

Structural Funds and Building Knowledge-based Economy in Slovakia: Experience, Major Challenges and Implications for Innovation Policies

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Abstract

This paper analyses impacts of the Structural Funds implementation on fostering RTDI in Slovakia. It explores absorption of the Research & Technological Development & Innovation (RTDI) investments from Structural Funds in different types of Slovak regions and analyses it via in-depth interviews with the experts on RTDI policies and professionals involved in implementation of the Structural Funds in Slovakia. Concluding section summarises findings from statistical data and interviews, and discusses policy options for implementation of the Structural Funds in planning period of 2007 – 2013.

Keywords: *Structural Funds; knowledge-based economy, innovation policy*

JEL Classification: O31, O32, O38

Introduction: Slovak Paradox

There is a general agreement that countries investing in the Research & Technological Development & Innovation (RTDI) are rewarded by high rates of economic growth and per capita income. This opinion is supported via a number of empirical studies (Radosevic, 2004).

The European Regional Innovation Scoreboard (RIS), for example, indicated that about 41 per cent of the variation in per capita regional income can be explained by differences in innovative performance (EC, 2003). This suggests a positive relation between a region's innovative performance and its economic performance. Innovative 'backwardness' may thus lead to low economic growth and income disparities.

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Slovakia provides for an interesting deviation from this rule and an example of a country with high economic growth, but low levels of the RTDI development. Since 2001 Slovak economy has enjoyed economic boom. The average rate of the GDP growth reached 4.2 per cent in period 2001 – 2005. In 2005 the GDP grew by 6.0 per cent. Inflation rate fell to 2.8 per cent and budget balance to 3.0 per cent of GDP. Interest spreads moderated and public and private firms had better access to finance. The country entered the ERM II system and the 2009 term for the Euro adoption seemed realistic. Two factors were behind the economic boom and stable macroeconomic performance. The first one was great influx of the foreign direct investment. The second one was related to implementation of a great array of social and economic reforms. The reforms were very successful in field of macroeconomic stabilisation and fostering business environment (WB, 2005). Less progress was done with removal of regional disparities, cutting high unemployment rates and education reform (Klas, 2005).

In field of RTDI, however, Slovakia ranked to the poorest performers in the EU-25 area (Gabrielová, 2005). The Summary Innovation Index (SII) of the European Innovation Scoreboard (Eurostat, 2005) ranked Slovakia on 28th place among 33 ERA countries. Data by the 2005 European Innovation Scoreboard indicated that the basic layout of the innovation performance changed little in Slovakia compare to previous years. Slovakia accounted for very high innovation expenditure by companies (160% of the EU-25 average) and ICT expenditure (95% of the EU-25 average). These were related to purchase of high-tech equipment by branches of multinational companies (MNCs). Foreign direct investment was behind high levels of employment in mid/high-tech manufacturing (121% of the EU-25 average) and new to market product sales (239% of the EU-25 average). Slovakia, however, failed to address some most serious problems in innovation performance, namely shares of business and public expenditure on R&D in GDP (38% and 25% respectively of the EU-25 average), University R&D financed by business sector (5% of the EU-25 average) and early stage venture capital (6% of the EU-25 average). Poor financial base of R&D system was reflected in very low commercial output. Rates of patent activity were only 3% of those in the EU-25 area.

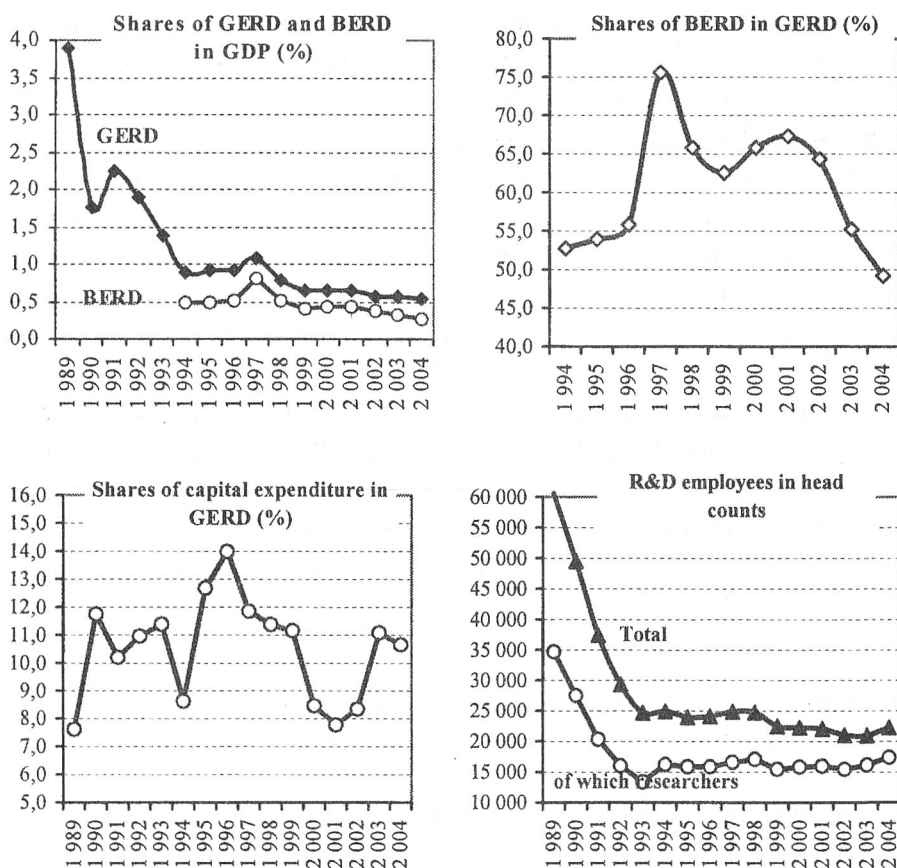
There has been a negative trend in R&D spending since 1989, when share of R&D expenditure in GDP (GERD) peaked with 3.88 per cent and subsequently decreased to 0.53 per cent of GDP in 2004 (Figure 1). The business expenditure on R&D (BERD) also decreased sharply. Slovakia's spending on R&D was one of the lowest in the EU-25 area; similar to those in Poland (0.59 per cent) and Latvia (0.39 per cent) and significantly lower than the EU-25 average (1.99 per cent). The R&D infrastructure was deeply underfinanced. Share of capital

expenditure in total GERD was low and varied from 6.5 to 11.0 per cent in period 1989 – 2004. Decreasing support to R&D system generated fall in stock of human capital in this sector.

High economic growth was fuelled by a great influx of the foreign direct investment (FDI) to Slovakia. The FDI was attracted by low costs of production (cheap and educated labour in particular) and flexible business environment. This kind of economic growth hardly is sustainable (Sokol, 2002). In the long-term, economic growth is above all defined by technological progress (Šarmír, 2002) and the accumulation of human capital, which determines the way and speed at which technological progress penetrates economic texture (Barro and Sala-I-Martin, 1995). Technological progress is not an exogenous factor, but an endogenous one and main driver of productivity and growth (Mankiw, Romer and Weil, 1992).

Figure 1

Development of Basic Indicators in the Slovak R&D System in 1989 – 2004



Since 2004 the Slovak Government recognised this danger and started to change its strategic priorities. It passed the Competitiveness Strategy (The Lisbon Strategy for Slovakia) and declared creation of knowledge-based economy a major development target. Changes in priorities were reflected also in some new policy initiatives. The most important ones were included in the National Development Plan (NDP). The NDP was envisaged for the shortened planning period 2004 – 2006, with all the project finance to be spent by end of 2008 as a maximum. The NDP contains a number of measures, which are likely to shape future innovation development in Slovakia. It includes characteristics of two sectoral operational programmes (Industry & Services – SOPIS and Human Resources – SOPHR) and Operational Programme Basic Infrastructure. The SOPIS and SOPHR and two Single Programme Documents 2 and 3 (SPD 2 and SPD 3) for the Bratislava Regions account for a bulk of innovation strategies in Slovakia for 2004 – 2006. These programmes are aimed at addressing major problem of the National Innovation System (NIS) – low spending on RTDI. There, however, is a question, how the RTDI outlays from Structural Funds were efficient and if the target regions accounted for sufficient absorption capacity for these investments.

This paper examines impacts of the Structural Funds implementation on fostering RTDI in Slovakia. It has three sections:

- Section 1 is based on data provided by the planning and implementing authorities of the Structural Funds and authors' computations. It assesses absorption of the RTDI investments from Structural Funds in different types of Slovak regions.
- Section 2 is based on 10 in-depth interviews with the experts on RTDI policies and professionals involved in implementation of the Structural Funds in Slovakia. They were selected as to reflect balance between Science & Technology (S&T) policy experts and academics, regional planning directors, representatives of the private sector and technology transfer centre, and managers of the Structural Funds.
- Section 3 summarises findings from statistical data and interviews and discusses policy options for implementation of the Structural Funds in planning period of 2007 – 2013.

1. Structural Funds in Slovakia and Investments to Knowledge-based Economy

The four sectoral and two regional programmes allocated some EUR 1 887.5 million to support Slovakia's economic and social cohesion with developed EU members. An overwhelming majority of these means were allocated to development of basic infrastructure and agriculture. Policies aimed at support of human

resources, innovations, R&D and technology transfer concentrated in the SOPIS, SOPHR, SPD 2 and SPD 3 and accounted for some 15 per cent of this sum.

The Sectoral Operational Programme Industry and Services (SOPIS) (MCRD of SR, 2004a) identified its global objective *Growth of competitiveness of industry and services*. Two sectoral Priorities were specified: (1) *Growth of competitiveness of industry and services using domestic growth potential* and (2) *Development of tourism*. Innovation-related measures concentrate in the Priority 1:

- Measure 1.1 ‘Support for new and existing enterprises and services’ (EUR 44.2 million);
- Measure 1.2: ‘Support for building and reconstruction of infrastructure’ (EUR 41.3 million);
- Measure 1.3 ‘Support for business, innovation and applied research’ (EUR 22.1 million).

The Sectoral Operational Programme Human Resources (SOPHR) (MCRD of SR, 2004b) identifies the strategic priorities for the development of the active labour market policy, reinforcement of social inclusion and investments into human resources through education and training. Most policies targeting development of the knowledge-based society are covered by measures 3.1 – 3.3 of the Priority 3:

- Measure 3.1 ‘Adaptation of vocational training and education to the needs of the knowledge-based society’ (EUR 29.14 million).
- Measure 3.2 ‘Development, improvement and more extensive provision of further education with the aim at improving the qualifications and adaptability of people in employment’ (EUR 48.88 million).
- Measure 3.3 ‘Development of career guidance and of systems for anticipating changes of qualification needs of the labour market’ (EUR 11.18 million).

Both the SOPIS and SOPHR were implemented on the whole territory of Slovakia, except for the Bratislava Region. Community funding in the Bratislava region is implemented via the two Single Programme Documents.

A) The Single Programme Document NUTS II – Bratislava Objective 2 (SPD 2) (MCRD of SR, 2004c) sets only one priority ‘Support of economic activities and sustainable development of the target area’ with 5 implementing measures. Two measures are potentially important for development of innovations:

- Measure 1.1 ‘Support of small and medium enterprises’ (EUR 39.4 million).
- Measure 1.2 ‘Support of common services for entrepreneurs’ (EUR 22.3 million).

B) The Single Programme Document NUTS II – Bratislava Objective 3 (SPD 3) (MCRD, of SR, 2004d) is the main reference document for provision of support to Human Resource Development Scheme. Priority 2 of the SPD 3 targets life-long learning and support of R&D via:

- Measure 2.1 ‘Stimulation and improvements in quality of education matching needs of enterprise sector’: (EUR 31.8 million).

• Measure 2.2 ‘Improving quality of employment and competitiveness of the Bratislava Region via development of human resources in R&D sector’ (EUR 10.3 million).

Table 1

Policies Funded from Community Means and Supporting Measures Aimed at R&D, Technology, Innovation and Human Resources in Slovakia in 2004 – 2006, in EUR million

Funding source Programme	Total	of which:			Shares (%)
		ERDF/ESF	national public	national private	
SOPIS total, of which:	301.26	151.21	84.66	65.39	100.0
measure 1.1	44.20	15.47	13.26	15.47	14.7
measure 1.2	41.25	30.94	10.31	0.00	13.7
measure 1.3	22.10	7.73	6.63	7.73	7.3
SOPHR total, of which:	425.64	284.48	81.86	59.30	100.0
measure 3.1	29.14	21.85	7.14	0.15	6.8
measure 3.2	48.88	33.11	9.38	6.39	11.5
measure 3.3	14.07	11.26	2.81	0.00	3.3
SPD 2 total, of which:	121.17	37.17	41.06	42.94	100.0
measure 1.1	39.40	6.69	8.81	23.90	32.5
measure 1.2	22.30	11.15	10.04	1.11	18.4
SPD 3 total, of which:	102.62	44.94	41.57	16.11	100.0
measure 2.1	31.18	16.26	14.92	0.00	30.4
measure 2.2	10.33	5.42	4.91	0.00	10.1

Sources: SOPIS, SOPHR, SPD 2 and SPD 3 programme documents and author’s own computations.

Table 1 displays overview of policies funded from Community means and containing measures aimed at R&D, technology, innovation and development of human resources in Slovakia in 2004 – 2006. The four large programmes allocated some EUR 950 million in various projects (half of the total cohesion-related funding). Some EUR 303 million was channelled to projects supporting R&D, technology transfer, innovation and human resources. Transfer of technology and life-long learning accounted for largest support. Given low level of innovativeness and R&D intensity in Slovakia, the overall share of the above-mentioned measures should be probably higher, but some EUR 303 million certainly boosted national budget for these activities.

Most of these outlays, however, were related to ‘soft innovation’ measures, as they included mainly support to human resource development in middle education, social fellowships for students from poor families, etc. (SOPHR Measures 3.1 – 3.3 and SPD 3 Measure 2.1). The highest support to technology transfer and building R&D infrastructure should concentrate in the SOPIS Measures 1.1 and 1.2. The actual contribution by these measures to the RTDI development was rather modest and did not match expectations:

• The SOPIS Measure 1.1 'Assistance to SMEs' aimed to support some 560 Small and Medium Enterprises (SMEs) and increase labour productivity in terms of value added by 18 per cent in supported SMEs by 2006. Planned numbers of supported SMEs were rather too ambitious. By end of 2005 some 50 projects were approved and contracted and the Scheme budget was spent. Most supported projects were based on purchase of technology, and reconstruction and modernisation of production facilities. Demand on the Measure by Slovak companies significantly exceeded supply of funding. There, unfortunately, were no strict requirements for innovativeness of purchased technologies and also no evidence on increases in value added in supported enterprises.

• The SOPIS Measure 1.2 'Business Incubators, Technology Parks and R&D Centres' was managed by two bodies. The NADSME managed calls aimed at incubators and R&D centres, while the SARIO calls for industrial and technology parks. The NADSME part of the Scheme contracted some EUR 6.36 million to 8 projects and budget for this part of the Scheme was spent by end of 2005. Supported projects included six business incubators in smaller cities and two research centres in cities of Košice and Banská Bystrica. The SARIO contracted four projects by end of 2005, with total support of EUR 11.67 million. Three projects were aimed at industrial parks and one on reconstruction of production facilities. Some EUR 12 million of public support remained to be spent by early 2006. At least 60 businesses in total should be supported by this Measure. Given relatively large number of parks and research centres, this goal seems realistic. The NADSME part of the Scheme proved to be very popular with the end users and demand on funding exceeded supply. Industrial parks accounted for overwhelming majority of the financial support to contracted projects. Demand on support to R&D infrastructure was much lower.

The Measure 1.2 probably was somewhat more efficient. Measure 1.1 helped SMEs to buy equipment, much of which would be bought anyway. It also is difficult to check, how innovative the technology equipment was and how it helped to boost firms' sales.

Measure 1.2 was more complex and took longer to implement, but aimed at innovative firms. It also did not distribute the Community funding for free, but subsidised only some running costs in incubators. The higher share of the firm's own finance invested in the project, the higher probability of efficient spending.

Calculations based on stricter definitions of RTDI reveal that the explicit RTDI projects concentrated in the SOPIS Measure 1.3 and the SPD 3 Measure 2.2 with total budget of EUR 32.43 million. This equals to 1.72 per cent of the total Community support to Slovakia's cohesion in 2004 – 2006.

Given very low national expenditure on R&D in Slovakia, this sum was a welcome supplement to national funding of R&D. In 2004, for example Slovak GERD accounted for some EUR 173.94 million and BERD EUR 66.6 million. If a 10 per cent increase is estimated for 2005 and 2006, Slovakia's GERD totalled some EUR 575 million and BERD some EUR 220 million in period 2004 – 2006. This means that the Structural Funds contributed by 5.6 per cent to Slovak GERD and 14.7 per cent to BERD in the same period (including Slovak national private and public co-financing). As most of the projects were aimed at private sector, the EU means somewhat helped to boost budgets of RTDI projects in commercial sphere, but by a limited extent. Low shares of the RTDI outlays in the cohesion-related support indicate that these means little contributed to building know-ledge-based economy in Slovakia.

2. Major Challenges in Absorption of the RTDI Projects

By early 2006 many RTDI policy measures accounted for low levels of disbursement. The SOPIS Measure 1.3 (which accounted for most RTDI outlays), for example, spent only a quarter of its budget by early 2006. The Measure was managed by the Slovak Energy Agency (with no prior experience in the RTDI projects) and generated only two calls. The first one supported some 21 applied research projects with EUR 4.82 million. Industry research (private) institutes doing research in chemistry, machinery and manufacture of transport equipment were main recipients of the aid. The second call supported some 37 projects with EUR 0.66 million. Most of these projects accounted for introduction of quality management systems, certifications and protection of intellectual property rights. Rest of the Measure budget should be spent in 2006.

The absorption capacity for the RTDI generally seems very low in Slovakia. Many projects started in 2006 only and may take longer time to produce visible effects. Some points, however, can be made about the design and implementation of the Structural Funds projects. Interviews with the policy experts highlighted several factors hampering implementation of the RTDI projects in Slovakia:

- There is no top-down approach to ensure maximal synergies in innovation policies in Slovakia, as there is no National Innovation Strategy and/or Authority. This limits co-operation between bodies designing and implementing innovation policy measures.

- The overall process of Structural Funds implementation is considered highly bureaucratic by end users. Interestingly, some applicants claim that domestic implementing agencies (Ministries in particular) impose higher administrative burdens than the Community rules.

- The procurement process is lengthy. Some applicants for the SOPIS projects have to ask also for commercial bank loans and pledge their property. Loan and pledge processing takes its time. The time plan for the projects changes and contracts with applicant are delayed.

- Demand on innovative solutions by Slovak companies is limited, as cheap and educated labour force is considered a more important competitive advantage.

- Some municipalities would prefer modernisation of basic infrastructure (water and sewage networks in particular) to high-tech projects.

- Some project recipients have little experience with management and administration of the Community funded projects.

- Construction of industrial/technology parks is hampered by unclear property rights to land use.

- Some municipal governments account for short-term planning, limited to their election period, while management of projects on the industrial and technology parks requires a strategic vision.

- The most successful measures included projects addressing real demand by end users. These include, e.g., SOPIS Measures 1.1 on technology transfer and 1.2 on technology incubators. These Measures, unfortunately, account for low levels of the RTDI intensity.

- Some regional measures were rather slow to implement. The SPD 2 Measure 1.2, for example, coped with lower demand than expected. It was aimed at development of services for entrepreneurs. The aid recipients would rather invite investment in basic infrastructure, e.g. sewage systems.

Regional allocation of the Structural Funds is the key problem in support to building knowledge based economy in Slovakia. Process of regional divergence in early 1990s (Baláž, 2004) created two very different regions in Slovakia: Bratislava and rest of the country. Bratislava obviously differs from the rest of Slovakia in terms of per capita GDP and investment, and rates of unemployment and population with tertiary education. There also are some differences, e.g. between Western and Eastern Slovakia, but compare to Bratislava they are much smaller. This pattern is recognised also in documents related to implementation of the EU cohesion initiatives. Due to its relatively high development levels, the Bratislava Region does not qualify for Objective 1 initiatives. The sectoral programmes accounted for some 93.1 per cent of the total cohesion-related outlays. Slovak regions outside Bratislava accounted for peripheral location and underdeveloped infrastructure. They absorbed most Community funding and channelled it to the basic infrastructure programmes (modernisation of railways, highways, etc.), but had little capacity for absorbing RTDI investments.

Table 2 presents patterns of regional R&D capacities and performance in Slovakia in 2004.

Table 2

Basic Indicators of Regional R&D and Innovation Capacities and Performance in Slovakia

NUTS II	Bratislava	Western Slovakia			Central Slovakia		Eastern Slovakia		Slovakia
NUTS III		Trnava	Trenčín	Nitra	Žilina	Banská Bystrica	Prešov	Košice	
No of R&D organisations ¹	105	22	33	20	27	21	19	25	272
R&D personnel in FTE	7 564.20	927.40	663.50	015.80	890.00	955.50	392.80	919.70	4 328.90
GERD total, EUR million	85.72	16.43	19.39	10.62	12.32	8.90	5.14	15.43	173.94
of which capital exp. BERD total, EUR million ²	10.45	3.17	0.89	0.69	1.40	0.77	0.21	0.95	18.54
GERD/GDP, % ³	1.09	0.65	0.70	0.32	0.42	0.25	0.16	0.37	0.59
BERD/GERD, %	17.89	63.19	82.33	39.89	62.01	47.50	64.93	35.54	38.29

Notes: Bratislava is both the NUTS II and NUTS III region. ¹ R&D organisations include legal and physical entities of research and development that provided data in business, government, higher education and non-profit sectors. ² By source of funding. ³ Refers to 2003. All other data refer to 2004. Exchange rate was 1 EUR per 40.045 SKK in 2004. GERD – Gross research expenditure on R&D; BERD – Business expenditure on R&D; FTE – Full time equivalent.

Source: Statistical Office of the Slovak Republic (2005): Yearbook of Research and Development in the Slovak Republic.

Bratislava had some 9 per cent of total Slovakia's population, but accounted for 50 – 60 per cent of total R&D capacities in terms of numbers of R&D organisations and R&D spending and employment. Bratislava's R&D organisations also generated half of the total active licences sold in current year. Somewhat lower share of BERD in GERD was explained via high concentration of public R&D facilities (Universities and Academy of Science) in the capital. Bratislava is the only Slovak region to have its own Regional Innovation Strategy (RIS). The project was initiated by Bratislava Self-Governing Region (BSGR) and was co-financed and methodologically led by the European Commission and implemented by the Business and Innovation Centre Bratislava. The target group of the project was technology oriented SMEs with innovation potential. The proposal for regional innovation strategy suggested 3 horizontal and 3 direct measures aimed to support innovation development in the Bratislava Region:

- Horizontal measures include (a) communication and networking, (b) regional technology policy – regional foresight, and (c) Structural Funds and Single Programming Documents.
- Direct measures include support of (a) innovation infrastructure development, (b) cluster creation in selected technology sectors, and (c) financing system and creation of capital funds for innovation activities.

Implementation of the RIS-BSGR strategy proposal by a large extent depends on measures implemented by the Single Programme Documents 2 and 3.

By 2004 the Bratislava Region was the only Slovak region with strong RTDI potential. Major strengths of Bratislava included: high concentration of public R&D infrastructure, human resources (Zajac, 2004) and expenditure; high influx of FDI and stocks of human capital (reinforced by brain gain); well-developed infrastructure; excellent location and existence of Regional Innovation Strategy. The region already established as leading car producer in Slovakia (Nemcová, 2005). Major potential development opportunity is a shift towards more sophisticated activities (including R&D centres) in industries clustering around manufacture of cars (Nemcová, 2004) (manufacture of electrical and optical equipment, machinery). Chemistry, nano-technologies and information technologies also rank to prospective activities. Major weaknesses potentially impeding innovation potential of the region include low business R&D expenditure, weak transfer of knowledge between the industry and academia sectors, and aging R&D infrastructure.

Regions of Western, Central and Eastern Slovakia accounted for lower stocks of population with tertiary education, underdeveloped transport and R&D infrastructure, high unemployment rates and lacking regional innovation strategies. These regions had some few strengths. The most important one is relatively well-developed medium-high manufacturing industries. With transport infrastructure improving rapidly in last few years, these regions may expect further influx of the FDI related to manufacturing. Major opportunity is to develop new competitive, export-oriented industries (manufacture of cars and components, machinery, electrical and optical equipment, chemistry, rubber and plastic products) and tourism sector.

3. Policy Implications

Slovak experience with implementation of the Structural Funds indicates that most money was spent for building basic infrastructure and questionable support of agriculture. Slovak regions outside Bratislava absorbed most Community funding and channelled it to the basic infrastructure programmes (modernisation of railways, highways, etc.). It was plausible solution for shortened planning period 2004 – 2006. Slovakia had second highest unemployment rate (18.0 per cent) in period 2001 – 2005 in the EU-25. High level unemployment was identified with difficult industry restructuring, underdeveloped infrastructure and late arrival of the FDI. Slovak Government used opportunities provided by Structural Funds and set a number of investment priorities important for solving economic

and social problems – modernisation of basic infrastructure, development of human resources and growth of competitiveness of industry and services. The priorities were correctly set, but some issues were rather neglected, including volume and absorption of RTDI investments. Several factors were behind this strategy (a) low absorption capacity for RTDI projects by most Slovak regions; (b) low attention paid by Government to RTDI issues prior to 2004 (Šarmír, 2004), and (c) mismatch between resources for RTDI funding and absorption capacities in Bratislava and rest of country.

Analysis of current experience with implementation of the Structural Funds in Slovakia implies following recommendations:

***Recommendation 1:** The RTDI policy mix must recognise different absorption capacities for RTDI projects by particular Slovak regions. Community funding aiming RTDI activities should concentrate in regions with good absorption capacities.*

Bulk of the cohesion-related spending concentrated in sectoral operational programmes in 2004 – 2006. These excluded Bratislava. This strategy could be useful when building basic infrastructure in lagging behind regions, but ignored potential for development of innovations in regions with best R&D infrastructure. Western, Central and Eastern Slovakia are likely to develop prosperous manufacturing industries and tourism sector. Direct technology transfer to SMEs and support to industrial/technology parks remain important innovation policy measures in these regions. Some resources, however, should be channelled to development and/or modernisation of regional R&D infrastructures as to increase potential for absorption of RTDI projects in the future.

***Recommendation 2:** Bratislava clearly is leader in RTDI activities in Slovakia and is able to absorb more sophisticated innovation policy measures.*

Bratislava concentrates over half of Slovak R&D capacities in terms of spending and employment. It accounts for some 60 per cent of total FDI directed to Slovakia after 1989. The region has excellent location (neighbouring on 3 countries). Local firms have dense networks of co-operation with Vienna, Budapest, Prague and other European cities. The city also is centre of the car production – the largest Slovak industry. The region has its own innovation strategy, which focuses on innovation infrastructure development and cluster creation in selected technology sectors. The region, however, lacks functional networks of industry-academia co-operation. Industry-academia labour mobility schemes, networks of broking institutions and innovation cluster policies seem the most promising innovation policy measures in the future.

Recommendation 3: *Technology and knowledge transfer is key innovation policy measure for the lagging behind regions.*

Western, Central and Eastern Slovakia account for underdeveloped (public) R&D infrastructure. These regions have to primarily invest in building basic infrastructure (construction of motorways and modernisation of railways) and development of human resources. Basic infrastructure and human resources are key factors for attracting FDI. This pattern of development operated well in Bratislava and selected areas of Central and Western Slovakia. It probably is task for national policy to support development of human resources, regional Universities and R&D centres in particular. Structural Funds may focus on innovation policy measures, which already proved to be successful in the past, namely technology transfer and building industrial/technology parks. These two initiatives generated greatest demand by Slovak SMEs in lagging behind regions. Investments to more sophisticated innovation policy measures (industry-academia labour mobility, clustering policies, innovation poles, assistance to IPR) may have problems with absorption capacity.

Recommendation 4: *The bottom-up approach to RTDI policies should be strengthened.*

It emerged from interviews with experts and stakeholders in regional development that Community initiatives are designed and implemented via central Ministries and their agencies in Slovakia. The regions are main beneficiaries of the Structural Funds policies, but regional governments have relatively little to say in policy formulation and implementation. Implementation of policy measures should reflect targets set in the regional innovation strategies. These strategies should be a compulsory pre-condition for access to the funding. Regional governments, stakeholders and experts should participate in developing programmes for regional implementation of the Structural Funds in field of RTDI activities.

Recommendation 5: *Access to the Community-funded projects must be simplified, but more attention paid to efficiency of investment and evaluation of the impact assessment.*

There is excessive volume of administrative procedures related to Community-funded projects. It discourages many potential applicants for RTDI projects. Most funding from Structural Funds is based on grants for purchase of technology and equipment. There is little evidence about efficiency of grants in latest phases of the innovation cycles. Commercial projects should be supported via commercial-type finance, e.g. discounted and/or guaranteed loans and equity

stakes in technology-based firms. Grants should be reserved for support to basic and/or applied research, where there are no immediate commercial outputs. More attention should be paid to development of impact assessment techniques and procedures. Training of experts also may improve evaluation and assessment processes.

Recommendation 6: *Innovation policies should address real demand on innovative solutions by Slovak businesses*

Low enterprise demand on innovative solutions is a major challenge of the Slovak economy. Innovation policies should promote only those measures, which address real demand by businesses. Slovakia has a dual economy. The MNCs account for highly efficient production systems and modern technologies, but import most innovation solutions from their headquarters. Many domestic SMEs consider RTDI activities risky and currently concentrate on low-cost, low value added activities. Innovation as major competitive strength is next stage of the SMEs development. Innovation policy measures must overlap with identifiable demand and continue in programmes, which operated well. What works, works. Technology transfer schemes, incubators and industrial/technology parks seem to be of best “value added” for regions outside Bratislava, while innovation clusters and networks of industry-academia co-operation should be fostered in the capital.

Conclusions

In Slovakia most debates on future innovation and R&D policy priorities are related to the allocation of means from the Structural Funds. Two important points were made, one related to absorption capacity of the RTDI investments in particular Slovak regions and second on the overall structure of the SF allocations in planning period 2007 – 2013.

- An analysis of the use of EU Structural Funds points to the fact that there is a very low absorption capacity for the RTDI projects outside Bratislava. Bulk of Cohesion spending is concentrated in sectoral operational programmes. These exclude Bratislava. Current strategy (channelling most SF means to less developed regions) could be useful when building basic infrastructure in lagging behind regions, but ignores potential for development of innovations in region with best R&D infrastructure. The Slovak Government currently tries to negotiate derogation from the rules on channelling SF to Objective 1 regions and ask for higher allocation of the RTDI spending to the Bratislava (Objective 2) Region. Means from the Structural Funds could provide for a significant boost of R&D

spending in Slovakia, providing these means are invested in regions with a good absorption capacity. Proposed change in the regional allocation of the Structural Funds must be, of course, approved by the new Slovak Government and European Commission.

- Slovak Government approved new version of the 2007 – 2013 National Reference Framework (NRF) on 17 May 2006. The NRF favours increased investments into the RTDI activities while at the same time giving considerable support to infrastructure projects. Roughly 39 per cent (EUR 4.1 billion) are allocated to four operational programmes related to the knowledge-based economy: (1) Knowledge-Based Economy, (2) Education, (3) Health Care and Employment, and (4) Social Inclusion. This structure of SF spending is much more innovation-friendly than that in period 2004 – 2006. A question remains, however, if Slovak businesses are able to generate real demand on this R&D and innovation-related funding. Operational programmes in the knowledge-based economy should, therefore, also contain initiatives supporting creation of an innovation-friendly environment. These include e.g. (a) measures aimed at increasing stock of human capital in lagging behind regions and low-tech industries, (b) pursuance of liberal policies aimed at opening local markets to international competition and (c) transfer of new technologies and management techniques to the low-tech industries, such as tourism, construction and/or wood processing.

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