

Gabriela Kol'vecková - Radoslav Tušan

Supply and Demand on Innovation in Eastern Slovakia

1. Introduction

The very first thoughts about innovations were published by J. A. Schumpeter (1964) in the work „Theory of economic development“. Schumpeter presents his sight that the cause of economy depression is expansion, which “rolls over” the economy and calls for special way of adaptation to new conditions. Schumpeter illustrates the base of the economic cycles by endogenous causes, but he accepts also the influence of so-called exogenous natural and social factors that can prolong the state of depression. Innovation process is in his opinion dependent upon technical progress and activities of entrepreneurs and innovations are the core of the effective competition. Economic development is base on the changes that arise spontaneous, within the system. This endogenous factor brings up innovations, fundamental changes in the field of technique and technology of production, in the organisation of production and its management. According to Schumpeter the main personality that gives dynamics to the economic system is the entrepreneur, who by his creative activity realizes economic development. The task of the entrepreneur is new combination of production factors – innovation. Schumpeter understands the notion innovation as follows:

1. launching the new product to the market, respectively of the product of new quality,
2. launching the new method of production, which has not been applied till now, although it does not rest on the new scientific findings,
3. discovery of new markets for the products produced irrespective of previous existence of that market,
4. exploitation of the new raw resources,
5. organizational change in production including creation of monopoly, respectively to its repression as an impact of competition.

2. Objective

Herewith the readers are being informed with results of the survey carried out within the NORTH HUNGARY AND KOŠICE BILATERAL REGIONAL INNOVATION STRATEGY PROJECT - NORRIS project. One of the goals in the project was to describe the situation in the Hungary and Slovak Republic in terms of innovation policy, although the NORRIS project refers to BAZ (BAZ - Borsod-Abaúj-Zemplén, Heves and Nógrád counties) region and Košice region only. This was the reason why the national actors of regional development were presented here as well. Several key regional players, existing Small and Medium Sized Enterprises - SME - support environment and technology providers have already proven their ability to contribute to the regional initiatives related to the Regional Innovation strategy - RIS process, but only with help of the financing of Research and Development - R&D sector by the state.

The objective included following research questions, which had been examined in time span of December 2006 – March 2007. In both regions were applied similar methods i.e. 600 questionnaires had been sent out for each region.

The research question number one was: “What are the innovation needs and obstacles in Eastern Slovakia?” This question dealt with demand side of the research, while the next one dealt with the supply.

The research question number two was: “What are the innovation characteristics for the supply in Eastern Slovakia?” Both questions were answered and assessed by means of qualitative and quantitative methods. There were two types of questionnaires specialized: one for supply and one for demand side.

3. Method

As for the demand, in the survey carried out within NORRIS project we examined innovations within sectors (see Table 1: Questionnaire distribution for the demand side) in compliance with the historical given potential, presumption of the Eastern Slovakia area. The number of required questionnaires for the research were set 20 per each sector, apart from mining where we accepted 5 complete questionnaires.

Table 1: Questionnaire distribution for the demand side

Sectors	Number of questionnaires	International Standard Industry Classification (ISIC)
Machine industry	24	D28, 29,34
Electrical and optical equipment	20	D30, 31, 32, 33
Food industry	25	D15
Material production	22	D23, 24, 25, 26, 27
Environment Industry	21	D37, E40, O90
Wood industry	8	D20,21,36
Computer and related activities	12	K72
Tourism services	11	H55
Construction industry	11	F45
Mining and quarrying	8	C11,13,14

As for the supply, we examined innovations within providers (see Table 2: Questionnaire distribution for the supply side) in compliance with the potential that has been developed in the Eastern Slovakia area since 1989.

Table 2: Questionnaire distribution for the supply side

Organization type	Number of sample
Technology Providers	17
Business Supporting Structures	10
Public Organization	4

4. Outcomes

What are the innovation characteristics for the demand in Eastern Slovakia - in Košice upper-tier territorial Unit?

The question in title was partly answered thanks to the questionnaire, which was one task within the NORRIS project. Demand analysis was conducted with the companies, which were anticipated to have innovation potential and at the same time had a historical background for their own development and growth in the Košice region. Also some newly established companies were included into the survey. The survey had used several questions for describing

the respondents. One of the distinctive features was ownership that is shown in Figure 1. Obviously, prevailing share of the companies are domestic.

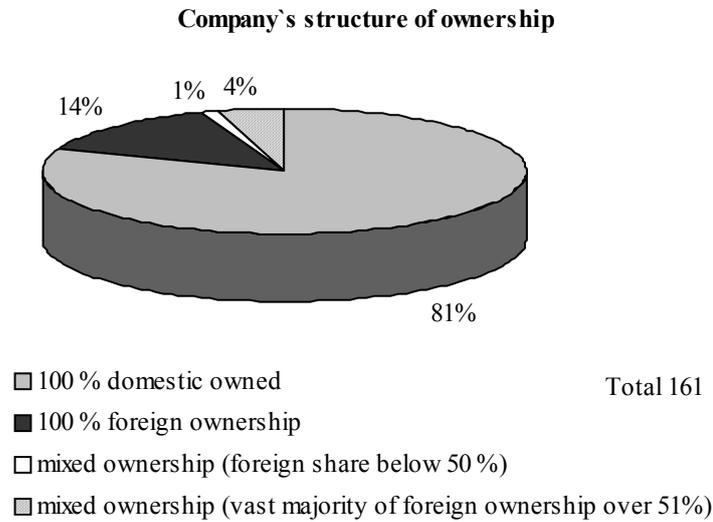


Figure 1: Sample description by ownership

After the respondents were introduced by one of their features, their answers were compiled and presented here.

The crucial part of the questionnaire was query about innovations. The stress was given on innovation needs in all companies from sectors in line with the quota sample provided above. The electrical and optical industry had the greatest desire to innovate, which was also in line with the results from the supply side analysis, where the supporting institutions had shown dominant role in the innovation processes in the Kořice region. There was “a match” of demand and supply proven. But still electrical industry is vivid and snappy one, therefore the innovation need was expressed on scale almost 5. The Technicom and IT Valley (mentioned below) is again evidence that this “vehicle” of innovation process was initiated very well. Apart from environment industry that demonstrated its needs as neither important nor unimportant, which was the lowest level among companies from all sectors. An essential outcome of these answers was that none of the respondents declared the innovation needs to be unnecessary or less important (see Figure 2: Innovation needs of the companies in Kořice region). Overall judgment on innovation needs was expressed on scale rather as a high importance for most of the sectors.

Even when the company has strong desire to innovate, it cannot be done without invention, i.e. ideas, sources for innovation. Therefore next result of the survey is devoted to answer the question: *On what do you base your need for product innovation?*

It was proved that own ideas and own customers are important for development of innovations in respect to results of the survey. Respondents are less likely to use journals or media for the innovation of their product range. Other sources of information for the innovation needs were presented in Figure 3: The sources of the innovation needs.

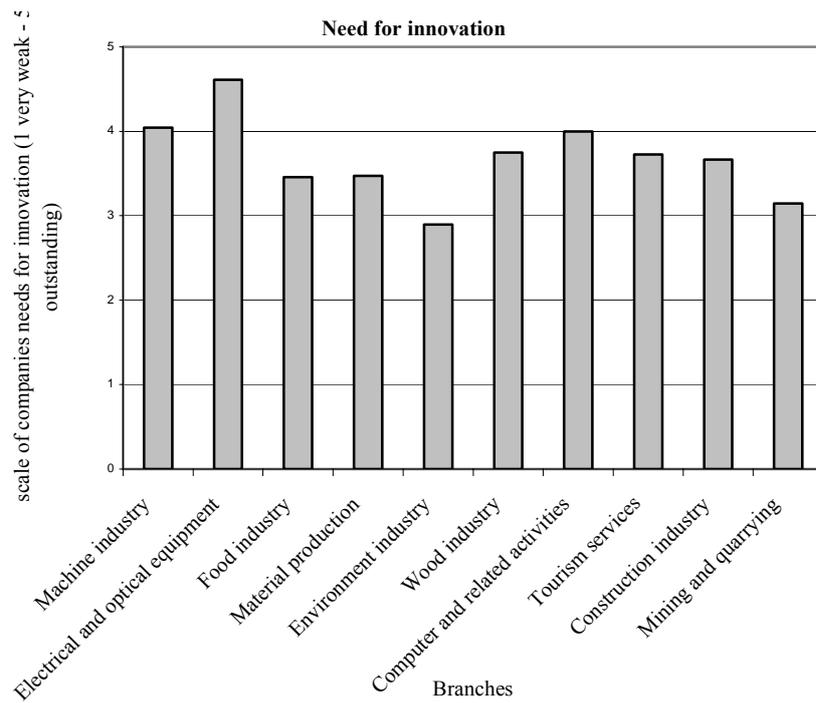


Figure 2: Innovation needs of the companies in Košice region

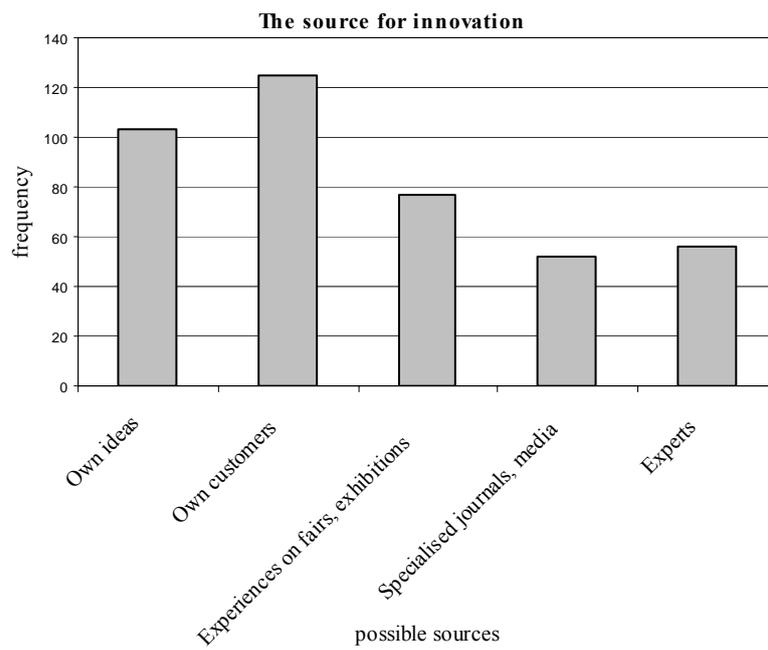


Figure 3: The sources of the innovation needs

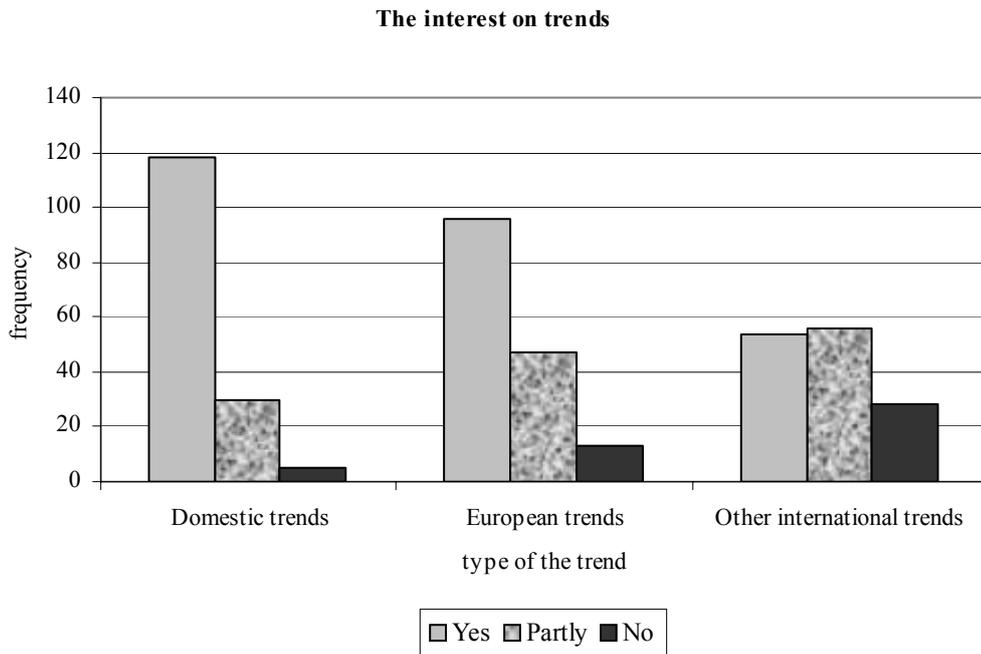


Figure 4: The knowledge of the trends

Watching the competitors or simply observing new trends in the sector can stimulate the source of innovation, such as „own idea“. The next paragraph explains these stimulations for the Košice region.¹

The knowledge of the trends shown by Figure 4 presents results of another self-evaluating question. The companies revealed their preferences of trend observation. More than 61% of firms indicated to observe European trends in their area of business. On one hand it is surprising that only 37% declared to observe the other international trends. On the other hand this fact is in line with the fact that companies rely mostly on their own capacities and own ideas when developing new products or just bringing to life any kind innovative effort for the sake of their own companies' market success.

¹ „To Schumpeter the fundamental question of business cycles was causation. In causation, he explicitly recognized the importance of external factors. Innovation plays the central role in Schumpeter's theory. He defined it “as the setting up of a new production function. This covers the case of a new commodity, as well as those a new form of organization such as a merger, of the opening up of new markets, and so on.” Innovation is different from invention, which provides the raw material, so to speak, for innovation. The individuals who introduce new production functions as distinct from reproducing old ones and altering the proportions and quantities of factors within old ones are called entrepreneurs. Innovation is more difficult than the ordinary running of a business for it involves a choice not between the tried and the tried but between the tried and the untried. But once the way has been shown it becomes easier for others to do the same thing, to improve upon it, and “to do similar things in similar lines”; the latter two categories represent what Schumpeter called “induced innovation”, though the first presumably is not innovation at all. This provides the explanation for the observed facts that innovations are not evenly distributed over time but come in clusters that they “are not at any time distributed over the whole economic system at random, but tend to concentrate in certain sectors and their surroundings.” (SCHUMPETER, 1964 In: SCHUMPETER, J. A. (1987) Teória hospodárskeho vývoja, Pravda)

To conclude the following can be stated:

- There is a gap in the trend observation, thus there is a need to turn the SMEs' attention towards the international – opened EU market, esp. behind the frontier because the innovation needs might be solved also by the help of foreign companies
- The companies already see customers as another source of the innovation ideas that might be used and broaden
- Any kind of information system created as a companies activity that would enable the personal contacts and quick reaction on the new trends
- The creation of (by business supporting organizations) a platform (e.g. club) for the communication towards the marketable innovations
- A support in the innovation process for the SME's is to follow EU relevant standards (EU standards is a must – the company ought to innovate the machinery in accordance with the norms)
- Accountancy should have more favorable conditions for the purchases of machinery. At present the system is not „SME friendly” (SME's cannot account depreciation and amortization e.g. of machine, however for the SME's this is the key for the development)
- In their own interests the SME's should recognize the need of cooperation with the technology providers using business supporting structures
- Required is permanent and closer cooperation and information changing. More project consideration is needed according to SME's. Introducing of regional universities, and research institutes, FP6 and FP7 for the SME's would be useful.

What are the innovation characteristics for the supply in Eastern Slovakia - in Košice upper-tier territorial Unit?

There were identified three groups on the supply side of the innovation process. The groups were: Technology Resource Centres, Business Supporting Structures, Public Organisations.

Technology providers are aware about technology innovations, as: energy safety innovations, alternative energy sources innovations. They are aware about European Framework Program (6.FP, 7.FP).

European programmes were implemented in the region. Slovak Research and Development Agency (APVV) is oriented on basic research, not for innovations.

Few institutions were successful in any national innovation supporting funding in the last years. Political and lobbyist aims are significant marked in area of innovation schemes. Institutes of Slovak Academy of Sciences are aware of importance of basic research grants.

Business supporting organisations - Regional Development Agencies have mostly negative opinion about the availability, accessibility and allocation mechanism of the regional innovation related funds. They declared a lack of suitable mechanism for innovation support. Accessibility of innovation funds is low, more units have no sufficient information about this existence of supporting tools. Agencies declared no legislative support for innovations. Grant financing scheme was realised through national level in some cases.

Bank organisations declared low accessibility of funds for innovations, because of conservative banks' policy. This policy decelerates the inflow of funds into a region.

Within these groups the dominant role was assorted to the following organizations: Slovak Academy of Sciences – SAV and its Institutions and Technical University of Košice and its Faculties and departments: Department of Electrical Drives and Mechatronics, Faculty of Electrical Engineering and Informatics.

Technology providers use to finance their innovation related activities own or domestic resources – funds (Scientific Grant Agency, Slovak Research and Development Agency), and projects of bilateral co-operations. Multilateral grants are involved, as: INTAS, COST,

EUREKA. Less funds inflow is from operation activities and from the sponsorship. Their exploitation of 6.FP funds is very low. They mostly participated in international R+D projects, especially in the last three years.

Business supporting organisations had mostly innovation related assignment in the last three years. Financial resources used to finance innovation activities were their own and EU funds, assigned to entrepreneurs' projects (PHARE, NORRIS).

The figure 1 below describes the relations among the subjects of the innovation suppliers and their objects in the innovation processes. But question that was not clear from this figure was: how do the suppliers know the needs? Obviously, when the Business Support Organizations provides consultancy, it is based on the SME's query. Or is it only single-ended approach - an offer of their services to SME's? As for the analysis of demand side, we found out that 58%² of SME's in examined sectors do not contact and do not need their services at all.

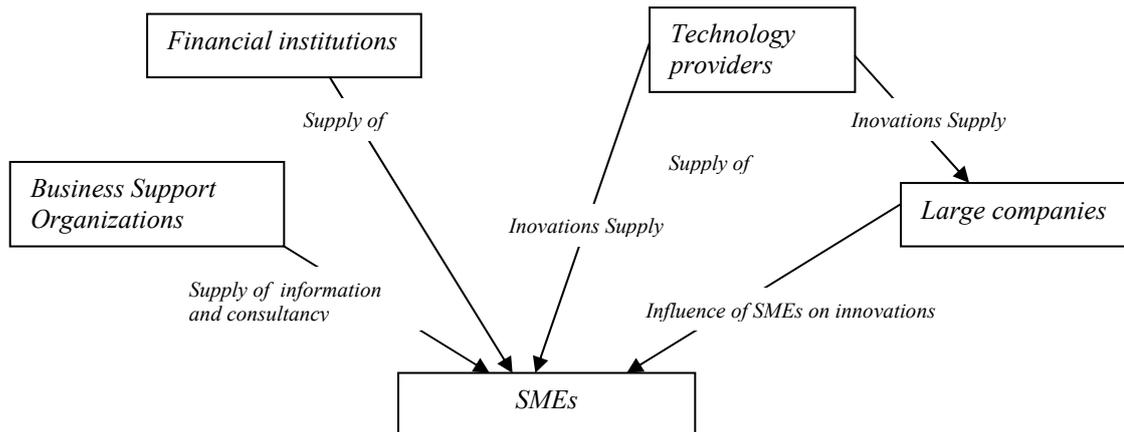


Figure 5: Support activities for innovations in the region

Support of innovations stems from brain, therefore the attitude towards innovations was also examined for the supply side analysis. It was disclosed that the attitude could be assessed from two perspectives. Because the answers of respondents were split and had stated that first group of respondents are strongly goal-oriented towards the collaboration. Their visions are oriented for the cooperation with companies. Second group of respondents does not declare their attitude openly, but express their research programs (e.g. SEGA, KATI, Aeronautics Institute of Kořice, Centre of progressive materials) that are often in collaboration with various institutions. Some respondents have mission and vision "clear", where they express a "freedom of scientific research", creative thinking, which are all factors of systematic implementation into networking within international cooperation. A special group of respondents are technology providers, who carry out the basic research. Their cooperation simply must exist, because their research field is small as well as the amount of companies that use the technology. But the cooperation is rather hidden behind the formal relations nowadays.

The collaboration in general is seen as positive feature that can help building of new capacities such as places to work, laboratories etc.

² Question C5.

In the survey was found that each organization claim to have a vision, or mission statement containing reference to innovation. The offer is denoted by new facilities, increased number of projects, etc.

To conclude the analysis of supply side in Eastern Slovakia: An important activity in regards to the RIS was an establishment of the Initiative of the Scientific and Technical Park Východ (TECHNICOM) in 2002, which was created in order to enhance business development and technology transfer at KSK. Technicom is an association created by of the Technical University of Košice - TU Košice, Košice Self-governing Region, Prešov University in Prešov and the city of Košice. In general the association has apart from other also these goals: to build the building in the scientific park and to secure a building permit on the TU campus. A feasibility study was carried out. Moreover, the project on obtaining funds from the EU structural funds was developed. It was based on 13 integrated projects of the research and scientific centres with most prominent companies in Slovakia. Business rules for spin off companies were developed within the TU Incubator. The main task of TU Incubator was to create opportunities to foster business activities at the TU primarily for students, postgraduate students and staff. IT Valley was established in 2007 by ten bodies: Technical University of Košice, University of P. J. Šafárik in Košice, Košice self-governing region, T-Systems Slovakia, Siemens PSE, NESS Slovakia, VSE IT services, Cisco Systems Slovakia, Microsoft Slovakia and Slovak Telekom.

Some more general remarks towards the supply side

In order to describe the supply side the individual key players were specified, one by one, in the surveyed area.

In Slovakia, the competence of the field of research, education and information technologies falls under the Ministry of Education though a portion of scientific and research sector policies remains within the terms of reference of individual departmental ministries while the innovation policy falls under the Ministry of Economy. The coordination in scope of this area has been carried out by the Slovak Government Council for Science and Technology as an advisory body of the Government, composed of the representatives of the administration central bodies, and representatives of organizations and workplaces of the research and development, as well as of the representatives of private sector. Although the Ministries work relatively well within their terms of reference, in view of achieving the Lisbon strategy targets, the system showed as little effective. Therefore, the Slovak Government proceeded to set up and then to complete the MINERVA Programme, which is a practical development of Lisbon strategy at the conditions of Slovak Republic.

SARIO - The Slovak Agency for the Development of Investments and Trade (Slovak Ministry of Economy) – provides a wide range of information and consultancy services with the aim to support entities which are interested to invest in Slovakia, and it also provides a service to the Slovak exporters with the aim to give them assistance in their expansion to the world markets. SARIO plays an important role in representing Slovakia as an investment locality of the Central Europe.

NADSME -The National Agency for the Development of Small and Medium-Sized Enterprises (Slovak Ministry of Economy) – The Agency is an association of legal entities, the founders consisting of: the Slovak Ministry of Economy, The Slovak Association of Entrepreneurs, and the Slovak Union of Sole Traders. The Agency provides coordination of all the activities to support small and medium-sized business in Slovakia, including financial ones, on the international, national and local levels. It provides management of the integrated networks RPIC and BIC.

The Slovak Energy Agency (Slovak Ministry of Economy) – fulfils the tasks in the field of intermediating the transfer of new manufacturing programmes and technologies into the

projects, the support, organization and coordination of resolving and completion capacities, their interconnection to the international network for the needs of the preparation, solution and completion of the innovative projects. This agency is going to be responsible for the innovation process.

The Slovak Guarantee and Development Bank - a specialized financial institution oriented to the support of small and medium-sized business, which is currently completed through nine guarantee programmes, seven subsidy programmes and three credit facilities.

Agency for the Regional Development Support (Slovak Ministry of Construction and Regional Development) – established to provide administration of the projects financed from Pre-Accession and Structural Funds of the European Union. It provides management of the integrated network of Regional Development Agencies and Euroregions.

Agency for Science Support as a purposeful organization of the Slovak Ministry of Education with returnable and non-returnable funds from the state budget, from the subsidies of the National Property Fund and other funds;

Agency for Research and Development Support is the most significant institution in Slovakia to support all areas of science and technology. It has been established based on the Act 172/2005 on the organization of the state support to the research and development. It is the assignee organization after the Agency for the science and development support, established by the Act 203/2001 dated 1st July 2001. The Agency supports research and development by providing purposeful proceeds from the state budget to support the Applicant's own research objectives. It supports individual projects as well as the projects in scope of Agency's programmes. The action plan of the Agency for Research Support focuses on:

- Support to national centers of excellence
- Support to human resources
- Support to the international scientific and technical cooperation

SARC – Centre for Development, Research and Technology (Slovak Ministry of Education) – The initial objective was to support creation of a link between science, research, development and the industrial production. Though recently, it is mostly orientated to the coordination of the European Union research projects.

The remaining participants are various associations representing the undertakings (the Association of Employer Unions and Associations, the Association of Industrial Unions, the Slovak Chamber of Commerce and Industry), and/or the industrial scientific and research organizations (the Association of Industrial Research and Development Organizations).

The Innovation Fund under the Slovak Ministry of Economy - a non-investment fund that is an independent non-profit, non-state-run legal entity established by the Slovak Ministry of Economy. Its objective is to support financially the scientific, research and development projects, the processing of conceptual studies, the development of supporting tools of technical policy, and the protection of intellectual property. The maximum support by the Innovation Fund goes up to 5 million SKK, while 50 % of the total costs have to be guaranteed by the resolving subject from its own sources.

5. Discussion

The comparison of the outcomes in Košice upper-tier territorial Unit with North Hungary in terms of supply and demand was carried out. But the objective of this very paper³ was to comment on the Eastern part of Slovakia only.

³ This part is provided as a complement in the article of colleagues Attila Nyiry and György Kocziszky that is to be found in this very issue of the booklet.

6. Conclusion

All what was surveyed in the region could be described by theory. Therefore the “innovation is defined more rigorously by means of the production function. This function describes the way in which quantity of product varies if quantities of factors vary. If, instead of quantities of factors, we vary the form of the function, we have an innovation. But this not only limits us, at first blush at least, to the case in which the innovation consists in producing the same kind of product that had been produced before by the same kind of means of production that had been used before, but also raises more delicate questions. Therefore, we will simply define innovation as the setting up of a new production function. This covers the case of a new commodity, as well as those of a new form of organization as a merger, of the opening up of new markets, and so on.”

“In the prosperity phase, investment from innovating activity increases consumers spending almost quickly as producers spending. A new factory in a village, for example, means better business for the local grocers, who will accordingly place bigger orders with wholesalers, who in turn will do the same with manufacturers, and these will expand production or try to do so, and so on. But in doing this many people will act on the assumption that the rates of change they observe will continue indefinitely, and enter into transactions which will result in losses as soon as facts fail to verify that assumption. New borrowing will then no longer be confined to entrepreneurs, and ‘deposits’ will be created to finance general expansion, each loan tending to induce another loan, each rise in price another rise.” (AGHION, 2002)

According to Patrick FRANCOIS and Huw LLOYD-ELLIS (2005) the Schumpeter’s ideas have had a lasting impact on macroeconomic thoughts. For example, the process of “growth through creative destruction” has become central to theories of endogenous long-run growth. What the theory above revealed is desired in praxis and the common Regional Innovation Strategy may be the first step to substantiate the theory into the practice of the less-developed regions far away from Brussels.

References

SCHUMPETER, J. A. (1964): *Business Cycles*. McGraw-Hill, Book Company, NY, 64-20620

AGHION, PH. (2002): *Schumpeterian Growth Theory and the Dynamics of Income Inequality*. *Econometrica* 70(3): 855-882.

FRANCOIS, P. – LLOYD-ELLIS, H. (2005): *Schumpeterian Restructuring*. Online [quoted 10-2-2007] < <http://www.econ.ubc.ca/fpatrick/schump.pdf> >.