The Necessity of Financing the Research and Development as a Basis of Creation and Implementation of Innovation in V4 Countries.

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Abstract

The year 2009 was proclaimed by the European Commission as a European Year of Creativity and Innovation with the slogan "Imagine, Create, Innovate". Research, development and innovation are the instruments important for the economy development and they are the source of countries´ competitive advantage at the present time. In reality, the amount of financial resources invested into research, development and innovation in the European Union is insufficient. Therefore in March 2000 the European Committee approved a Lisabon Strategy and defined its aim. According to this the European Union should become by the year 2010 the most competitive and the most dynamic knowledge economy in the world with a sustainable growth, creating more and better working places and bigger social cohesion.

The first part of the article is focused on defining research and development according to present Slovak legislation. The analyse is appreciating and comparing the economic growth rate of V4 countries with the EU average and is explaining in more details the amount of the financial resources invested into research and development in V4 countries individually.

Key words: The Economic Growth, Innovation, Research and Development Expenditures, Lisabon Strategy

JEL Classification: O30

1 Introduction

In recent years, one of the most important factors of economic growth become more investment in research and development. They allow not only to innovate the production, but also increase business competitiveness and competitiveness of the whole economy. The custom corporate resources to fund research and development are inadequate in most cases, it is necessary to support this area also by the resources from government sector and from abroad. The biggest current problem is inadequate funding from the government sector, lack of legislation and tax instruments that should have a positive impact on the business sector in R&D.

2 Theoretical Definition of Research and Development

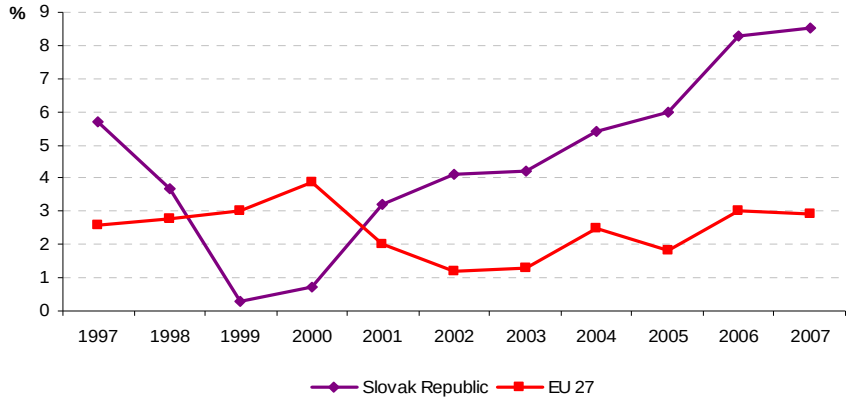
According to Slovak law 172/2005 Z.z. (State support for research and development), the research is defined as systematic creative activity taking place in science and technology for the needs of society and the development of knowledge. It consists of basic and applied research [6]. The aim of basic research is to acquire new knowledge of the examinee and deeper

understanding, regardless of their practical application. Applied research, unlike basic research deals with application of new knowledge into economic and social practice.
Development is systematic creative activity in the field of science and technology, which uses patterns and knowledge gained through research or based on practical experience in developing new materials, products, equipment, systems, methods and processes, including construction and prototype development.
Expenditure on R&D include the total expenses incurred in the organization of R&D activities, i.e. internal expenditure. These consist of capital and current expenditure. The expenses incurred outside the organization include only those that serve to support internal research and development (e.g. purchase of equipment for R&D). The current expenditures are the costs to its business organizations and departments, and research and development costs of the tasks handled its own capacity. In addition to its own corporate resources to the support R&D activities are using funds obtained from government sector and from abroad.
Expenditure on R&D can be measured using two summary measures, namely [9]:

- **Gross domestic expenditure on R&D – GERD** – representing domestic and foreign spending to conduct R&D within the country over a period of time (with the exception of expenses on R&D that are carried out abroad),
- **Gross national expenditure on R&D – GNERD** – that include the country's total expenditure on R&D carried out abroad.

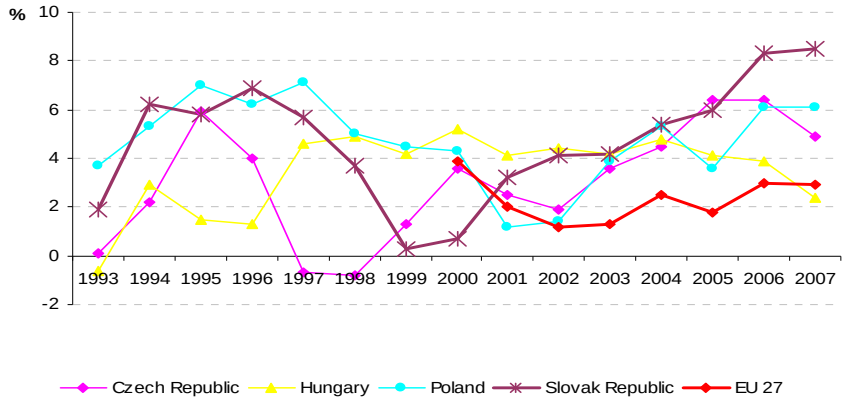
3 The Economic Growth in V4 Countries Compared with the EU Average

Over the past decade, the Slovak economy has undergone many significant changes. This was particularly the transition from centrally planned to a market economy, implementation of major reforms, but also the entrance of Slovak Republic to the European Union and adopting the single European currency.
All these changes have contributed to significant economic growth and increased competitiveness of the country. The difference between the development during the years 1999 to 2007 is more than 8%. This growth is one of the fastest within the EU Member States and since 2001 is well above the average of economic growth in EU (Graph 1). In 2007, the Slovak economy grew at a rate 8,5%, but EU only at a rate 2,9%.



Graph 1: The comparison of the economic growth rate in Slovak Republic and EU 27
Source: Eurostat

In recent years not only the Slovak economy, but also economies of other V4 countries thrived. Comparing the economic growth of the Slovakia with other V4 countries from 1993 until the end of 2007 shows graph 2, whereby it can be stated much progress in our country now.



Graph 2: The comparison of the economic growth rate in V4 countries with the EU average
Source: Eurostat

However, imported economic crisis in recent months has a very negative impact on the economy of all countries. The economic growth rates are slowing and the countries are moving into negative numbers (recession). Estimates for 2009 are very unfavorable. It is expected that the economies of most countries get below 0% (EU will fall to - 4%, Hungary will fall to – 6,3% and Slovakia will fall to – 2,6%). A possible way out of this situation is to increase investment in innovation activities of enterprises and promoting R&D not only through domestic but also foreign sources.

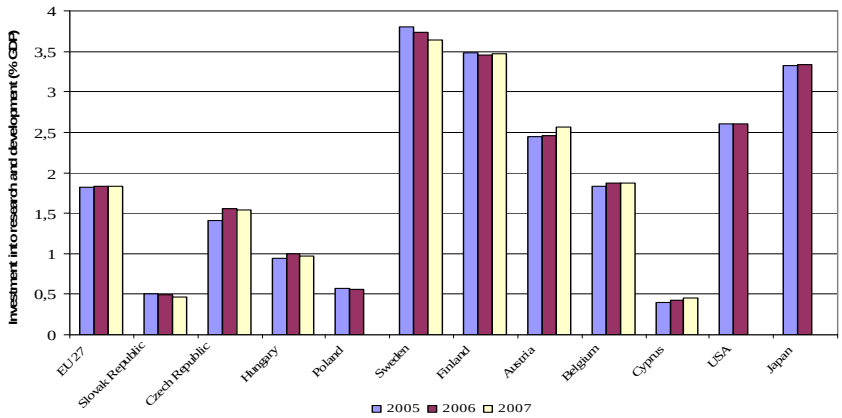
4 Research and Development Expenditure

The issue of competitiveness of the economy as a whole deals with the Lisbon Strategy, which was adopted in 2005. In 2000, the Summit held in Lisbon, which was identified as a fundamental aim of the European Union to become by 2010 "the most competitive and dynamic knowledge economy in the world capable of sustainable economic growth, with more and better jobs and greater social cohesion" [5]. This aim can only be achieved through rapid and long-term economic growth, so that individual states will create in the market economy more convenient conditions for growth of the country's competitiveness.

A mentioned document, which was also accepted by Slovak Republic, is focused on the rising of standard of living for EU citizens, including through support for R&D funding. The European Union recognizes that the support of basic and applied for R&D creates a strong presumption for building knowledge-based economy contributes to employment growth and hence to the overall economic growth in the Euro area.

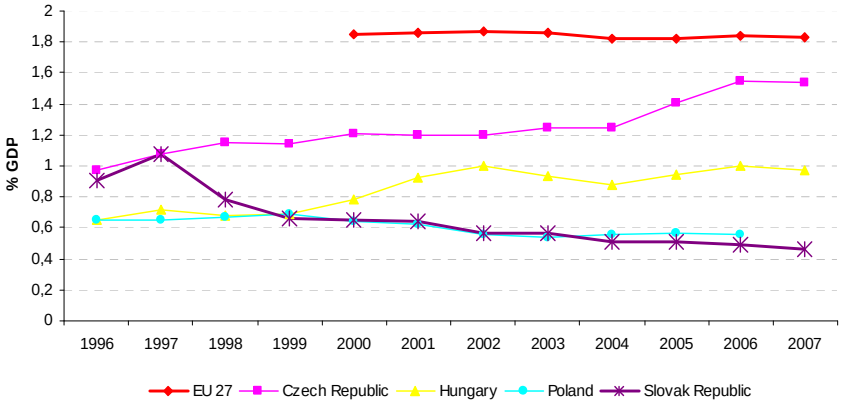
In the Lisabon Strategy is also defined another aim, i.e. to increase investment in R&D to 3% of GDP. This would lead to further economic growth, job creation, improved quality of life, but also to solving societal problems. Of those 3% would be at least 2/3 the investment from the private (business) sector and 1/3 of public resources. From the EU countries, only Sweden and Finland has achieved this aim until now. In 2007, the investment into R&D in Sweden were 3,64% GDP

and in Finland were 3,47% GDP. Only these two countries can compete with the research strength of the USA and Japan (Graph 3).



Graph 3: The investment into the research and development in selected countries
Source: Eurostat

The negative trend in investment in R&D has been seen for the EU 27 (Graph 4), where in recent years the investment have been decreasing, respectively stagnating. In 2007 investments amounted to only 1,83% of GDP. This situation is caused mainly because some member states, especially from a group of the catching up countries display a lack of activity in this area, and thus hamper the implementation of the stated aims of the Lisbon Strategy.
A similar situation as in the whole EU is also in Slovakia, where, despite significant economic growth, share of expenditure on R&D relative to GDP in recent years is gradually declining. The value of this indicator in 2007 was only 0,46% of GDP, well below the established aim of 3%. Not only in Slovakia but also Poland has failed to exceed 1% of GDP (0,56% of GDP in 2006). The value of spending in this country is decreasing or stagnating and also is well below the required 3%. Hungary was in the same year received the 1% of GDP. The biggest problem of these countries is the lack of private sector investment. Only one country from V4, Czech Republic, has been converging to EU 27 average. Its investment in R&D from year to year increases and in 2007 were at 1,54% of GDP.

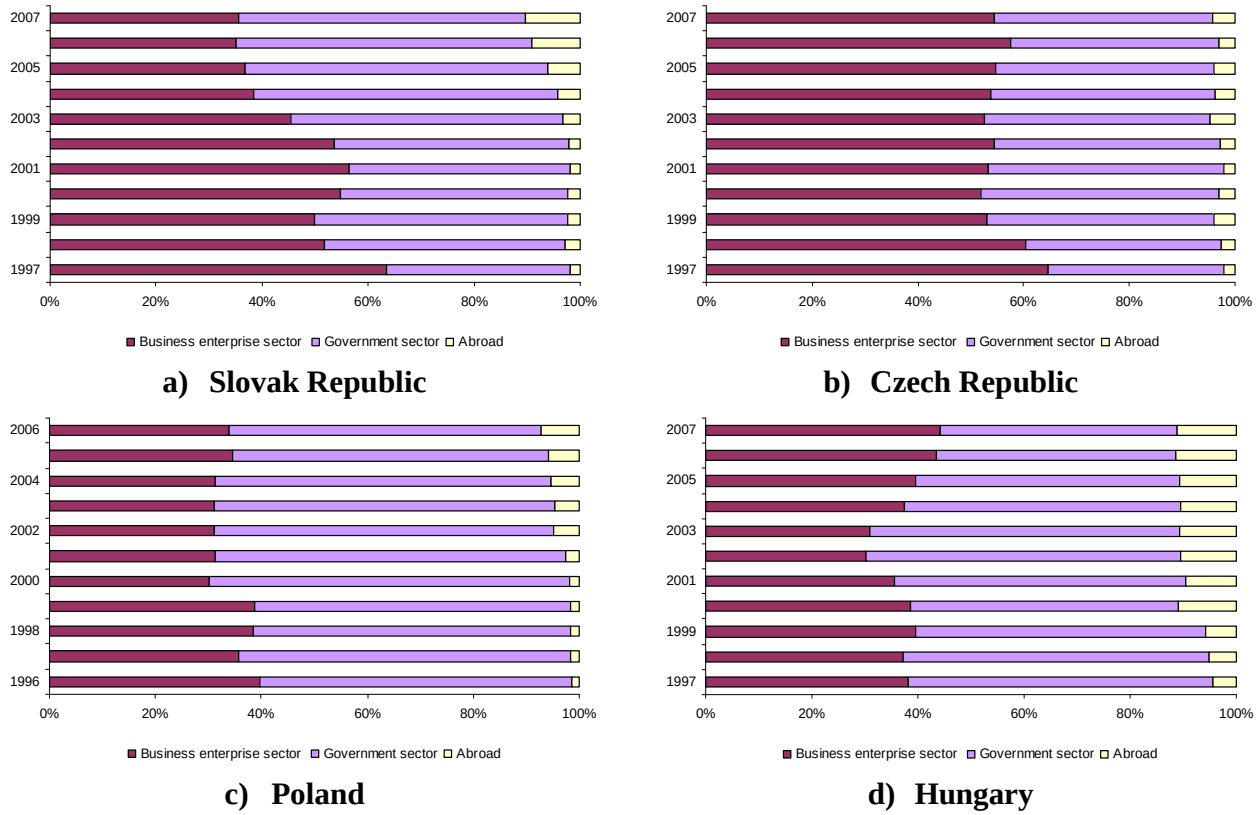


Graph 4: Gross domestic expenditure on R&D (% of GDP) in V4 countries in comparison with EU 27 average
Source: Eurostat

5 The Structure of Research and Development Expenditure

Gross domestic expenditure on R&D consist of three main sources, namely business enterprise resources, government resources and resources form abroad. In all four countries of V4, the financial resources spent by both private and public sector on R&D and innovation are insufficient.

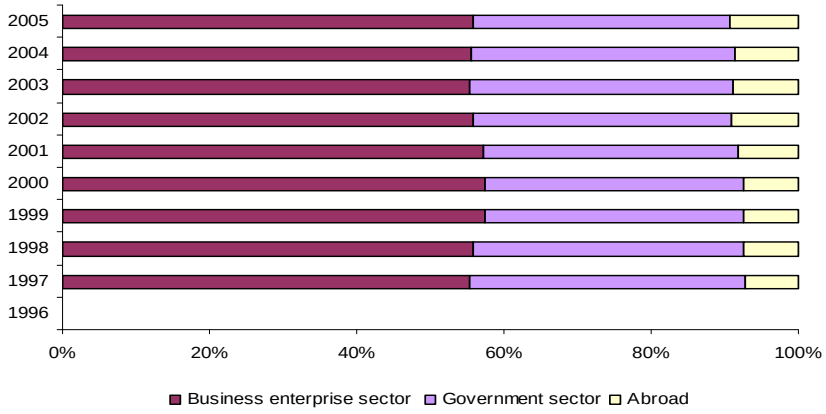
As already noted, expenditure on R&D in Slovak Republic recorded a downward trend. In more recent years, the share of expenditure on R&D from business enterprise resources to total gross expenditure on R&D is decreasing (from 57,4% in 1996 to 35,6% in 2007). By contrast, government and abroad expenditure on R&D during the period increased (Graph 5a). The structure of expenditure in this area is therefore being developed in the opposite direction, as the Lisbon Strategy requires. The business resources, i.e. private expenditure, which should constitute 2/3 of total expenditure, represent about 1/3 (35% of total expenditure in 2007). In most cases, businesses are unable to compete with powerful foreign companies with new technologies and sufficient equity to finance research, development and innovation. After the entrance of Slovak Republic to the European Union, expenses from abroad significantly increased nearly 6% (to 10,2% of total expenditure in 2007).



Graph 5: Gross domestic expenditure on R&D from individual resources (% of GDP) in individual countries

Source: Eurostat

The economic growth in Czech Republic in recent years has a very positive impact on the area of expenditure on R&D (Graph 5b). Even thought it is not only below the target value, i.e. 3%, but also below the EU 27 average value, it is only one significant and positive increase in V4 countries. The most of financial resources are from own corporate resources (54% of total expenditure in 2007). In case that the trend will continue, the corporate resources should be 2/3 of total expenses in the future. Compared with other V4 countries, abroad resources used to finance R&D in this country are the lowest (4,1% of total expenditure in 2007).
Gross domestic expenditure on R&D in Poland is formed mainly by government expenses, which represent nearly 60% of total expenditure (Graph 5c). The enterprises are able to invest in this area a small part of their resources, which represent only 1/3 (33,1% of total expenditure in 2006) of total expenditure. The share of abroad resources in total resources is growing slowly.
In the area of expenditures on R&D, Hungary is on the second place. The first is Czech Republic. These two countries have recorded an increasing trend in recent years in this area, unlike Slovak Republic and Poland, where the amount of expenditure on R&D support is gradually decreasing. Approximately Hungary obtained equal amount of resources from government and from corporation, i.e. around 40% (Graph 5d). In contrast to other countries, this country is most able to acquire the funds from abroad, amounting to 11,1% of total expenditure on R&D in 2007.



Graph 6: Gross domestic expenditure on R&D from individual resources (% of GDP) in EU27
Source: Eurostat

Neither V4 countries, nor EU27 fails in the condition that their own corporate resources on R&D accounted for 2/3 and public resources 1/3 of total expenses. By the year 2005, approximately 55% of total expenses were business enterprise expenses, 35% were government expenses and 9% were abroad expenses. The average data for the EU27 after 2005 are not available (Graph 7).

3 Conclusion

The expenditure on R&D in Slovak Republic at 0,49% of GDP is inadequate, resulting in the low innovation activity of Slovak enterprises. According to the study of the European Commission, European Innovation Scoreboard 2008, which is published by the location of individual countries on the basis of achievements in innovation, Slovak Republic is at 26-th place and belongs to the last group, the group called catching-up countries, together with Poland, which is at 27-th place and Hungary at 25-th place. Croatia, Bulgaria, Latvia, Lithuania, Romania and Turkey are behind

these V4 countries in the area of innovation activity. The innovation activity of Czech Republic is the best from V4 countries, i.e.18-th place.
The main reason of insufficient innovation activity in the Slovak enterprises are mainly the low expenditure on research, development and innovation projects which results should be transformed into the practice. According to the recommendation of the European Commission, Slovak Republic should by focused on the increasing funding into education, research and development, into reducing long-term unemployment and into completion the reform of education and lifetime learning in accordance with the market needs.

References

[1] EUROPEAN COMMISSION: European innovation scoreboard 2008. Comparative analysis of innovation performance, January 2009, available on the Internet: http://www.proinno-europe.eu/eis2008/website/docs/eis_2008_final_report.pdf

[2] EUROPEAN COMMISSION: Science, technology and innovation in Europe, 2008 edition, available on the Internet: <http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-EM-08-001/EN/KS-EM-08-001-EN.PDF>

[3] EUROPEAN COMMISSION: Innovation Tomorrow: Innovation policy and the regulatory framework: Making innovation an integral part of the broader structural agenda, France, 2002. 221 s. ISBN 92-894-4549-1

[4] EUROPEAN COMMISSION: Communication from the commission on the European Competitiveness Report 2008, [online] November, 2008, [citované 15.1.2008]. Dostupné na internete: <http://ec.europa.eu/enterprise/enterprise_policy/competitiveness/doc/compet_rep_2008/com_2008_0774.pdf>

[5] MINISTERSTVO FINANCIÍ SR: Stratégia konkurencieschopnosti Slovenska do roku 2010, Národná lisabonská stratégia, July 2005, available on the Internet: <http://www.rokovania.sk/appl/material.nsf/0/94ECDFEF0E61564AC1256FA50033DFB9/$FILE/Zdroj.html>

[6] Zákon 172/2005 Z.z. o štátnej podpore výskumu a vývoja

[7] Návrh zákona o inováciách, available on the Internet: <http://www.economy.gov.sk/pk/88-2007-1000/ma.htm>.

[8] www.ec.europa.eu/eurostat/

[9] www.statistics.sk