Innovation in the European Union in the light of Lisbon Strategy and Europe 2020 Strategy

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Abstract: This article attempts to characterize the programming issues of innovation development in the European Union described in the Lisbon Strategy and Europe 2020 Strategy. It discusses the role of innovation in the long-term development of the economy of the European Union. The author attempts to analyze the level of innovation of the EU economy on the basis of selected indicators in 2010, which allowed the separation of the countries with the highest and lowest potential for innovation.

1. Introduction

The experiences of the world, especially Europe indicate that market mechanisms do not have self-pro-innovative structural transformations in the economy of all countries and regions [2, 9]. This is evidenced by the relatively low level of innovation in the European Union compared to the United States. For this reason, the European program of economic, social and territorial development aims to boost the innovation processes determining increase of its competitiveness. In the European Union's development programming, aspects of the development of human capital and the creation of knowledge-based economy, which are the main carriers of innovation, are the most important instrument of structural transformations in the economy and, consequently, maintaining, or even increasing the European standard of living.

The role of innovation in the development and progress of the socio-economic development is extremely important, because innovation is an indispensable condition for the development of a dynamic and efficient economy [1, 27]. The condition of the innovation is the existence of a tendency to innovate, which is innovativeness. Innovation can be defined as the tendency to create new or improve existing products and processes, and new systems of organization and management, as well as other creative and imitative changes, leading to the creation of new values in the various subsystems of the economic system to assimilate foreign companies and scientific and technical achievements. Innovation management is defined as

the ability and motivation of entrepreneurs to constantly seek and use in practice the results of research and the research and development of new concepts, ideas and inventions [5, 9].

2. The purpose, methodology and research area

The purpose of this paper is to present both theoretical and empirical aspects of innovation development programming in the European Union. This paper attempts to diagnose the level of innovativeness of the member states on the basis of quantitative analysis of indicators such as the level of expenditure on R & D in relation to GDP, number of people employed in science and technology as a percentage of total employment in the national economy and the number of patent applications European Patent Office.

3. Programming the development of innovation in the European Union

Development programming is the process of setting goals, priorities and objectives of European development policy, organizing and financing their implementation carried out in several stages, and their joint implementation by the Member States and entities operating in them [2, 16-17]. The programming process is carried out in the framework of long-term cooperation and joint actions of the community and Member States as well as economic and social actors, resulting in the preparation of program documents applicable in the Community during a whole programming period. Development programming in the European Union is seen as a modern form of socialized planning and economic, social and ecological market economy. Its main objective is to create the development of a knowledge-based economy (KBE) and the so-called intelligent sectors of the economy (*new economy*) that benefit from the development of science and technology, and produce innovative products and services with a high proportion of added value, so they are very cost-effective.

The European Union, in its attempt to respond to the challenges of globalization, formulated the main directions of development of the EU for the years 2000-2010 in the Lisbon Strategy [2, 16-17]. Its main objective was to overcome the internal structural barriers, as well as causing the EU economy the most dynamic and competitive on a global scale, based on knowledge and innovation, capable of sustainable development and forming an increased number of jobs and greater social cohesion. These objectives were to be achieved by 2010. The Lisbon Strategy was implemented using the so-called *open method* of coordination in the European Union, which has proved to be ineffective in practice [3, 7-8]. The main objectives of the Lisbon Strategy, in particular the increase of innovation, entrepreneurship and employment, labour market reforms and pension systems depended on political and economic decisions at the national level, with particular emphasis on those taken by private operators and not by the EU itself. According to the Lisbon Strategy, the private sector was obliged to cover 66% of expenditure on research and development in each member

state, and the public sector 33%, so that their overall level was at least 3% of the GDP of the country. This task has been carried out by the private sector, which was not too compelled by the authorities of the Member States, since they implemented the neoliberal economic model and support it for political reasons, no matter the cost to the economy and society of the European Union, and at the same time, contrary to the assumptions of Lisbon Strategy, as well as long-term interests of the private sector.

Unrealized fully Lisbon Strategy objectives remain valid, because the concept of the development of the European Union on the basis of its economy and increased innovation seems to be the only reasonable solution [2, 18-21]. This view is reflected in the new EU development strategy for 2011-2020 called the *'Europe 2020. "A strategy for smart, sustainable and inclusive growth"*. This strategy is a modification of the Lisbon Strategy, and is adapted to the new conditions of development resulting from the global economic crisis, as well as changes in the global economy. The main objective of the Europe 2020 Strategy, in spite of the unfavourable conditions of globalization and crisis, points to maintain the successful model of the social market economy, which will be possible thanks to the development of a knowledge-based economy. The Europe 2020 Strategy shows the same goal in the desired level of investment in research and development activities of the Member States of 3% of GDP [2, 23]. The essential task, formulated in the Europe 2020 Strategy, is to increase investment in this activity by the private sector, and to improve the conditions for private R&D activities in the European Union.

4. Level of innovation in the EU economy

One of the most popular measurement methodologies for innovativeness testing is the Oslo methodology, developed more than 40 years ago [4, 48]. The basic ratio used in this methodology is the indicator called GERD, showing gross domestic expenditures on R&D activities. GERD to GDP ratio is one of the most important indicators used in international comparative statistics. Other frequently used measures of the level of innovation include, among others, rate employed in science and technology in relation to the total employment in the national economy and the ratio and number of patent applications submitted to the European Patent Office per million inhabitants.

Analysis of the level of expenditure on research and development in the countries of the European Union in 2010 shows wide variation (Table 1). The undisputed leader in this area is Finland, where expenditure on R&D sector reached 3.9% GDP and much higher than 3%, indicated as a target in the Lisbon Strategy and Europe 2020 Strategy. This level has been also reached or exceeded only by Sweden (3.39%) and Denmark (3.07%). High expenditure

on R&D has also been noted in the economies of Germany (2.8%) and Austria (2.79%). The lowest value of the ratio was observed in Romania (0.46%) and Cyprus (0.5%).

Another indicator is the share of people working in science and technology in relation to the total employment in the national economy (Table 1). In this area, we observe dominance of Luxembourg (55.9%) and three Scandinavian countries - Denmark (51%), Sweden (50.8%) and Finland (50.6%). Note the high position of Belgium (49.3%), Ireland (45.9%), the UK (45.1%), Estonia (45%) and Germany (44.8%). The lowest value was recorded in Portugal and Romania, 23.9% and 24.4%, respectively.

Table 1. Selected indicators of the level of innovation in the European Union in 2010.

Country	Expenditure on R&D (as % of GDP)	Employment in science and technology (as a % of total employment in the national economy)	Number of patent applications submitted to the European Patent Office (per million inhabitants)
The European Union 27	2.01 *	40.5	108.59 *
Belgium	2.01	49.3	130.49 *
Bulgaria	0.6	31.6	1.61 *
Czech Republic	1.55	37.8	25.52 *
Denmark	3.07	51	241.71 *
Germany	2.8	44.8	265.57 *
Estonia	1.63	45	38.07 *
Ireland	1.71 *	45.9	79.13 *
Greece	-	32.4	6.72 *
Spain	1.39	39	31.61 *
France	2.24 *	43.8	135.11 *
Italy	1.26	33.8	73.31 *
Cyprus	0.5	43.9	12.97 *
Latvia	0.6	37.8	-
Lithuania	0.8	42.7	6.49 *
Luxembourg	1.48	55.9	165.91 *
Hungary	1.17	33	20.23 *
Malta	0.67	31.9	-
The Netherlands	1.85	51.9	193.42 *
Austria	2.79 *	39.2	188.3 *
Poland	0.74	36.3	8 *
Portugal	1.59	23.9	10.19 *
Romania	0.46	24.4	1.86 *
Slovenia	2.09	40.8	81.69 *
Slovakia	0.63	33.5	6.04 *
Finland	3.9	50.6	217.69 *
Sweden	3.39 *	50.8	306.74 *
Great Britain	1.8 *	45.1	76.51 *

* Estimate
Source: own study based on [6], access 17.11.2012.

Concerning the number of patent applications to the European Patent Office per million inhabitants, the clear leader is Sweden, which was the only of EU countries that

exceeded the barrier of 300 applications (exactly 306.74) (Table 1). It is worth noting that this is the result nearly three times higher than the EU27 average of 108.59. Next to Sweden were Germany (265.57), Denmark (241.71) and Finland (217.69) applications. Close to achieving barrier of 200 applications were Netherlands (193.42) and Austria (188.3). At the opposite extreme were the countries that were not able to get up to 10 applications, namely: Bulgaria (1.61), Romania (1.86), Slovakia (6.04), Lithuania (6.49), Greece (6.72) and Poland (8).

5. Summary

The European Union in a number of areas relevant to the development of innovative economy is weaker than the United States and also develops more slowly. At the same time the EU economy suffers increasing pressure from the growing China. In the area of innovation in the European Union it is necessary to permanently increase spending on research and development, as a key determinant of the direction chosen in European development strategies. This action should allow not only to maintain but also to strengthen its competitive position. Based on the analysis in the area of innovation management in the light of the EU's Lisbon Strategy and the Europe 2020 Strategy, one can make the following conclusions:

1. In the era of globalization, innovation is an important determinant of competitive economy building in and entities functioning within it;
2. Innovation development programming in European Union is a reasonable action, because market mechanisms alone are not able to self-drive pro-innovative structural transformations in the economy;
3. The innovation aims of the Lisbon Strategy that were not fulfilled are the result of ineffective “open” coordination method and the lack of tools of economic pressure, which could be determining the innovativeness of private sector;
4. The realisation of Europe 2020 Strategy and its aims concerning innovation will largely depend on the private sector involvement in R&D activities;
5. The realisation of Europe 2020 Strategy is endangered by world economic crisis influencing public finance in European Union Member States, the tendency of budget limitations, high unemployment rates, slow economic development and consequently, problems of private sector;
6. Innovativeness of European Union differs by country. Some of the Member States have high innovative potential, for example Denmark, Finland, Germany or Sweden. At the same time, innovativeness of countries such as Bulgaria, Latvia, Lithuania or Romania remains dramatically low.

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