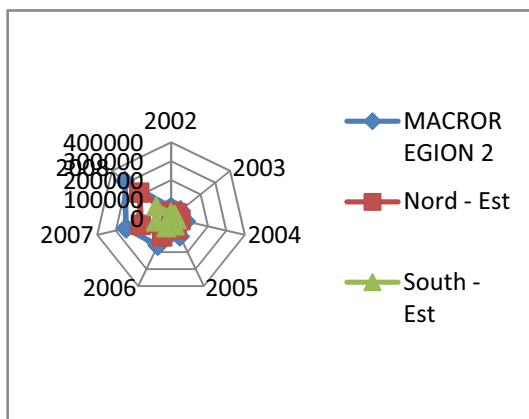


Figure 3: Financial Resources from RDI system in Romania: the values for the expenses from RDI registered in Macroregion 2 and Regions Nord-Est and South-Est.

[Source: graphics are from authors results based on the data took from [https://statistici.insse.ro/shop/index.jsp?page=tempo2&lang=ro&context=26: \]](https://statistici.insse.ro/shop/index.jsp?page=tempo2&lang=ro&context=26:)

Macro region 3 is composed of **South Region** with his 6 counties: Arges, Calarasi, Dambovita, Giurgiu, Ialomita, Prahova and Virginia and **Bucharest-Ilfov region** with its two components:

Ilfov and Bucharest. Financial Resources from the macro region 3 were values that varies between 393611 RON in 2002 and 2091512 RON registered in 2008. In the **South Region**,

Financial Resources, from RDI system vary from 90884.7 RON in 2002 and 231770 RON in 2007. In 2008 the values for the Financial Resources decrease to 229496 RON. The values recorded in the South Wallachia is 23.09% of values recorded in Macro region 3 in 2002 that is 10.97% recorded in 2008 .

From **Macro region 3** includes and **Bucharest-Ilfov region** which have the highest values for expenditure on RDI. Thus in the Bucharest – Ilfov region are the highest values recorded for financial resources involved in RDI activities , the values were in the range of 76.91% in 2002 and 89.03% in 2008 compared to values recorded in Macro region 3.

The maximum values for financial resources involved in RDI activities are registered in Bucharest and the values range are from 262785 RON in 2002 and 1487299 RON in 2008. The registered expenditures in Ilfov county were in the range of 39941.3 RON values in 2002 and 374717 RON registered in 2008

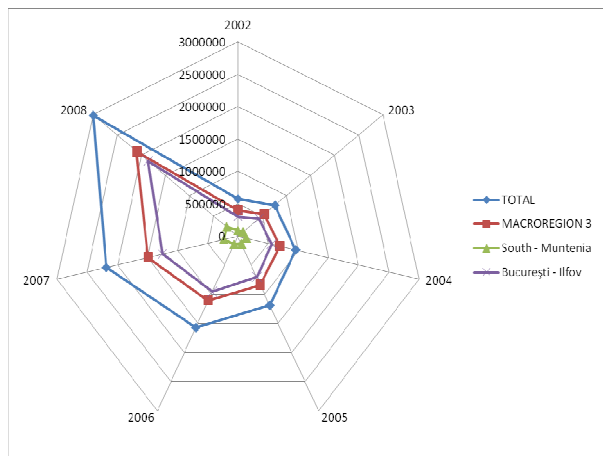


Figure 4: Expenses in RDI system in Romania: the values for the expenses from RDI registered in Macroregion 3 and Regions South-Muntenia and region Ilfov ; [Source: graphics are from authors results based on the data took from

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Macro region 4 is composed of **South-West Oltenia region** and have the following counties: Dolj, Gorj, Mehedinti, Olt and Valcea. **West Region** have the next

counties: Arad, Caras-Severin, Hunedoara and Timis. Expenses recorded in Macro region 4 varies between values recorded in 2002 as 48176 RON and 241464 RON registered in 2008.

In the **South West -Oltenia region**, expenses as financial resources involved in RDI sector were in the range of 21306.5 RON, values which represent 44.83% of values recorded in Macro region 4 and were registered in 2003. The value of 88164 RON registered in 2008, represent 36.51% of values recorded in Macro region 4.

In the **Western region** RDI costs were 55.17% of values recorded in Macro region 4 and is 26577.6 RON, value registered in 2002. The maximum value of 63.49% of values recorded in Macro region 4 was registered in 2008 and represents 153300 RON.

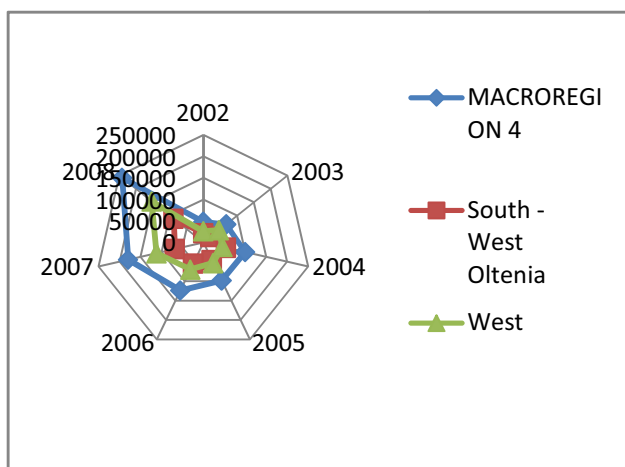


Figure 5: Expenses in RDI system in Romania: the values for the expenses from RDI registered in Macroregion 4 and Regions South-West Oltenia and region West ;

[Source: graphics are from authors results based on the data took from [https://statistici.insse.ro/shop/index.jsp?page=tempo2&lang=ro&context=26: \]](https://statistici.insse.ro/shop/index.jsp?page=tempo2&lang=ro&context=26:)

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