Chapter 7.

Innovation policy in the small and open economies – the case of the Slovak Republic

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7.1. Introduction

In the EU countries, the innovation and innovation support became an often-emphasized priority mostly with regard to the Lisbon strategy. In the EU conditions, the innovation policy is conducted mainly on the national level with many specific innovation support schemes and overall framework. The key element in innovation, research, and development support should be the stimulation of the private sector, which is the main driving force in this field together with public sector.

The Lisbon commitment of the EU to increase research and development (R&D) funding from public sources to 1% of GDP and private sources to 2% is reality mostly in member states, which are already star performers in this area. Therefore, it is necessary to examine the reasons for these suboptimal results, try to find common and successful models of support, and try to implement them in the least successful countries[1].

The rationale for research, development, and innovation support is obvious and is supported by many theoretical and empirical papers in economic theory. Especially the endogenous growth theory emphasizes the relevance of human capital accumulation, the results of research and development, innovations in fostering economic growth, increasing the competitiveness of national economies, increasing the quality of life and therefore the overall economic development (Barzel, 1968, p. 348; Griliches, 1994; Rogers, 1995).

[1] This should not be understood as institutional xeroxing, but as an analysis of specific and successful elements in innovation and research support mechanisms.

Griliches (1992, p. 29) states that the existence of spillovers in research and development is very relevant, when comparing the so-called social rate of return and private rate of return (profit and rentability of investments in the case of specific private company investing in R&D and innovation). He concludes that private investments have higher social rate of return in comparison with the profit that the private companies achieve from the results of their R&D investments. The presence of social rate of return from R&D and innovation is frequently one of the main arguments used in emphasizing of state interventions presence in this field. The important aspect connected to the presence of state intervention in this field, is to find such solution, which does not disrupt and negatively affects other economic processes in the economy (Grifith, 2003).

The aim of this chapter is to introduce some aspects of the Slovak innovation system and innovation policy, briefly study and compare them with selected small and open economies: Estonia, Finland and Ireland.

7.2. The innovation and technological development of the Slovak Economy

In the recent years, Slovakia has shown excellent macroeconomic results. It has enjoyed economic boom and macroeconomic stability. However, in the field of innovation and technology development, Slovakia ranks among the poorest performers in the European Union (EU). According to the Summary Innovation Index (SII), Slovakia significantly leaves behind the average innovation and technology development of the EU countries. In 2006, the Slovak Republic ranked 28th out of 34 analysed countries (European Commission, 2007b). Although Slovak economy recorded some above-average results in youth education attainment level (119% of the EU-25 average), ICT expenditures (105% of the EU-25 average) or employment in medium-high/high-tech manufacturing (141% of the EU-25 average). High ICT expenditures and high share of employment in medium-high / high-tech manufacturing are the effects of huge influx of foreign direct investments in the previous period and purchases of branches of the transnational corporations. Great inflow of foreign direct investments is attracted mainly by the low-wage character of Slovak economy and is aimed at technology diffusion rather than creation of innovation.

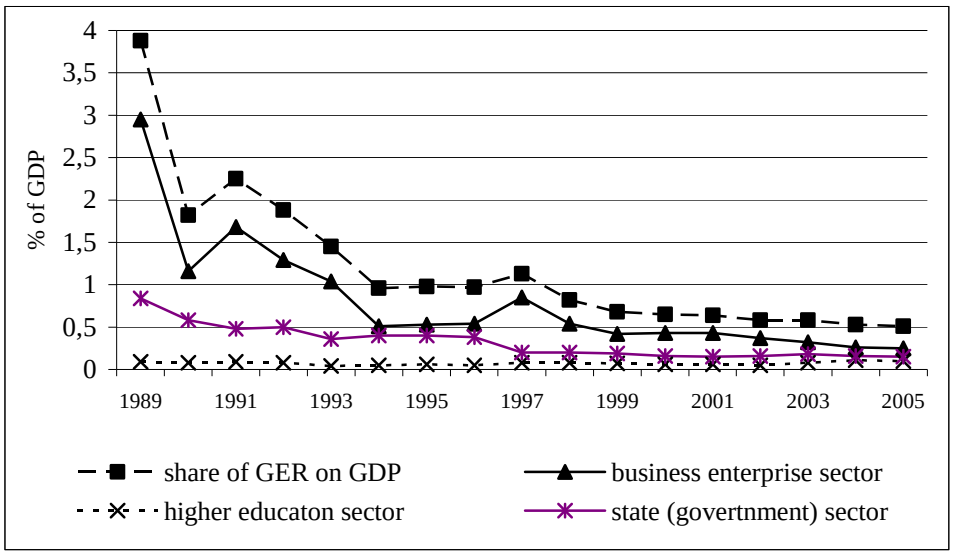
Other figures of the European Innovation Scoreboard indicate under-average and poor performance of innovation and technological development: public R&D expenditures (38.5% of the EU-25 average), business R&D expenditures (21% of the EU-25 average), early-stage venture capital (17% of the EU-15 average). Some of the indicators, mostly in patent activity, show crucial inefficient performance: EPO patents per million population (6% of the EU-25 average); USPTO patents per million population (6.5% of the EU-25 average) or triad pat-

ents per million population (0.9% of the EU-25 average). Based on SII score, Slovakia is included into group of countries, which are trailing (European Commission, 2007b)

Radosevic (2004, p. 624) evaluated R&D and innovation capacity using a set of partly different 25 quantitative indicators organized within the new national innovation capacity, and calculates summary innovation capacity index[2]. According to his results, Slovakia ranked 20th out of 24 assessed countries.

Additionally, negative (or at least stagnating) trends of basic indicators are shown by figures 7.1, 7.2, and 7.3. They clearly illustrate unsatisfactory tendencies in innovation base during the previous period.

Figure 7.1. Share of GERD on GDP in the Slovak Republic in 1989-2005

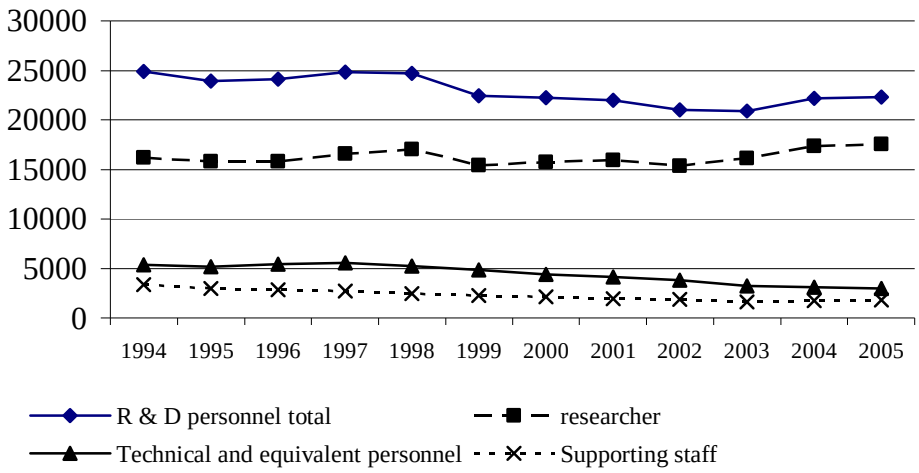


Source: own counts based on Klas (2006).

Sharp decrease of GERD share on GDP at the beginning of the 1990's was caused by transition recession and restrictive financial policies as well as restructuring processes at the microeconomic level. Mostly in the first part of 90's the business sector cut R&D expenditures as a reaction to the increasing competition, liberalisation, and privatisation.

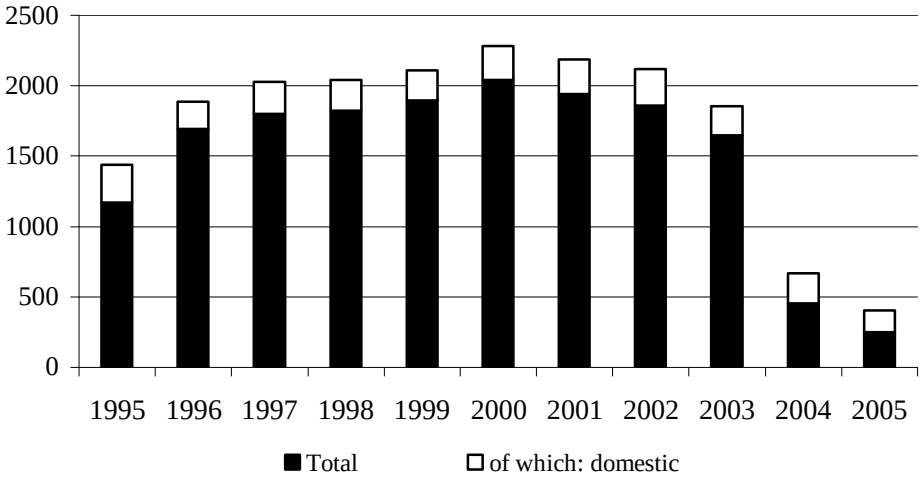
[2] The analysis is based on a series of 25 indicators compiled for 10 Central and East European countries and 14 EU member states (Luxemburg excluded). Indicators are divided into four groups: absorptive capacities (Slovakia ranked on the 19th place), R&D capacities (22nd place), diffusion capacities (15th place) and demand capacities (22nd place).

Figure 7.2. Research and development personnel



Source: own counts based on Klas (2006).

Figure 7.3. Applications concerning inventions according to the international patent classifications



Source: own counts on based of Statistical Office of the Slovak Republic (1996, 2001-2006).

7.3. The innovation system in the Slovak Republic

7.3.1. Institutional framework

Slovak innovation system comprises a number of public sector, private and non-profit organisations, and institutions. Majority of the public sector is controlled / supported by Ministry of Education or Ministry of Economy.

The Ministry of Education designs national science and technology policies. Its organizational division – The Science and Technology Section of the Ministry of Education formulates the development concepts of national science and technology policies and policy instruments fostering R&D. Another division – The International Cooperation Section of the Ministry of Education ensures participation and cooperation in international programmes related to science and technology. In the previous years, the Ministry of Education created certain key legislation elements of the national innovation system: the Law on Science and Technology Assistance Agency, the Higher Education Law, the Law on Science and Technology, and the Law on Slovak Academy of Science.

R&D field in the Slovakia consists of:

The Slovak Academy of Sciences (SAS) is Slovakia's foremost institution for the promotion and support of basic, strategic, and applied research.

> *The SAS´s primary mission is furthering of knowledge and understanding of the natural, technical and social sciences, and providing the necessary scientific foundation for the advancement* (Slovak Academy of Sciences, 2005).

The SAS publishes 62 scientific journals and about 80 monographs annually. It is subdivided into three scientific sections encompassing 56 scientific institutions and 12 auxiliary organizations, which provide supporting activities

Universities and Higher Education Facilities represent another relevant R&D capacity. There are 20 public, three state and 10 private universities and Higher Education Facilities in Slovakia. In the recent years were established a few new universities as a results of increasing demand for higher education. Slovak universities have very limited resources for R&D activities. Consequently, the research quality many of them is mostly poor (European Commission, 2007a). They must also face to brain drain of teacher and students

The VEGA Grant Agency is a scientific grant agency of the Ministry of Education and the SAS. It was established in 1996. The VEGA is a funding and advisory body in the field of scientific and technical policies, financing basic research and evaluation of research projects.

The Slovak Research and Development Agency (SRDA) is the only research and development grant agency in Slovakia. It was established in 2005, as

a successor of the previous agency – The Science and Technology Assistance Agency – functioning since 2001. The SRDA supports basic research of the superior quality, applied research, and development in all science disciplines and technology including support of interdisciplinary and multidisciplinary research based on top quality.

The Centre for Advancement, Science and Technology (SARC) was established in 1991. The main missions of SARC are supporting activities of transfer of technologies, promoting of management in the field of science and technology, and promotion of the Slovak organization in European R&D projects and programmes (including the 5th and 6th Framework Programmes, COST and EUREKA programmes). Moreover, SARC helps to commercialize R&D results.[3]

The second group of elements of the Slovak innovation system are institutions and agencies controlled/supported by the Ministry of Economy.

The National Agency for the Development of Small and Medium Enterprises (NADSME) was founded in 1993 as a joint initiative of the Slovak government and EU PHARE programme. Since 1997, it has operated as a non-profit organization involving three shareholders: the Ministry of Economy, the Entrepreneurs Association of Slovakia and the Slovak Association of the Personal Businesses. NADSME's primary mission is supporting of small and medium-sized enterprises (SME), including innovation development. NADSME runs supporting programmes and provides the funds promoting:

» stimulation of the SME sector growth;
» improvement of the competitiveness of SMEs;
» globalization, penetration into new markets;
» facilitation of access of SME to capital.

It established a network of Regional Advisory and Information Centers (RAICs), Business Innovation Centers (BIC)[4] and First Contact Points.

The Business and Innovation Centre in Bratislava hosts Innovation Relay Centre Slovakia (IRC Slovakia) established in 1997. IRC Slovakia provides the Slovak enterprises and R&D institutions with services related to technology transfer, partners findings, consulting and advisory. Important parts of supporting NADSME infrastructure are business and technological incubators[5] (NADSME, 2006). In 2004, NADSME was appointed as a managing authority

[3] In 2006, the SARC was integrated into the SRDA as Department for International Cooperation.
[4] There are five BICs in Slovakia. BIC provides services to business, focusing on innovation consulting, international technological transfer, financial consulting, regional development project management and investment consulting.
[5] There are placed 10 business and technological incubators, nine First Contact Points and 14 RAIC in Slovakia.

in the selected measures of EU funding. These measures cover a significant proportion of total innovation policy expenditures in Slovakia (National Agency for Development of Small and Medium Enterprises, 2006).

The Slovak Investment and Trade Development Agency (SARIO) aims for attracting foreign direct investments and developing the FDI projects up to their final stage, decreasing unemployment rate and supporting exports. SARIO administrates the selected measures of Structural Funds and, in cooperation with NADSME, implements the measures related to business incubators, technology parks, and R&D centers.

The Slovak Innovation and Energy Agency (SIEA) is an organization focused on development and promotion of savings and rational use of energy as well as alternative energy sources.

The Innovation Fund is a non-investment fund established in 1997 with the aim of supporting the development of science, R&D and accelerating innovation development in the Slovak Republic.

Apart from institutions controlled by Ministry of Economy and Ministry of Education, the national innovation system is supported by:

The Slovak Guarantee and Development Bank (SGDB) which, in addition to traditional banking services, performs financial intermediation of risk capital contracts – Programme I^2 – The Business Angels Network

The Slovak Venture Capital Association (SLOVCA). Its primary purpose is increasing awareness of the public in the field of availability of venture capital to entrepreneurs, as well as of other investment and banking institutions, and economic, political, and regulatory bodies in Slovakia.

7.3.2. Slovak innovation policy

Slovakia lacks a coherent National Innovation Plan and a central body responsible for creation, implementation, and managing of innovation policy.

The main shortcomings of the Slovak innovation policy include absence of influential central policy-making authority responsible for making up coherent innovation policy. Some selected innovation policy issues are made up within the Slovak Government Council for Science and Technology (SGCST). According its statute

> *the SGCST is an advisory body to the Slovak government responsible for preparing and exercising the government's science and technology policies with regard to economic, social and culture development and defence and foreign affairs of the Slovak Republic* (*Statute…*, 2006).

The SGCST was constituted in 1999 after the period of complicated development, which significantly points out the position and importance of innovation

policy in the Slovak economic policy. In 1991, the Slovak Government Council for Science and Research was established. In 1995, due to its inefficient operation it was cancelled and replaced by the Office for Strategy of the Development of Society, Science, and Technology of the Slovak Republic (OSDSST). Subsequently, the OSDSST set up Slovak Government Council for Science and New Technologies. Later, the OSDSST was cancelled and Slovak Government Council for Science and New Technologies was replaced by the SGCST (Klas, 2006).

SGCST comprises of representatives of ministries, institutions of R&D and entrepreneurial associations. Assessing of SGCST activity is ambiguous. Baláž (2005, p. 515) states that Council has had certain limits: complicated structure, limited remits, and low prestige. Contrary to these problems, the Council proposed to establish the Science and Technology Assistance Agency and to pass some acts on education, science, and technology. On the other hand, these initiatives were focused on the public sector and did not promote to commercialize results of R&D. Additionally, cooperation among the Council, the Ministry of Economy and the NADSME has been poor. Finally, the SGCST formulates science and technology policy rather than innovation policy (European Commission, 2007a).

Although innovation policy has not been a priority of government agenda, innovation policy was outlined in a fragmented form in the broad strategic documents adopted by the government. The Slovak Government has made some progress by passing the *Strategy for Competitiveness Development in Slovakia until 2010* (*the Lisbon Strategy for Slovakia*) in 2005. This strategic document states that Slovakia's long-term growth and competitiveness must be based on knowledge-based economy building. It emphasizes four priority fields (Ministry of Economy…, 2006):

1. information society,
2. science, research and innovations,
3. entrepreneurial environment,
4. education and employment.

At the end of 2006, the government adopted Slovak National Strategic Reference Framework for the programming period 2007-2013. The Strategic Reference has three main priorities (Ministry of Finance, 2006):

1. Infrastructure and regional accessibility;
2. Innovation, information society and knowledge-based economy;
3. Human resources and education.

What is more, Ministry of Economy prepared a strategic document *Innovation Strategy for the Slovak Republic 2006-2013* which identified and listed significant weaknesses of the national innovation system (Ministry of Economy, 2006):

- absence of explicit and clear innovation policy and fragmentation of competencies;
- weakly applied research;
- deficient measurement of innovation policy – lack of measurement promoting diffusion of innovation;
- scarcity of knowledge on innovation and weak innovation management in the business sector, low level and decreasing of R&D expenditures;
- weak system of science and technology funding;
- weak relationship between research-education system and entrepreneurial sphere – poor demand of enterprises for results of the Slovak R&D and low level of commercialization;
- weak innovativeness of the firm and low business R&D expenditure – caused by scarcity of venture capital, low development business innovative culture and low development of the inter-enterprise coordination in the field of innovation.

On the other side, Slovakia's innovation system has some elements, which may increase its innovative potential: educated and qualified labour force, which contributes to good environment for generating innovations; increasing trend in ICT using and the functional monitoring system for innovation policies.

This document outlines systematic, horizontal, and sectoral priorities. The sectoral priorities included:

- production of electrical and optical equipment;
- manufacturing of machinery and equipment; and
- production of chemicals and chemical products.

The horizontal objectives include information technologies and nanotechnologies. The Innovation Strategy proposed also explicit legislative and institutional tools and measures to build overall framework conditions favouring innovations.

7.4. Institutional framework for research, development and innovation in selected EU countries

In the EU, the innovation policy is the sole competence of individual member states. The innovation policy in each country encompasses a broad range of direct and indirect instruments, their combinations, and specific institutional characteristics. We have chosen to briefly study the institutional framework of three selected small and open economies, to some extent comparable with Slovakia. Therefore, the selection of Finland, Ireland, and Estonia was not random. While Finland unambiguously represents the innovation-oriented market economy, Estonia and Ireland could serve as examples of other transition economies. The common denominator for all these economies is clear strategic support (both financial and institutional) for research, development, and innovation, which is

the key precondition for their present favourable development. Each of these countries also faces the challenges that are connected to the globalisation process; therefore, it is interesting to study their individual approach in order to observe some similar patterns in institutional and legislative framework and its development.

Before studying the individual research, technology, and innovation institutional frameworks, it is necessary to present the current position of these countries in mutual comparison, according to the European Innovation Scoreboard (table 7.1).

Table 7.1. European innovation scoreboard 2006

Indicator	EU25	SK	FI	EE	IE
New S&E graduates	12.7	9.2	17. 4	8.9	23.1
Population with tertiary education	22.8	14.0	34.6	33.3	29.1
Broadband penetration rate	10.6	1.5	18.7	11.1	4.4
Participation in life-long learning	11.0	5.0	24.8	5.9	8.0
Youth education attainment level	76.9	91.5	84.8	80.9	86.1
Public R&D expenditures	0.7	0.3	1.0	0.5	0.4
Business R&D expenditures	1.2	0.3	2.5	0.4	0.8
Share of medium-high/high-tech R&D	-	63.4	86.4	62.0	85.0
Enterprises receiving public funding for innovation	-	2.8	15.2	0.3	27.8
SME's innovating in house	-	13.1	37.6	29.8	47.2
Innovative SME's cooperating with others	-	6.8	17.3	16.0	15.6
Innovation expenditures	-	1.9	2.5	1.6	1.7
Early stage venture capital	-	0.004	0.036	-	0.021
ICT expenditures	6.4	6.7	7.0	9.8	5.2
SME's using organizational innovation	-	13.4	47.0	39.2	49.6
Employment in high-tech services	3.4	2.7	4.5	2.8	3.6
Exports of high technology products	18.4	4.6	17.8	10.1	29.1
Sales of new-to-market products	-	12.8	9.7	4.4	5.6
Sales of new-to-firm products	-	6.4	5.1	7.6	4.5
Employment in medium-high/high-tech manufacturing	6.7	9.4	6.8	4.8	6.0
EPO patents per million population	136.7	8.1	305.6	15.5	77.3
USPTO patents per million population	50.9	3.3	104.6	1.2	37.4
Triad patents per million population	32.7	0.3	101.7	0.0	14.8
Community trademarks per million population	100.7	10.8	106.8	31.7	143.0
Community industrial designs per million population	110.9	17.3	95.5	9.2	49.0

Notes: SK – Slovakia, FI – Finland, EE – Estonia, IE – Ireland.
Source: European Innovation Scoreboard (2006).

7.4.1. Ireland

Ireland's rapid economic development has led to the discussion about the quality and future prospects of its economic growth. As for other countries, Ireland's research and innovation policy is under constant development and is becoming more a matter of political discussions. Despite favourable economic development and increased funding, Ireland's innovation performance falls behind the best European countries. Ireland's spending on R&D reached 1.4% of GDP, in which the budget appropriations represented 0.33% of GDP in 2005.

In line with this discussion, Irish government adopted three strategic documents, thus creating a favourable legislative framework for research, technology, and innovation development:

- Strategy for Science, Technology and Innovation (adopted in 2006),
- Irish National Reform Programme (adopted in 2005),
- Building Ireland's Knowledge Economy (adopted in 2004).

In June 2006, the government published Strategy for Science, Technology and Innovation 2006-2013, which outlines the main objectives for the nearest future and seeks to make Ireland a leader of innovation research, technology and innovation. According to this document, by 2013 Ireland should become internationally renowned for the excellence of its research and be at the forefront in generating and using new knowledge for economic and social progress, within the innovation-driven culture (*Strategy…*, 2006). Compared with previous years, some changes took place also on the governance side of research and innovation policy. The former Irish Council for Science, Technology and Innovation Additionally was replaced by the Advisory Council for Science, Technology and Innovation and in 2004 the government established the Office of the Chief Scientific Adviser.

FORFAS is a national policy and advisory board for enterprise, trade, science, technology, and innovation and operates under Ireland's Department of Enterprise, Trade and Employment. FORFAS provides service to the Industrial Development Agency (IDA), Science Foundation Ireland (SFI), Enterprise Ireland, Office of the Chief Science Adviser and other related agencies. The main policy areas of FORFAS are:

- capturing the economic benefits of public investment in research,
- human capital development to support an innovation driven economy,
- improving framework conditions for innovation and enterprise development,
- advancing coherent and dynamic enterprise development policies.

The main funding sources in Ireland are the Science Foundation Ireland and the Higher Education Authority. The Science Foundation Ireland is focused mainly on funding information and communication technologies and biotechnology. It was established as the third agency of FORFAS in July 2003. The Higher Education Authority is responsible for financing scientists (as individuals), higher education institutions, and research centres through its Programme for Research in Third Level Institutions. The Programme was launched in 1998 and it is expected to end in 2010. It supports research in humanities, science, technology, and the social sciences, including business and law.

7.4.2. Finland

In Finland, the innovation policy is under constant institutional development and the country annually increases funding in this field. In 2006, the budget appropriations on research and technology in Finland reached €1.68 billion, which represented 1.05% GDP. As compared with previous year, funding rose by 2.7% (€83 million).

In general, we can observe a shift from the narrowly-defined science and technology policy towards the broadly-defined innovation policy which encompasses issues of research, technology and other related policies in Finland. The key issues are under discussion in the Science and Technology Policy Council, which is chaired by the Finnish Prime Minister. The institutional framework of Finland is organised in four main tiers:

1. The first tier is represented by the government and national parliament with advisory support from the Science and Technology Policy Council. Moreover, the Finnish National Fund for Research and Development (SITRA) is under direct subordination of the parliament.
2. The second tier is represented by respective ministries (Ministry of Education and the Ministry of Trade and Industry).
3. The third tier is represented by the R&D funding agencies, TEKES and Academy of Finland. Academy of Finland funds basic research through competitive grants. While the majority of TEKES funds are allocated to R&D projects carried out by companies, TEKES is also a large financier of university research. The budget of the agency is €478 million (2006), supporting approximately 2000 projects annually. Besides financial support, TEKES provides also non-financial support in various forms of technical assistance. TEKES is the key actor in international cooperation and supports access of foreign companies and investors to key technological companies in Finland.
4. The fourth tier is represented by organisations conducting research (universities, polytechnics, public and private institutes and companies).

Finnish government created a legislative framework by adopting several documents related to research, development, education, and innovation:

- Knowledge, innovation and internationalisation elaborated by the Science and Technology Policy Council in 2002,
- Education and Research 2003-08: Development Plan, prepared by the Ministry of Education and Research for a five-year term. The document lays down strategy for the development on Finnish universities, their funding, cooperation with public sector and research orientation,
- Government Strategy Document 2005,
- Government Resolution on the Structural Development of the Public Research System, adopted in 2005.

7.4.3. Estonia

Estonia's research, technology and innovation institutional framework currently undergoues the process of evaluation of preceding period and creation of new strategies for the near future. In 2005, expenditures on R&D amounted to 0.94% of GDP and, as one can observe, continue to grow in the subsequent years. In real terms, the average annual growth rate in 2001-05 was 16.5%[6]. In recent years, the structural funds contributed a large portion to Estonia's R&D expenditures.

At present, Estonia further develops the programme "Knowledge-based Estonia for the years 2007-13" entitiled "Knowledge-based Estonia II". The document was adopted by the Estonian government and parliament at the end of 2006. The document lays down the following, ambitious objectives for the years 2007-13:

- to achieve the proportion of eight workers in research and development per 1000 workers,
- to achieve the proportion of modernized and new research and development infrastructure to 80%,
- to increase the expenditures on R&D to 3% GDP with the share of public sector at 1,4% GDP,
- to publish 1200 scientific publications,
- to increase five fold the number of patents per million inhabitants.

Although the innovation performance of Estonia cannot be compared with Finland or Ireland, clear orientation on research, technology and innovation are important issues in Estonia. In the preceding period, Estonia consolidated and

[6] In the same period the average annual expenditures on R&D declined in Slovakia by 0.6%.

created various strategic documents and institution to foster research and innovation output. However, the results are not optimal and there is always room for improvements; still, the targeted direction can be seen as positive. Estonia faces the problems similar to those of other small and open transition economies. Similarly to other transition economies, the main challenges lie in the coordination of respective institution responsible for funding, coordination and implementing. In addition, the lack of funding is a major problem, which, however, is compensated by the inflow of cohesion policy funds.

The institutional framework of Estonia's research and innovation system consists of two main tiers – the executive and implementing tiers.

1. The executive tier is represented by the government, the parliament, Ministry of Economic Affairs and Communication, Ministry of Education and Research, together with their affiliated advisory councils and committees. The main advisory body subordinate to the government is the Government R&D Council. For the respective Ministries two sub-committees have been created – the Innovation sub-committee at the Ministry of Economic Affairs and Communication and the Research sub-committee at the Ministry of Education and Research.

2. The implementing tier is represented mainly by the Enterprise Estonia and Estonian Science Foundation. Enterprise Estonia was founded in 2002 with the aim to support international competitiveness of Estonian business environment. Enterprise Estonia is focused on various types of business sector support related do research, technology and innovation. The main objectives of the agency are the enhancement of the Estonian enterprises' competitiveness on foreign markets, inclusion of foreign direct investments, inbound and domestic tourism, elaboration of technological and innovative products and services, development of Estonian enterprises and the entrepreneurial environment as well as enhancement of general entrepreneurial awareness.

7.5. Conclusions

The general picture of innovation activities and performance of the Slovak economy is very weak. Considerable economic growth and improvement of indicators of a macroeconomic stability are the results of low-cost economy factors (low labour costs, undervalued exchange rate of Slovak koruna). In the major strategic documents, Slovak policy makers have repeatedly proclaimed the necessity to build long-term development and prosperity on the determinants of knowledge-based economy: education, innovation, knowledge, and information technologies. Contrary to the proclamation, construction of national innovation system is insufficient and has many shortcomings. Innovation policy has not been a priority of governmental agenda up to now. Creation of supreme advisory body during 1990s in the field of science, technology, and innovation was com-

plicated and lengthy. Activities in the field of science and technology policies and promotion of innovation dynamics controlled by Ministry of Education and Ministry of Economy have not been well coordinated. Therefore, lack of cooperation and collaboration is one of the reasons for weak connections between R&D and the business sector. Consequently, Slovak economy records an extremely low level of commercialization of the R&D effects. Slovak innovation system is more oriented on knowledge production and knowledge transfer rather than knowledge use.

Notably, Slovakia lacks a coherent national innovation plan and an authority in the field of innovation policy. Innovation policy is not clearly composed but fragmented into more strategic economic policy documents. The public policy in the Slovakia contains a strong commitment to the establishment of developed innovation-driven economy with a strong, national innovation system. Transnational learning also played a significant role in designing Slovak science and technology policies (e.g. SRDA).

The study of the selected countries with developed research, technology, and innovation system allows us to obtain certain experience and recommendations on how to foster and build such a system. From the study of the selected countries (namely Finland, Ireland and Estonia), we can observe and identify some common patterns which ought to be precondition for successful, dynamic and effective innovation system and innovation policy:

- presence of central government body, responsible for the conduct of innovation policy;
- long-term, clear, coherent innovation policy, capable of reflecting global challenges and changes;
- concentration of competencies, resources and funds;
- innovations as a growth factor ought to be a priority of government economic policy;
- focus on selected and promising branches (sectors) generating comparative advantage;
- structural funds play an important role in innovation funding;
- find balance between the private and public sector funding and support.

Creation of an appropriate model of stimulating the private sector on the one hand, and the public sector on the other hand, would increase the propensity for investments in this field and is a crucial precondition for achieving synergy effects.

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