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## Regional Innovation Strategies in a Cross-border Environment

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# **Regional Innovation Strategies in a Cross-Border Environment**

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## **Abstract**

Innovations are considered to discover new solutions to exploit novelty in the technological, but in social and economic fields as well. It means, the concept of innovations is true also for a sustainable development. The sustainability of the regional strategies is researched at the background of the regionalisation of the governance system. Particularly, the regions of Eastern Slovakia and Northern Hungary, both having a tradition of heavy industry, are studied in their cross-border innovation and sustainability context. The realisation of the joined regional innovation strategy represents a unique opportunity to test and implement the RIS process in a cross-border environment. The path dependence concept is applied to two border regions and studied on the background of historical and economic transformation along the following axes:

- from centrally planned economy to market economy,
- from sectoral orientation of economy to regionalized economy,
- from industrial economy to knowledge-based economy and services,
- from environmentally harmful production to renewable energy sources sector,
- from vertical organisation and administration to horizontal partnerships and clustering,
- from regional production to regional innovations,
- from national governance to multi-level and cross-border regional governance.

## **1. Path from centrally planned to market economy**

The fundamental economic and political changes in Central and Eastern Europe in the late eighties of the 20th century have utterly altered the political and economic map of Europe. The struggle of national, regional and local development of post-communist countries is substantially influenced by the transition from central planning to a market system. In the centrally planned system of resource allocation, regional and city plans were strongly determined by priorities and decisions at the national level, using a top-down approach. The present situation in the former communist countries (FCC), as a result of pursuing regionalisation, decentralisation, governance principles, regional policy creating and implementing, has unsurprisingly several features discrepant from well-established naturally grown western countries and regions.

The present discrepancies of FCC and western countries in functioning at national, regional and local level is definitely a result of a number of variables - but probably the weightiest is the heritage of centrally planned economies. It is perhaps worth to add, there was not only one change that has broken up natural economic and societal development, but in reality two of

them. The former one has changed the political and economic system from market to central economy. After 50 years of “successful” changing formal and informal institutions, the latter change to market economy has not been a change to previous stage, but again a deep-drawn change to a new system, bringing total and complicated transition into a new stage. The transition came to bring a hope of better life and freedom, accompanied by both enthusiasm and fears. That externally led double change is probably the main source of prevalent way of thinking in post-communist European countries, with a less developed community life, regional partnership, looking at national or EU level as the external decision makers and a supply of financial sources.

Regional and local development is one of many new terms in FCC. In the centrally planned system of resource allocation, regional and city priorities and their financing were based on decisions at the national level, following strict top-down approach. Today, the responsibility for local development and physical planning is decentralised to newly established municipal governments. At regional level, rights and duties for development and planning were shifted to newly formed or reformed regional administration. Namely, EU requires the creation of subnational institutions to administer its regional aid from all candidate countries as a precondition to EU accession. The legal liberty of strategic planning and local economic development granted to cities and regions has not been accompanied by the corresponding financial resources. The lack of resources at regional and local level has resulted in fictitious strategic planning development. The financial handicap has caused setting their priorities as analogous to the higher national level – the foremost potential sources of financing. The liberty of planning in the first post-communist decades has got more a form of strategic training than full or really implemented planning documents. The transition has brought to FCC, including the Slovak Republic and Hungary, also severe serious economic and employment-related problems.

By the early 1990s the former COMECON (The Council for Mutual Economic Assistance, former economic block of the FCC countries) common foreign relations of the post-communist countries dropped to a minimum level and they built concurrent cooperation with West-European countries (Gál, Rácz 2008). Market forces outcomes are evident in consequent spatial disparities and social stratification. There are numerous typical reasons for regional disparities in economic and social development – the essential factors for both Slovakia and Hungary are the proximity to western borders, urbanisation degree, diversification of regional economy, infrastructure quality, human and social capital level, entrepreneurial tradition, and historic-cultural background (Barta et al. 2005, McDermott 2002, Lorentzen et al. 1999, Hudec and Urbančíková 2007). As regards regional disparities, metropolitan cities and western regions have been generally much more successful, while the more eastern and rural regions are lagging behind. The metropolitan regions of Bratislava (Slovakia) and Budapest (Hungary) perform much better economically than eastern regions. Regions with higher innovation and proximity to poles of growth have had much better position in adapting to the new circumstances of the EU market.

The main identical facet of the economic structure and development of Slovakia and Hungary lies in the centre–periphery relationship. Both border regions of Eastern Slovakia and

Northern Hungary have similar disadvantages - peripheral location at the Eastern part of Schengen border, limited proximity to poles of growth, unskilled labour market, relative transportation inaccessibility, high unemployment and poverty rate, etc.

The economic policy of both Hungary and Slovakia after 1989 is predominantly based on exogenous factors such as foreign investments, EU accession, EU structural funds, etc. The economic policy of incentives to foreign direct investment with yet decreasing support of research, development and innovation, would be expected to results in conservation of the communist industrial past, peripherality and lock-in. In a comparison to quickly growing metropolitan regions of Budapest and Bratislava, raising regional disparities between the capitals and the north/eastern parts of the countries would be likely.

Several old industrial areas, narrowly oriented in production, suffer from a mixture of three negative lock-ins cluster (Hassink, Shin 2005, Boschma, 2003):

- functional lock-in: inter-firm relationships,
- cognitive lock-in - a common negative world view,
- political lock-in - hindering renewal and restructuring.

Typically, domination of large companies is present, the self-sustaining coalition as well as lobbies for sectoral interventions active at a national or supranational level, more hindering than supporting the re-structuralisation processes, aiming at removing the incentives to supporting SMEs and thus paralysing competition and tranquillising large industries (Hamm, Wienert 1989). This is particularly motivating to study in the former centrally planned economies, where the industrial tradition has been injected in a big doses quite recently to testing their progress in avoiding negative path-dependent development. Restructuring was rather spontaneous, the interventions were aimed only at preventing or resolving social and economic collapse. This has lead to both a strong, spatially uneven tertiarisation process, and the dominant role of foreign direct investment as a driving force of restructuring (Lux 2010).

Another kind of “national border lock-in” exists if taking into consideration the integration influence on cross-border regions. Optimistic economic opinion would expect EU integration benefits at a regional level, including regional integration. Nevertheless, there are a number of other factors or barriers respectively, hindering integration at regional level such as between the regions of Hungary and Slovakia (i.e. between two countries from former one Soviet-imposed Communist political-economic system). The main scope of the paper is to study:

- What is the improvement of two similar regions in the last 20 years within two different countries, what can we learn in terms of path dependence and lock-in?
- What are similarities and differences in their regional innovation governance and performance?

## **2. Cross-border innovation policy experiment**

Traditional approach to innovation (early works of J. Schumpeter and others) has emphasized R&D as the origin and driver of a successful innovation strategy shaped by a mixture of

institutional routines and social conventions. Ever more habitual behaviours embodying knowledge – often tacit in its nature, as well as aspects such as trust are viewed as being at the heart of the innovation process. This approach leads to the concept of social capital, understood as networks, norms and trust that facilitate cooperation for mutual benefit. Social capital increases, supports and explains the benefits of investment in physical and human capital. That aspect of innovation is particularly important when dealing with cross-border innovations. Thus as an appropriate tool a network of institutions based on a partnership is considered that fosters development strategies and to refer to the learning region concept as well as regional innovation system as a tool.

Since economic development can be understood as a process of innovation activities, innovation emerges as the engine of growth and the role of institutions is an essential variable, “the national innovation system became an important part of national industrial policies” (Lundvall 1992). Regionalisation process gradually changing over the time brings – in accordance with learning regions concept – new challenges such as change of the regional governance system toward more networking structure, embedding together cooperation and competition, away from hierarchical structures. Regionalisation accompanied by decentralization of power and resources leads also in Eastern Slovakia and Northern Hungary to a situation when regional (innovation) policies are supposed to start to play more important role.

The original idea of regional innovation systems (RIS) and regional innovation governance as policy tool in well developed regions aimed at overcome fragmentation of regional innovation has been tested also in the case of (any) peripheral and old industrial regions within European regional policy. Although there have been positive achievement in application of RIS tool in several regions, (Charles et al. 2000) showed the difficulties in achieving success in regions where some form of successful innovation system was not already in place. The European Commission built up broad institutional and information support on innovation and launched regional innovation strategy projects in several waves, enabling to get empirical results. Regional innovation strategies, operational programmes and measures in favour of research, technological development and innovation (RTD&I) or more generally ‘competitiveness’ have been designed and funded with the support of the Structural Funds since the early 1990s.

The creation of the cross border regional innovation strategy has been expected to play an important role in enhancement of the interregional and international cooperation and competitiveness. The creation of the common cross-border RIS represented rather exceptional opportunity to test and overcome the border barriers, to strengthen transnational and regional co-operation in the field of R&D and innovation and to exploit the existing capacities in a more efficient, integrated way. The bilateral RIS was under the preparation in the frame of „North Hungary and Košice Bilateral Regional Innovation Strategy Project - NORRIS” funded by EC within the 6th FP. In fact, it has stimulated cross-border relations at the expert level, but it has been realised in the border regions with a low knowledge flow between them, underdeveloped economic relations and rather strong national economic orientation.

A special survey methodology has been prepared in order to get the cross-border innovation activities as close as possible. Selection of the economic branches for the questionnaire survey in the East Slovak Košice region has been made according to following set of rules:

1. The branch's share in total employment.
2. The branch's location quotient.
3. Regional priorities
4. Assumption of innovation potential
5. Location and size (geographical and size principle, different size and location following representativeness principle as much as possible.

According to the survey methodology, the sample design resulted in 5 common branches of interest: machine industry, electrical and optical equipment, food industry, material production, energetic and environment industry. Both regions have chosen also own branches of their own interest. Identification of the branches of common interest has been followed by surveying companies, leading to comparison of regional business environments, encouraging trans-regional learning and exploiting the existing capacities. Also, within the cross-regional innovation strategy, three join projects have been chosen for financing:

- Forming of Regional Innovation Agency – Regional Innovation Centre association
- The establishment of a Science Park – High Tech Park association
- The establishment of a renewable energy interregional cluster

Until now, advancement invoked from the cross-border innovation strategy can be validated by the single activity – an initiative to build up cross-border research-driven cluster in the area of renewable energy sources funded under 7th FP Regions of knowledge (project acronym KNOWBRIDGE) to be finished in 2012. This means, there is once again an EU external financing.

Nevertheless, another positive aspect of the cross-regional innovation strategy is that the research done within the regional innovation preparation can also serve as a basis for explaining the development of the border regions in their cross-border context.

### **3. Eastern Slovakia and Northern Hungary: two regions – same path?**

There were several papers published dealing with the Northern Hungary and Eastern Slovakia border regions (Frunzaru 2005, Hudec, Kol'veková 2007, Zsúgel 2006) and their prospects and barriers of a closer cross-regional integration. When looking at the map of Europe and European Union, both border regions of consideration of are located on the EU Eastern periphery (Schengen border), being handicapped in their accessibility to markets and economic centres of gravity. The Eastern Schengen border shows a range of political, historical, cultural aspects with a considerable impact on the reference regions. The eyes and ears of people and economic activities after the accession of Hungary and Slovakia into EU have been set on into western direction. EU integration has been seen as the only rational solution for both countries supposed to result in economic growth utilising single market, free movement of people, goods, services and capital. For the regions such as Northern Hungary

and Eastern Slovakia, the expectations of development are to a great extent (or too great extent) directed to drawing support from the structural funds.

Northern Hungary, located in the North-eastern part of Hungary, consists of three counties: Borsod-Abaúj-Zemplén, Heves and Nógrád, the administrative centre of the region is Miskolc. Northern Hungary takes over 14% of the territory of Hungary. Eastern Slovakia area covers almost one third of the territory of Slovakia, and consist of two self-governing regions – Prešov and Košice Region.

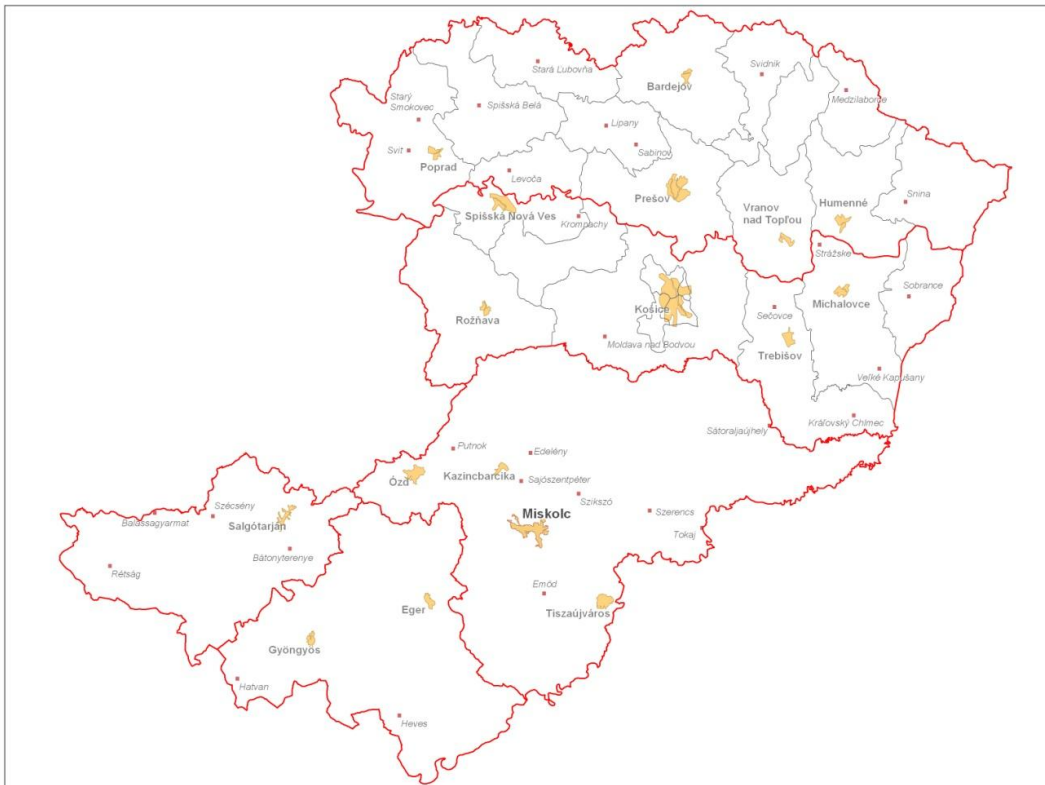


Figure 1: Northern Hungary and Eastern Slovakia.

The regions showed up similarities at the beginning of transition period (Gál, Rácz 2008, Mezei 2005):

- Heavy industry build in the socialistic era and its decline after 1989,
- Peripheral position to metropolitan region and EU markets and institutions,
- Centrally planned economy experience,
- Spatial and economic position in relation to metropolitan region,
- Similar level of regional GDP,
- High number of small municipalities, similar degree of rurality,
- Poor quality and structure of transport network,
- Air pollution caused by the economy structure ,
- High risk of social exclusion, high level of Roma population,
- Universities located in a natural centre (Košice and Miskolc respectively).

In a light of the recent theoretical research, regional growth depends on a number of external and internal qualitative attributes, formal and informal institutions, regional innovation system, knowledge base, social capital, innovation governance, etc. The attributes can be

summarised for both regions almost equally in the following table by defining problem areas and Regional innovation system deficiencies based on (Tödtling, Trippl 2004, Cooke 2004, Asheim et al. 2007). Both regions show mixed characteristics of both old industrial (OIR) and peripheral regions (PR). Although, there can be expected differences according to dissimilar and isolated development when comparing to western regions being in the similar category of mixed old industrial/peripheral regions.

No.	Dimension	Deficiency	OIR or/and PR
1.	<b>Economy, and firms</b>	specialised on mature industries, clusters missing or weakly developed	OIR +PR
		large firm dominance	OIR
	<b>knowledge base</b>	synthetic, engineering	OIR
2.	<b>Innovation activities, networks and regional clusters</b>	narrow technological trajectories, low level of R&D and product innovation	OIR +PR
		technological and / or political lock-ins	OIR
		domination and emphasis of incremental and process innovation	OIR +PR
3.	<b>Universities - research organisations, education and training</b>	oriented on traditional industries and technologies	OIR
		emphasis on technical skills, managerial skills and “modern“ qualifications often missing	
4.	<b>Regional innovation system</b>	national, top – down organised and forced – „innovation movement“	OIR
	<b>knowledge transfer</b>	some services available but in general “thin“ structure; lack of more specialised services, too little orientation on demand	OIR +PR
5.	<b>Cross-border cooperation</b>	Not supported, trans-national organisation of production in COMECON	-

Table 1: Northern Hungary and Eastern Slovakia regions dimensions and deficiencies.

Let us follow to characterise briefly the development of the regions across the dimensions in the table 1, with a special focus on innovation and cross-border cooperation. The research of similar/different development within two countries has been studied based on secondary statistical data and expert interviews in both regions realised in the spring 2010.



#### 4. Economy, firms and knowledge base

There were several known and unknown factors at the beginning of the studied period predetermining the regions to their lagging in the European framework – distance to poles of growth, urbanisation level, economy diversification, infrastructure quality, the level of human and social capital, entrepreneurial tradition, historical and cultural background, etc. It is not surprising that during the transition period, capital cities and western regions have been generally much more successful, while eastern and rural regions are lagging behind –the question is, how they are able to react and utilise existing endogenous potential and exogenous opportunities. The result is of course also a picture of national and EU regional policy.

The economic development of the regions of interest can be illustrated by the standard regional GDP per capita at current market prices indicator in comparison to corresponding metropolitan regions - see the Figure 2.

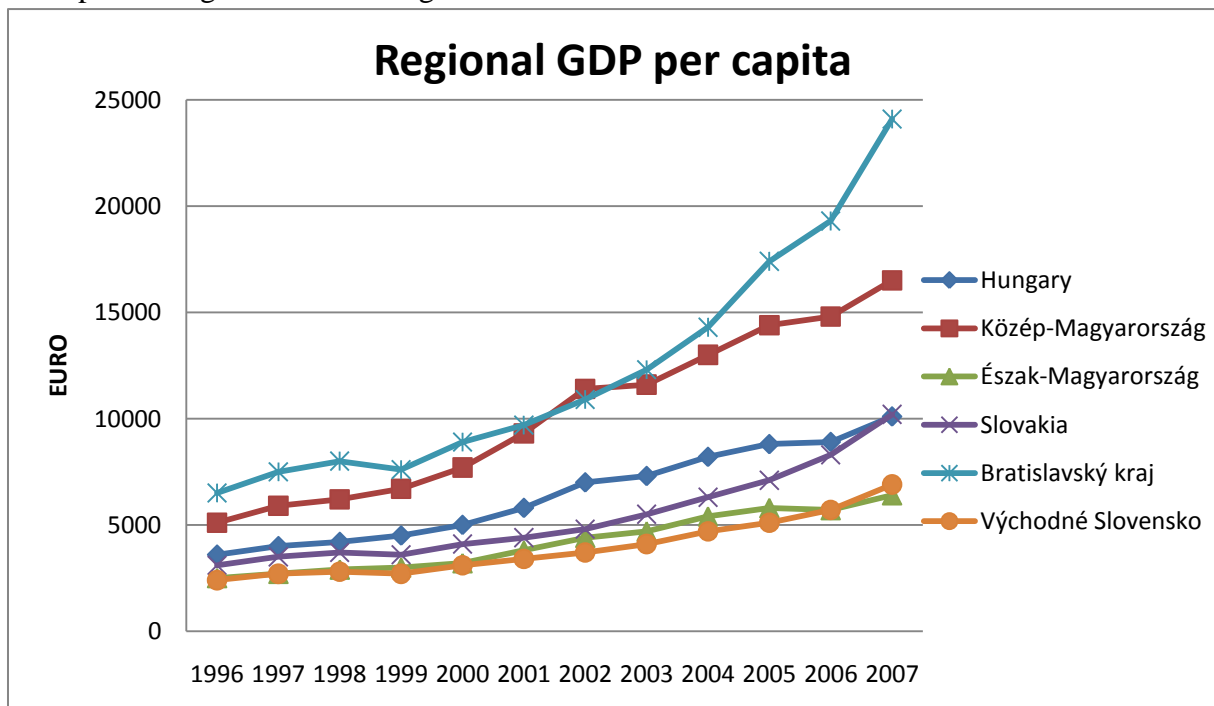


Figure 2: Regional GDP per capita at current prices. Source: Eurostat 2010.

What is the preset relative position of the Eastern Slovakia (Východné Slovensko) and Northern Hungary (Észak Magyarország) in the national context?

Before entering Bulgaria and Romania to EU, both Eastern Slovakia (SK04) and Northern Hungary (HU31) were in ranking of the EU25's 254 NUTS-2 regions among the ten lowest regions. Their position improved optically after the change from EU25 to EU27. Although the regional GDP per capita (at current prices) is increasing, the disparities to metropolitan, more urbanised regions - Bratislavský (SK01) and Közep Magyarország (HU31) - are increasing. There is very similar relative development, at the end of the time series Eastern Slovakia is gathering the advantage from national economic growth rate. To compare the progress in

records (Table 2), several regional figures show only small differences of the regions in their metropolitan/regional relation. This explains, that however the regional and national policy has been, there is similar development. Both regions have low employment rate and high unemployment rate.

The basic economic comparison of the border regions is given in the following table 2:

Region ID	HU10	HU31	SK01	SK04
GDP per capita in % of the EU average	66,3	25,9	96,7	27,8
GDP Growth Rate in %	5,75	3,02	5,81	4,48
Employment Rate in %	62,16	49,22	73,12	56,51
Unemployment Rate in %	4,61	13,37	3,39	13,20
Vehicles Density: number of passenger cars per 100 inhabitants:	34,40	23,38	39,24	20,04
Labour productivity in EUR per person	57 502	32 687	34 845	20 887

Table 2: The basic economic comparison of Northern Hungary and Eastern Slovakia. Eurostat, 2010.

As regards regional economic structure, the industrialisation in 50-ties and 60-ties is still preserving in both regions -manufacturing of basic metals and fabricated metal products in the Eastern Slovakia and chemical industry and manufacturing of machinery and equipment in the Northern Hungary. Slightly higher specialisation is apparent in the Northern Hungary as it can be seen on the Figure 3 and 4.

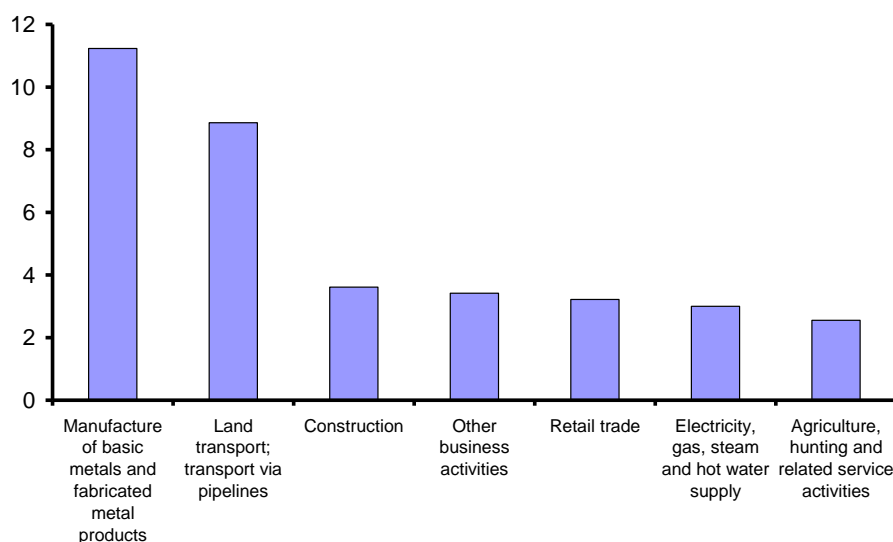


Figure 3: Branches in Eastern Slovakia according to the share in total employment. Source: Calculation based on National Statistics.

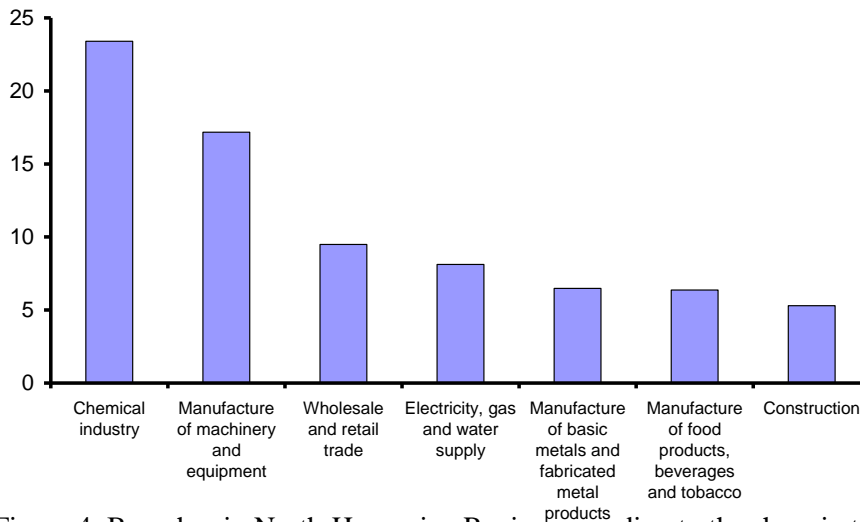


Figure 4: Branches in North-Hungarian Region according to the share in total employment. Source: Calculation based on National Statistics

After twenty years, both regions show only slight changing of their regional economic structure, following their dependent path. This has been caused mainly by the general tendencies during the transition period to keep unemployment rate as low as possible, utilising FDI in the privatisation period, based on the prevailing low wage rates. Nevertheless, there are new promising economic branches emerging in both regions that grow on the new roots in the fast growing prioritised sectors – ICT, creative industry in the East Slovakia region, renewable energy sources, etc. In the Northern Hungary, renewable energy sources firms has grown even to a well developed cluster form (ENIN), mechatronics, nanotechnology, etc. And there are several good practices of regional or bottom up character to be mentioned.

Currently, from 52 industrial parks in Slovakia only 3 of them are located in the East Slovakia. To compare, 165 supported projects have got the title of “Industrial Park”, 28 industrial of them located in the Northern Hungary. A very special case is the industrial zone in the village Kechnec, close to Košice city and Hungarian border. Small, self-starter municipality has set up the goal to attract investors and actually 2500 workers are employed in 12 companies, including Getrag Ford.

A good example of clustering is the ENIN cluster working in environment sector, bringing together activities in waste management, district heating, water supply, steel and chemical industry, forestry and real estate business.

Another institution located in Miskolc-Tapolca is Bay Zoltán Foundation for Applied Research - the largest non-profit applied research organisation in Hungary. The institution is focused on material and laser technology, nanotechnology, biotechnology, ICT, logistics and industrial production technologies. There is no similar, commercially oriented research institution in the East Slovakia.

In terms of path dependence and lock-in of the regional position and economic structure, large firms and old industrial economic structure prevail, although several new branches are promising in both regions. There are economic activities based on the former industrial

knowledge leading to related areas within the technology trends such as logistics, nanotechnology, ICT, energy and environment sector. The expert interviews highlighted the shift of knowledge from ecologically harmful heavy industry production to energy and environmental sector. The low unemployment rate shows a lack of new working places and in relation to employment rate, labour migration to metropolitan regions and abroad. Both regions show cognitive lock-in especially in the rural regions with a high unemployment rate. That can be seen in a low voter turnout in all elections, tendency to vote for radical and populist solutions, paternalistic attitudes, etc. (Mezei 2005).

## 5. Innovation system, innovation policy, networks and regional clusters

Promoting innovative policy, regionalisation of national innovation system is a crucial task in both countries. The hopes of the R&D&I sector are partially associated with implementing the National Strategic Reference Framework 2007-2013 and a pressure from EU level.

Hungary	Slovakia
<ol style="list-style-type: none"> <li>1. Weak RTDI performance of firms, low occurrence of cooperation in innovation.</li> <li>2. Low occurrence of cooperation in innovation activities among key actors, multinational enterprises not sufficiently embedded in the NIS.</li> <li>3. Potential gaps in the human resources for R&amp;D and innovation activities.</li> </ol>	<ol style="list-style-type: none"> <li>1. Weak R&amp;D system disables cooperation between academia and industry sectors.</li> <li>2. Underdeveloped system of innovation governance.</li> <li>3. Low shares of innovative enterprises limit competitiveness of the country.</li> </ol>

Table 3: Main innovation policy challenges in Hungary and Slovakia. INNO-Policy TrendChart – Innovation Policy Progress Reports of Hungary and Slovakia. 2010.

The main regional features of the national innovation systems can be highlighted as follows:

Hungary	Slovakia
<ol style="list-style-type: none"> <li>1. Due to the centralised nature of the Hungarian policy, regional organisations do not play a major role in devising innovation policies.</li> <li>2. The intensity of innovation cooperation among key national innovation system (NIS) actors is low.</li> <li>3. Law on Research and Technological Innovation (Act CXXXIV of 2004) has been approved.</li> </ol>	<ol style="list-style-type: none"> <li>1. Development of regional systems of innovation, has been lagging behind. Slow progress of the policy measures aimed at establishing regional innovation centres.</li> <li>2. Real powers of the Self-Governing Regions (SGR) are limited by their low financial resources.</li> <li>3. No legal definition of and/or standards for the National System of Innovations, national innovation agency was created in 2007.</li> </ol>

Table 4: Regional features of the national innovation systems in Hungary and Slovakia. INNO-Policy TrendChart – Innovation Policy Progress Reports of Hungary and Slovakia. 2010.

Regional innovation performance is not yet easy to measure at regional level. Nevertheless, at least available innovation scoreboard indicators show a similar indigence both at the side of inputs (R&D expenditures) and output (Patent Applications).

Region ID	HU10	HU31	SK01	SK04
R&D Expenditure-Business in % of GDP	0,69	0,13	0,26	0,12
R&D Expenditure-Government in % of GDP	0,45	0,02	0,40	0,07
R&D Expenditure-Education in % of GDP	0,23	0,18	0,22	0,08
Number of patent Applications	42,20	4,30	19,80	4,00

Table 5: Basic indicators of regions in comparison to metropolitan regions. Source: Eurostat 2010, OECD Regional Statistics 2010.

In relative terms, the European Regional Innovation Scoreboard provides a comparative evaluation of innovation performance via cluster analysis using the accessible innovation indicators at NUTS II level. The regions are classified according to three groups of indicators:

- Enablers - the main drivers of innovation that are external to the firm,
- Firm activities - innovation efforts that firms undertake,
- Outputs - outputs of firm innovation activities.

The Table 6 shows very similar picture as the previous table showing absolute numbers.

Region ID	HU10	HU31	SK01	SK04
Regional innovation scoreboard	average	low	average	low
Enablers	average	med-low	average	low
Firm activities	med-low	low	med-low	low
Outputs	med-high	low	med-high	low

Table 6: Relative regional innovation performance. Source: Regional Innovation Scoreboard (RIS) 2009

### Northern Hungary:

Innovation policy in Hungary has started earlier than Slovakia and using a broader scale of measures and tools. There is National Office for Research and Technology (NKTH) coordinating national technology and innovation policy. The country is fortunate to host the European Innovation and Technology Institute from 2009. The National Office for Research and Technology coordinates the regional innovation system of Hungary. There is a key role of strong regional innovation agencies, such as NORDA located in Miskolc.

In 2003 the government has approved the first R&D policy and loaded Innovation Fund, whereby 25 % of the financial resources of the Fund are mandatory to be used for regional innovation purposes. So called INNOCSEK programme is aimed at encouraging demand for

innovation services by providing a voucher to micro- and small Enterprises. There are several other programmes named after their inventors such as

- Baross Gábor Innovation Programme, aimed at supporting regional innovation networks via Regional Innovation Agencies
- Pázmány Péter Programme invented to create Regional Knowledge Centres at Universities, aiming at effective utilisation of their R&D results.
- Asbóth Oszkár Programme, focusing on creation of innovation clusters

The Hungarian Government has financed cluster initiatives with an aim at supporting horizontal networking what resulted in establishing more than 200 clusters in Hungary. So called Pole Program governed by the National Development Agency has led to an evaluation procedure of „clusters“ to recognise their quality and maturity and to provide them professional and financial support. In April 2010, there were 16 accredited clusters in Hungary. There is only one of them located in Northern Hungary – ENIN: Environmental Industry Cluster.

Generally, the regional innovation policy can be characterised as regionalised type, top-down organised. Furthermore, there is a raised awareness in the public on innovation importance.

### **Eastern Slovakia:**

There was no coherent innovation policy mix in Slovakia till 2007, just a bundle of ad hoc policy measures, designed by various agencies of central government. Both numbers of policy measures (approximately five active by 2007) and volume of financial assistance allocated to these initiatives were completely unsatisfactory when addressing major challenges of innovation development in the country (Innovation Policy Progress Report SLOVAKIA, 2009).

In Slovakia, foreign direct investment has become a major driving force of economic growth, offering incentives to foreign investors. Business expenditure on R&D (BERD) made up only one third of the total national R&D expenditure - that shows the prevalent production orientation of foreign companies. There are only nationally coordinated R&D institutions in Slovakia - higher education institutions and research institutes of the Slovak Academy of Sciences (SAS), no commercial research oriented institutes. The major actors of the National Innovation System are Ministry of Education, but the innovation supporting is at the same time influenced or financed by the Ministry of Economy and other state institutions. The wandering innovation agenda has been joined with energetic one in the Slovak Innovation and Energy Agency, under the Ministry of Economy in 2008. During 10 years, the country was not able to approve the Law on innovation, what is a significant proof of innovation agenda understanding.

The key managing authorities within the Slovak NIS are the Ministry of Education and the Ministry of Economy together with their agencies. The historically first one institution (partially dealing with innovation) is the National Agency for the Development of Small and Medium Enterprises (NADSME). NADSME operates a network of 14 Regional Advisory and

Information Centres (RAICs) and cooperates with 5 Business Innovation Centres, 9 Centres of First Contact Points and 16 Business and Technology Incubators. The situation has changed by getting EU financial sources. Structural funds enabled 10 times higher financial support in the planning period 2007 - 2013 than in 2004 -2006. The main measures are focused on innovation finance for SMEs, technology transfer support, introduction of quality management systems, industry-academia cooperation, creation of industrial and technology parks. The regional innovation policy can be characterised as centralised. There is much lower awareness in the public on innovation importance than in Hungary.

This has one interesting consequence as found out in the enterprises surveying in the cross-border innovation strategy preparation – Hungarian companies expect at a much higher level state subsidies for financing their innovation activities and technology development.

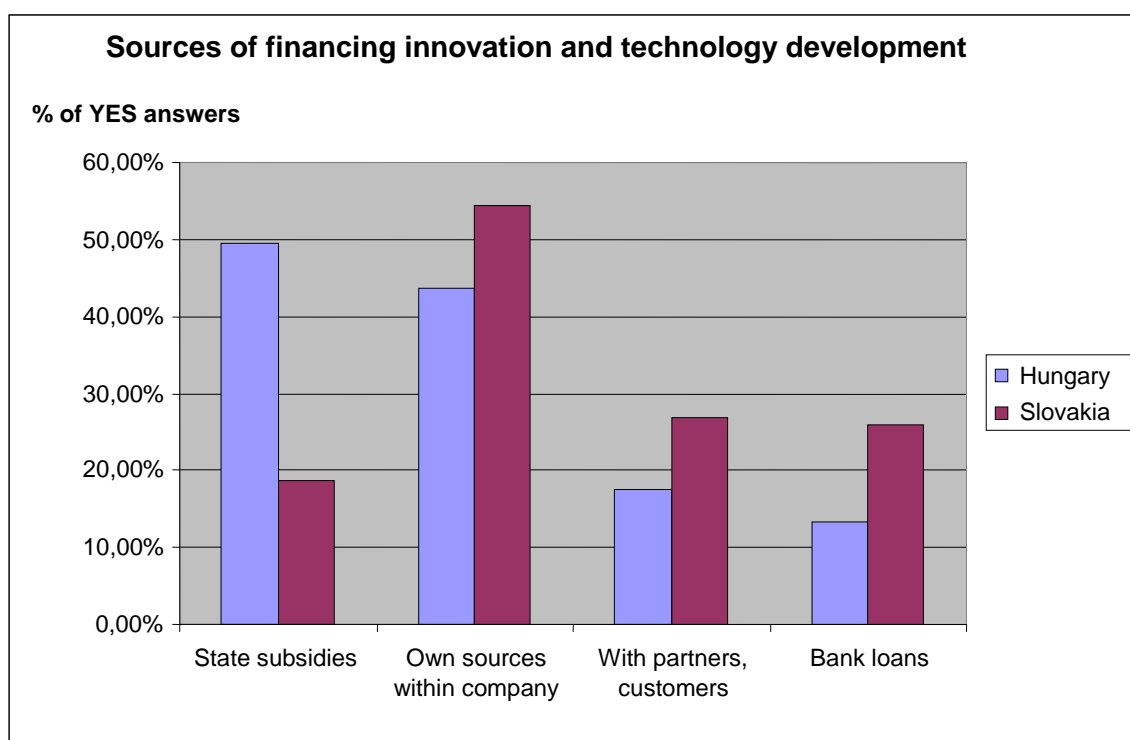


Figure5.. Sources of financing innovation activities and technology development of the companies in the Košice Region and Northern Hungary. Source: Results of the NORRIS survey

To conclude, the research done within cross-border innovation strategy preparation in 2008 and expert panel in 2010 show the following similarities and differences among regional innovation system and policies Northern Hungary (NH), Eastern Slovakia (ES):

#### **Similarities:**

- Regionalised type of innovation system, top-down policy approach national dominance of decision making,
- Lack of co-ordination among major policies: macroeconomic, sectoral, education, investment promotion, regional development, etc.,
- Low share of business R&D expenditures,

- Dominance of large foreign companies but starting activities in newly formed sectors,
- Increase of innovation policy activities, awareness of triple helix, partnerships and horizontal networking,
- Low number of patents and other research, development and innovation outputs,
- Low number of R&D personnel in comparison to national and EU level.
- Knowledge transfer has not a long tradition universities and private companies
- Both universities started work on technology parks, i.e. Science Park in Miskolc and Technicom in Košice.

#### **Differences:**

- NH: Hungary and NH started their innovation activities earlier, including financing from regional innovation fund; there is higher awareness of innovation importance,
- NH: There are higher expectations of innovation financing from public sources,
- NH: At the regional level, NH has more coordinated supporting policy having a powerful NORDA agency and private research and brokering activities,
- NH: Clustering became a fashionable tool, partially because of available external financial sources,
- ES: The regional administration has not been able to financing innovation level, but both Prešov and Košice region started their innovation policy strategic activities applying from EU sources (FP6 and FP7 programmes etc.). National innovation policy is rather slow, inefficient, uncoordinated and mechanistic,
- ES: Several new projects started in 2009-2010 financed from the structural funds – University innovation and technology transfer centres, Multifunctional centre at the Košice region, Innovation partnership centre in the Prešov region, etc. The national ambitious project of Regional innovation centres is suppressed and postponed,
- ES: Several cluster initiatives started – without national support, being in their very early phase – IT Valley, Biterap (IT services) and AT+R (automation and robotics).

## **6. Cross-border regional activities and governance**

Traditionally, any kind of border means separation of different structures, “us and them” way of thinking. Simultaneously, there is a function of connecting and mutual influencing different areas across the border. Hungary and Slovakia became members of the EU in 2004, although, first attempts of integration among former EU15 and FCC countries have started already in the early 1990, when agreements on free trade among the European countries have been applied. The historical, cultural, political, economical conditions of theoretically trans-boundary regions make the development process of potential consistent economic space or even regional identity building, rather complex.

Several initiatives positively influenced also Hungarian-Slovak border area. The most known Community Initiative INTERREG (Interregional cooperation) was set up in 1990. The strong EU political support for “regional crossing” is obvious in the increase in funding to EUR 7.75



billion in the period 2007-2013 as compared to EUR 5.78 billion in the previous programming period 2000-2006. Another important euroregional initiative covers much broader Carpathian Euroregion association created by the Ministers of Foreign Affairs of Poland, Ukraine, and Hungary (1993) or Košice-Miskolc Euroregion (2000). The former one declared idea of covering peripheral, less developed regions, the work done has been definitely a good turn supporting mutual understanding. Although, its importance is decreasing and the stronger EU cross-border concept, Schengen border loading, prevails at present. Košice-Miskolc Euroregion has not come with real cross-border activity content and gradually disappeared. In 2008 Miskolc resigned from the Euroregion. The image, coverage and results of the mentioned cross-border activities can be seen in environment protection, people to people activities (sport and culture), tourism, studies and plans. The economic content is somewhat missing (Orsolya 2010).

The creation of a cross-border regional innovation strategy of Northern Hungary and East Slovak Košice region is the main economic strategic activity comprising “connecting” function that resulted in opening doors to common innovation activities.

It can be concluded that several lock-in problems exist in both border regions. Cognitive lock-in can be recognised in a common negative world view, fatality outlooks, low voter turnout in all kind of elections, rather strong tendency to vote for radical and populist solutions, paternalistic attitudes, amplification of economic and social differences among the metropolitan region and peripheral regions. Functional lock-in exists caused by the domination of large companies in the regions, usually in foreign ownership, not incorporated enough to regional framework. Although, there exist a number of new grass roots business activities depressing the lock-in power. A negative influence of political lock-in embedded in the old industrial relations, exists at both regional and national levels showing the face of centralisation, hierarchy, power networking of politics and large firms, preferring infrastructural projects and depreciation of community and smaller players undertaking and movements. The last one national border lock-in mentioned is particularly powerful as well, retaining in old “us and them” attitudes, accentuating national and historical aspects of the border, political positioning on cognitive lock-in thinking. Politics based on confrontation is prevailing cooperation policy. There is a strong negative synergy interdependence among the four lock-ins, restraining border regions in their past. EU membership as a positive factor causing modernisation of regional economics, governance and innovation policy together with raising new business activities makes a possible deviation from the old industrial and political past promising in a longer perspective.

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