THE INNOVATION SYSTEMS IN CENTRAL AND EASTERN EUROPEAN REGIONS WITH SPECIAL ATTENTION TO THE HUNGARIAN CASES

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ABSTRACT

It has been an important challenge for Central and Eastern European regions to find their own opportunities after the transition in the frame of the new economic regulations and environment. The development of innovative and knowledge-based industries counts to these opportunities. If we observe the innovation performance of the Central and Eastern European regions, we can see that the capital and metropolitan regions perform much better compare to the other, non-metropolitan regions. These non-metropolitan regions have more or less similar innovation capacity, but their economic performance and opportunities differ from each other. Many of them marked the knowledge-based development as an opportunity to strengthen their regional economic performance. I studied in the Hungarian non-metropolitan regions how the regional innovation systems build up in them and I tried to determine the regional network between the actors.The main results of the analysis have shown that we can't talk about a real system between the regional actors of innovation. The relations between academic and business sector are weak and the roles of the intermediary organizations are not clear. The situation could be improved, if the actors would recognize their roles and opportunities.

JEL: *O18, O31, R10*

KEYWORDS: *innovation systems, regional development, non-metropolitan regions*

INTRODUCTION

Knowledge, learning, innovation activities and their relations have been playing more and more important role in the regional development processes in the last two-three decades.The knowledge or science-based products can give competitive advantages for a given region and the new industries can have an effect on establishing new entrepreneurships or new cooperation. The creation of new products or services are influenced not only by the economic performance of an actor but there are many factors which have an effect on these processes. The legal or economic environment of the actors are such factors which can't be influenced by one or two actors easily and they have became increasingly importance in the frame of the innovation creation. These industries can touch many other actors in a region as well for example universities or science centers. These can be really important actors, because they can provide the adequate knowledge (human resources, graduates) and research opportunities. Therefore they can give the base for the new innovative products or activities. Thus we can talk about two groups of actors: knowledge suppliers and knowledge appliers. Between these two groups are the intermediary organizations which support the flow of knowledge, products, human resources or capital. So the relationship between the actors plays a crucial role in the operation of the innovation system. Finally the whole system is embedded in the socio-economic environment of the region. It has been an important challenge for Central and Eastern European regions to find their own opportunities after the transition in the frames of the new economic regulations and environment. The development of innovative and knowledge-based industries counts to these opportunities.

The main theoretical findings about the regional innovation systems are summarized in the first part of the paper. The innovation performances of the Central and Eastern European regions with special attention to the Hungarian regions are briefly presented in the second part. The methodology of the investigation and the results are written in the third part. At the end of the paper I summarize the main conclusions of the investigation.[1]

[1] This research has been prepared in the frame of OTKA NK 104985 research project (New driving forces of spatial restructuring and regional development paths in Eastern and Central Europe at the beginning of 21st century).

1 INNOVATION SYSTEMS – REGIONAL INNOVATION SYSTEMS

The main concept about the innovation systems are summarized in this part of the paper. I present briefly how the concept of systematic view of innovation builds up and why has the concept of regional innovation systems become relatively important point in the literature. The process of creation innovations and new products has been interpreted as a linear model which described a closed, one direction process from the basic research to the new product. The connections between the elements of process were limited. It came down just to the consecutive pieces of the process and the importance of these relationships was low. The systematic view and conception of innovation have been based on the evolutionary and institutional economics. The evolutionary concept of economics emphasizes the non-linear dynamics, complexity theory and path-dependence. The economic dynamics are influenced by the behaviour of firms and the market environment in which these firms operate according the evolutionary concept [1]. It focuses on the analysis of this economic dynamics against the mainstream theory of economics which seek after the equilibrium state of the system [2].

The first studies about the national innovation systems[2] were written by Freeman (1987), Lundvall (1992) and Nelson (1993)[3]. Their works constitute the basic concept of the systematic view of the innovation. The innovation system builds up from a network between the organizations of the public and private sector. The actors of this network have a stake in the creation, importation and extension of novelties and new products [3]. Lundvall (1992) rates to the parts of such a system not only the directly concerned actors but all of those elements which are concerned with the national innovation processes indirectly as well [4]. Nelson (1993) focused on the knowledge and formation of innovations in his analysis. He studied the flow and direction of technical innovations and informations between the public and private organizations [5]. Thus we can see that Freeman focused rather to the institutes which constitute the

[2] There were „only" innovation systems in the first years of the concept. The specialized conceptions (for example regional innovation system) were invented later.

[3] AnnamáriaInzelt has written about four studies which had an elementary effect on the innovation system studies: Freeman (1987), Porter (1990), Lundvall (1992) and Nelson (1993). [6]

system. Lundvall and Nelson studied in turn the innovation process, its components, the connections and the relations of dependency between the actors.

The innovation system can be categorized by national, geographical or industrial dimension [6]. The national and geographical dimension should be emphasized from these three dimensions to get closer to the evolution of innovation system in the regional level. The national innovation systems are different from each other more or less. These differences are caused by the effects of those factors that influence the innovation systems in the national level. The factors can help efficiently the innovation process, but they can hinder it considerably [2]. Therefore we can assume that the lack of harmonization in the national innovation systems can embarrass the international business which builds on relationships and cooperation. Cooke and his colleagues asked "whether globalisation was eroding national hegemony in respect of the organisation of innovation, the equally valid question of whether the organisation of innovation within nations was evolving in new ways was scarcely mentioned" in their study about regional innovation systems [7, 476 p.]. They have taken on this idea and a criticism has been worded about the lack of a concept for innovation systems on the subnational level[4]. The efficiency of the innovation processes in the regional level was demonstrated by the study of Malerba (1993) about the Italian national innovation system as well. It has emphasized the effective cooperation and clusters of those small and medium enterprises which have not been directly the part of the Italian national innovation system [8]. The analysis of innovation processes in the regional level became more and more popular from the end of the 1990s. There are some facts which played a role to increase the importance of this concept [9]:

- subnational regions differ from each other in industrial specialization and innovative capacity [10]
- knowledge spillovers are determined often spatially (regionally) [11]
- the growing importance of tacit knowledge [12], [13] and the spread of tacit knowledge which based on trust, untraded interdependencies [14] and geographical proximity [15]
- the presence of governance competencies and institutions on the regional level [16]

[4]Cooke and his colleagues mentioned the studies of Freeman (1995) and Lundvall (1997). They started to analyse the subnational innovation processes in these works.

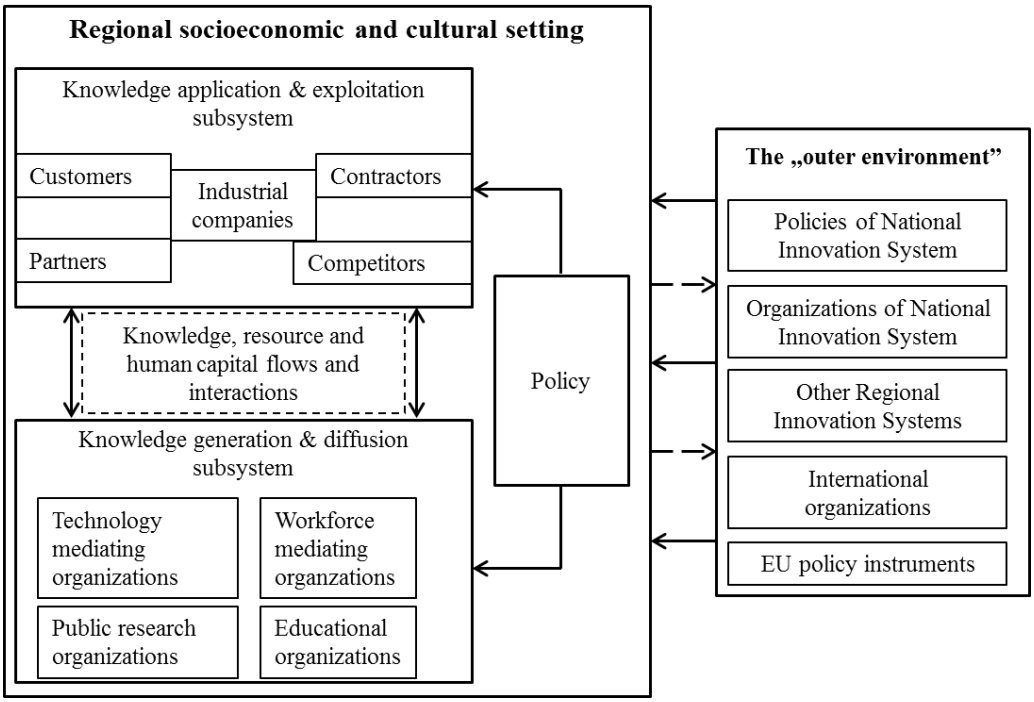
The regional innovation system is only a type of the territorial innovation models. Moulaert and Sekia (2003) distinguished six types of these models and they emphasized that the regional innovation systems manage the innovation process as a creative process. Its main characters are the interactions between the actors, the problem-oriented approach and the cumulative aspect of research and development. The cumulative aspect means that the regional R&D is built on those industries which were dominant earlier in the region. The concept of collective learning plays a big role in the regional innovations systems. They are governed by different regulations. There are numerous interactions between the actors [17].

To determinate the actors of the regional innovation processes it is worth to see which organizations and how fit to the regional innovation system. The regional innovation potential involves those local and national organizations and institutes that support somehow the generation of regional innovations. Therefore the knowledge generator or applier actors belong to the regional innovation potential even as those organizations which influence the political background, the business environment, networking processes or relationships positively or negatively. They are indirect actors of the regional innovation processes but they are a part of the potential. Thus, the regional innovation potential evolves from the aggregation of these actors. If we systematize we can see which actors have direct effects on the regional innovation processes [18].

The first scheme of the regional innovation system was presented by Autio (1998) who differentiated two subsystems inside the whole system: the knowledge generators and the knowledge appliers. The flows of knowledge, materials and human resources can be found between the two subsystems. Outside factors as national and international institutions, policy guidelines and other regional innovation systems have an effect on the system [19]. This model was improved with a new element between the two subsystems. The "policy" involves those – particularly regional – actors who influence the innovation system by their legal competences and financial sources. These three subsystems are embedded in the socio-economic and cultural environment of the region. The outside factors don't have effect directly on the system, but it can determine the potential opportunities of the actors and the organizations in the regional innovation system. It has an important role especially if a region doesn't have the opportunity to develop an own economic strategy or

regulations. The outside factors have rather direct effect on the system in this case, because they determine the policy guidelines or regulations (Figure 1) [20].

Figure 1 The schematic figure of the regional innovation system



Source: Tödtling–Trippl (2011), 456.

We can see that the interactions between the actors play a key role in the operation of the system. It is depend on the relation between them mostly. The flows of production factors and the effects of the outside environment can be varying in different regions. The Hungarian regional innovation systems have been investigated on the basis these theoretical conceptions. Two research questions have been led the investigation. It was investigated how different are the regional innovation systems in Hungary from the theoretical concept on the one hand and how the actors of these systems relate to each other on the other hand.

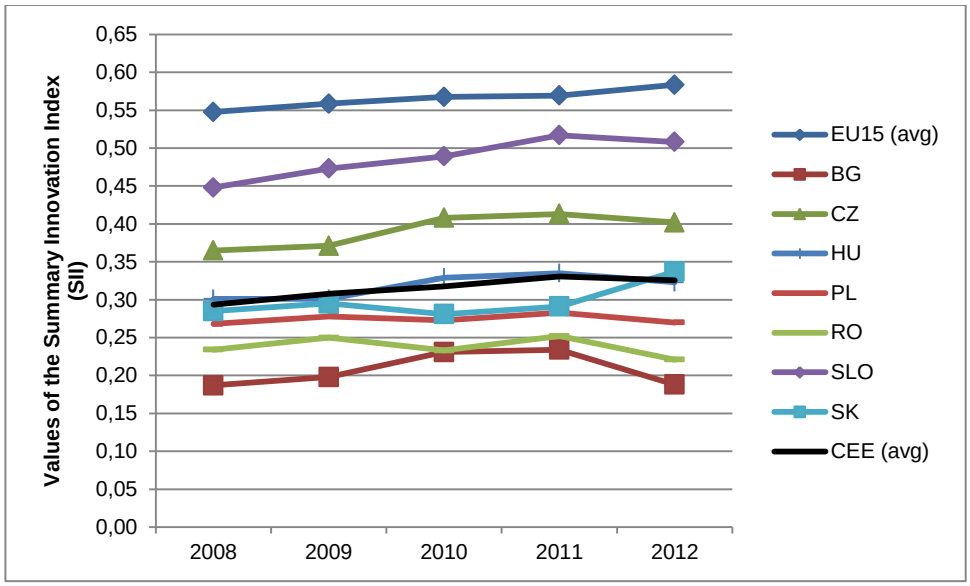
2 THE INNOVATION PERFORMANCE OF THE CEE REGIONS

It has been written in the theoretical part of the paper that the operation of regional innovation system is embedded in the socio-economic context of the region. It is known that the Central and Eastern European regions have a typical trend in the economic performance. The capitals and their agglomerations of these countries are the most developed regions, the performance of other regions lag behind of the capital

regions. It is worth to see how the differences in regional economic performance can influence the innovation performance of the regions. It can be assumed that the capitals are the most strongest in the innovations. However it is an interesting question what differences are between the other regions in the Central and Eastern European countries, especially in Hungary.

Firstly, the innovation performances of the CEE countries have been analysed. The data have been collected from the current edition of the Innovation Union Scoreboard (Figure 2). Innovation Union Scoreboard measures in every year the innovation performance of the EU countries. The main indicator of the measurement is the Summary Innovation Index (SII). It is a multidimensional index which involves three main types of indicators (enablers, firm activities and output) and 8 dimensions of innovation[5][21]. It can be seen that every countries from this macro region lag behind the average value of the old EU countries (EU15).

Figure 2 The innovation performance of CEE countries



Source: author's edition on the data of Innovation Union Scoreboard

It can be observed on the graph that the Central and Eastern European countries can be rated in three groups. The Czech Republic and Slovenia have their points significantly above the average of the CEE countries. Hungary, Slovakia and Poland have similar performances there are only small differences between them. Slovakia and Hungary showed almost the same values in 2012, Poland had bit lower points in

[5] The detailed methodology of the index has been written in the report of the Innovation Union Scoreboard.

that year. The innovation performances of Bulgaria and Romania lag behind from the CEE countries.

The innovation performance of the CEE regions have been analysed through the data of Regional Innovation Monitor. The Regional Innovation Scoreboard has 12 regional level indicators: 4 about the firm activities, 4 about the innovative outputs, 3 about the R&D expenditures and 1 about the human resources. These are measured in the Innovation Union Scoreboard as well however there are some changes to the original national level measurement[6][22]. Six countries have been analysed in this investigation: Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia. The regions have been rated in three groups which have been formed by the highest, medium and lowest third of the regional performance in terms of each indicator.

The Czech regions are the leaders of the region in innovation activities. Their performance is significantly higher than the other CEE regions. There is only one indicator (the ratio of tertiary educated people) in which the Czech regions are not so strong. They perform averagely or bit below the average in this dimension except Prague. The capital region emerges highly from the Czech regions in consideration of all the indicators. Jíhovychod has higher tertiary education potential than the other non-capital regions, but there are no big differences between the Czech regions. The lowest innovation performance has Severozápad which performs the weakest in the most of the indicators among the Czech regions.

The Hungarian regions have an average innovation performance. They can be distinguished in three groups[7] according their innovativeness: the capital region (Közép-Magyarország), the industrial developed regions (Közép-Dunántúl and Nyugat-Dunántúl) and the underdeveloped regions (Dél-Dunántúl, Észak-Magyarország, Észak-Alföld and Dél-Alföld). The capital region (Budapest and the agglomeration) has the highest innovation potential in Hungary. The two so called industrial developed regions are characterized with relatively strong values in the dimensions of high-tech employment, business R&D expenditures and the collaboration between innovative SMEs and other innovative actors. The four underdeveloped regions performed relatively weak compared the other CEE regions. They had an average potential in tertiary education but weak performance have been

[6] The detailed methodology of the Regional Innovation Scoreboard can be read in the report of the Scoreboard.

[7] Lengyel and Leydesdorff (2011) have identified three groups in their paper as well studying the Hungarian regional innovation systems in terms of knowledge function synergy [23].

indicated in innovative SMEs, technological and non-technological innovators, the newness of the products among others. The low ration of innovative SMEs should be stressed as a main problem from the aspect of innovation in the Hungarian regions. They performed almost the weakest among all of the CEE regions.

Poland has shown a heterogenic picture about the regional innovation performance. The strongest values have had the capital region, Mazowieckie. There are some regions which perform above the national average. These are non-capital, but metropolitan regions in Poland which have a significant role in the Polish economy as well. The other regions have performed weakly in innovation activities especially those regions which located in Eastern Poland. They have had the weakest performance in public and business R&D expenditures, high-tech employment and public-private co-publications. It can be observed from the data of Regional Innovation Scoreboard, that the Polish regions have relatively strong potential in tertiary education. There have been many investments in the higher education and the ratio of people with tertiary education has risen in the last years.

Romania has shown the weakest overall performance among the CEE countries. All of the regions have performed poorly in many of the indicators. Bucharest-Ilfov, the capital region has emerged highly by its innovation performance among the other regions. Some regions have performed surprisingly well in innovation activities of SMEs, but it should be noticed that these indicators have been measured by a survey. Therefore the results may have some inaccuracy. The values of some indicators have shown that the institutes of innovation processes are lacking in the Romanian regions. Tertiary education, collaboration with other actors, patents and high-tech employment performed the weakest in Romania.

Slovakia has had similar performance in summary as Hungary. The general pattern of the CEE regions can be observed here as well, because the strongest performance in innovation has the capital region (Bratislavsky Kraj). However there are only small differences between the other three regions according to the results of regional innovation scoreboard. The non-capital regions are relatively weak in the ratio of tertiary educated people and in public R&D expenditures but they have shown relatively strong performance in public-private co-publications. There are significant differences between the regions in high-tech employment, because Bratislava and Západné Slovensko have shown higher values than the others.

The Slovenian regions have performed well among all of the CEE regions. The region of the capital city (Zahodna Slovenija) has indicated significantly better performance than the other region. Both of them have been counted to the best performing regions in most of the indicators.

Some characteristics could have been discovered during the analysis. It has been observed that the capital regions performed much better than the other regions. The non-capital Czech and Slovenian regions have shown the strongest innovation performance, the Slovak, Polish and Hungarian regions have performed averagely and the Romanian region lag behind.

3 THE INSIDE RELATIONS OF THE HUNGARIAN REGIONAL INNOVATION ACTORS – LINKAGES AND COOPERATIONS

My investigation about the regional innovation actors in Hungarian regions based upon interviews which were part of other research project. That project investigated the innovation-friendly government and the local innovation processes from the aspect of regional development. 28 interviews have been recorded in six Hungarian regions (all of the regions except Közép-Magyarország where Budapest and its agglomeration area belong). Such interviewees have been collected who had experiences in the local innovation processes. It has been sought after asking the most relevant persons in every region concerning the local innovation. The interviews tried for asking all of those organizations which belong to the different subsystems (see Figure 1) of the regional innovation system. The interviewees have been working as

- head of knowledge-transfer centre of local university (knowledge generators),
- directors of regional innovation agencies (intermediary organizations),
- experts at chamber of industry and commerce or
- CEOs or owners of such entrepreneurships that are members of the Hungarian Association for Innovation (knowledge appliers).

Some policymakers and NGOs have been asked as well. They are not direct part of the innovation system but it was interesting how they see the regional development and innovation processes from outside.

I focused in my investigation from two aspects on the interviews:

1. I have analysed how the interviewees think of the whole system, how they look at the operation of the regional innovation system and how they see the connections between the actors of the system.
2. I have investigated the system from organizational approach to determine what functions have the directly affected organizations (for example universities, innovation agencies or chambers) to the regional innovation performance.

3.1 The operation of the Hungarian regional innovation systems

The first experience about the regional innovation process was that there are many differences between the outside view and the inside aspects of the regional innovation systems. One would guess that there is an adequate network or initiatives to form an adequate network between the regional innovation actors after reading the regional innovation strategies and development strategies. But the actors of the regional innovation system have looked on the inside relations of their own network more negative as it could be assumed formerly. They have emphasized rather the problems and they have talked less about the opportunities or success stories [24]. Many of the interviewees have stressed that the main actors of the local innovation processes have been known each other for a long while. They have thought of the personal contacts between the directors of experts in most of the cases. However these contacts don't guarantee the real cooperation but it can facilitate the flow of informations between the organizations. It could be assumed if the staff of different organizations know each other they have an own opinion about the other institutes or actors. It may have positive as well as negative effects on the networking or the cooperation.

The collaborations between the parts of the system are important because there are different tasks in the innovation process that are set out by different actors. Positive effects are the good and fruitful relationship between the actors. But if somebody has a bad opinion or can't look relatively clear on the activities of an actor then the cooperation won't be realized between them. Therefore trust is a key element in the regional innovation system either between the actors or inside an organization. Informations, human capital and knowledge can flow easier if the actors place confidence in each other. Some interviewees noticed that the question of trust is an

important problem. They have perceived the lack of trust between the actors of the local innovation and it may set back the collaboration with each other. One interviewee noticed that the lack of trust can be realized as a social problem. Other interviewees have talked about such big organizations in which the lack of trust may evolve between the different departments of the institute (for example universities). It could be seen on the schematic figure of the regional innovation system how important the flow of different factors are between the subsystems. If trust is lacking in the system the flow of these factors is more difficult and the whole regional innovation system can't operate suitably [24].

The parallelism in functions of some local, regional and national organizations was another important thing which has caused difficulties inside the systems. It could be observed almost in every region. This observation shed light on the matter of the top-down organized institutes. Some organizations have formed in the national level and they have been delegated to the regional level. Their functions depend on the concepts of the current government without respecting the real claims of the regional innovation processes. An interviewee has illustrated the situation this way: "I don't know what they do in the frame of innovation activities. They organize some thematic program and workshop, but they don't work as a real intermediary organization". The financing of these top-down organizations depends on the national government or the operational program of the European Union as well. When the projects have terminated from which these actors were financed, they started to look for new opportunities to finance themselves. They have found new activities such as writing and managing EU projects. Thus, these organizations could serve their original function less and less.

It can be experienced a high level of ambivalence between the original model of the regional innovation systems and the perceptions of the interviewees about the regional innovation processes and their background in Hungary. More experts agreed that every region has own specialisation and socio-economic background even in Hungary. These specialisations would require the adequate institutions of innovation in the regional level and more interviewees said that the region could have a critical mass from the aspect of innovation activities. On the basis of some interviews the regional level has seemed to be as a consensus, because the county level is rather small for the innovation and the national level is too diversified from the aspect of economics. However the political and economic competencies can be found mostly in

Budapest. The regional level had slight competencies some years ago, for example decision on some subsidies for innovation. These competencies have been put back in the capital, when the regions as administrative units were terminated. The interviewees noticed that the decentralized competencies would be important in the tasks of innovation.

The interviewees agreed that stable institutions and business environment are key elements of the innovation processes. The adequate framework is important because it can help the actors to do their activities on the optimal level. But the lack of the stable background can put back the innovation performance. Therefore these factors are meaningful for the knowledge generators, the firms and the intermediary organizations as well.

3.2 The operation of regional innovation system from organizational aspect

The organizations of the regional innovation system were put in three groups following the scheme of the system: knowledge generators, knowledge appliers and intermediaries. The actors of the Hungarian regional innovation systems can be analysed more or less in similar frames.

The knowledge generators are mostly the universities. Every Hungarian region has a nationwide significance university. They are the most important institutes of tertiary education in these areas. There are other smaller educational organizations as well beside the significance universities. The institutionalization of the innovation processes at the universities started about 10 years ago. The universities could apply with their research projects for the so called "Regional Academic Knowledge Center" program. This program targeted the regional universities to improve their innovation performance. It was the first step at most of the regional universities in forming the technology-transfer centers. These departments have been responsible among others supporting the researchers in the innovation process, as well as collection and registration the patents of the university. The formation of the technology-transfer centers have ended according to the interviews. The interviewees from the universities have stressed that the approach of the rectors and the leaders to the innovation processes has been important factors. It is demonstrated by the investments of universities as well (for example new science building for life sciences in Pécs). The leaders of universities' technology-transfer centers have noticed that the

approach of researches about publishing new results or patents should have been changed. The researcher staff at the university had to understand that it is better for them and the institution as well if a new invention is gone through with all the patent registration and control process. It has taken time till the researches have understood the importance of these administration and legal processes.

The interviewees have had ambivalent opinion about the cooperation with other actors. It has been emphasized that the relationship of academic and business sector is important. Some opportunities and examples have been denominated where one could see successful academic-business cooperation. It can be observed that these institutes know the local actors of the innovation processes. However it hasn't guaranteed the real collaboration with them. It has depended mostly on the current research projects. The interviewees have drawn attention to the lack of some internal relations as well. It means that some departments of universities or faculties haven't cooperated well each other or they wouldn't like to know about the other projects.

The knowledge appliers have been assessed less than the other actors. However some interviewees could provide such valuable information which helped to discover their relations the regional innovation processes. These interviewees are member of the Hungarian Association of Innovation among others. They have noticed that stable regulations and adequate environment have been lacking in Hungary. These problems have weakened the innovation performance of the small and medium entrepreneurship. These facts have been strengthened in the results of regional innovation monitor of EU as well. It can be observed on the basis of interviews that the regional economic actors focus on the survival in the business life. The risk of the invention of a new product can't be taken in by them. The other problem what have been mentioned by the experts that most of the international orientation have been lacking at most of regional small and medium firms. They couldn't take part on international workshops or fairs because they haven't had products or the financial background. Some interviewees have talked about the lack of entrepreneurial skills and narrow-minded entrepreneurship which haven't look out from their small local environment.

Clusters were taken into consideration as hybrid organizations in the frame of regional innovation systems. These forms of cooperation may have role as a knowledge generators as well as knowledge appliers. The interviewees have noticed that most of the clusters have been created only because of the projects of EU. These

clusters haven't had any real collaboration in their frames. There have been only few clusters in Hungary which could benefit from the common works of the members. These have been organized in bottom-up way and these have based on real cooperation between the members. There are few clusters in which the suppliers have been organized around a stronger firm.

The parallelism in serving the functions has been already mentioned at the intermediary organization. It can be observed in the relation of the regional innovation agencies and chambers of industry and commerce in some regions. Regional innovation agencies were founded to support the innovation activities in regional level. They have provided services related to the innovation process. The agencies have been financed from EU or other national projects. Their financial backgrounds have become uncertain as these projects ended. Thus, they have tried to stay on their own legs and survive the situation. Therefore they started to do such activities which were less related to their original functions and they have brought down the effectiveness of original functions. The opinions of interviewees were ambivalent about the regional innovation agencies. Some interviewees said that the innovation agencies are unnecessary organizations. Others have thought that they have their own position between the regional institutes. It should be noticed that these sights could be influenced by the relationship between an interviewee and the leader of regional innovation agency.

Other significant intermediary organizations are the chambers of industry and commerce. They were organized in the county level and they have been working for the development of entrepreneurships. The chambers have played significant role in the innovation process. But they haven't had similar performance in every county. In those counties where a regional center located the performance of the chambers in innovation activities was much higher than in other counties.

CONCLUSION

It could be seen during the analysis that the regional innovation systems of the Hungarian non-capital regions are not perfectly completed systems. But the planned system wouldn't be better. The regional innovation systems can't be built up from the top, because these require the real cooperation between the actors of the system. Although some actors of the Hungarian regional systems have shown collaboration

among each other, it can't be stated that it would be a certain thing inside the Hungarian innovation systems. Mistrust and unknown functions of some actors are the main source of problems according the interviews. Some interviewees have noticed that they are in connection with those actors which play important role in their innovation activities. Many interviewees said that they wouldn't like to connect with those organizations which have theoretically functions in innovation process however they can't serve really these functions. The analysis of innovation performance distinguished on three groups the Hungarian regions. The capital region has the strongest performance as in the other CEE countries. Közép-Dunántúl and Nyugat-Dunántúl belong to the second group. Some important Hungarian or multinational firms can be found in these regions which improve the innovation performances of these regions. These firms have important role in innovation processes because there are only smaller universities, but the regional economic background secured an adequate environment them. However there are differences inside the region as well and the effects of innovation activities don't touch the whole region in the same way. The other four regions are in the third group. Their innovation performances are relatively weak. Although these regions have significant universities which play important role in the Hungarian tertiary education, these can't have significant effect on innovation processes. The biggest problem in these regions is the lack of the innovative SMEs. Thus, the development of SMEs and innovative nascent entrepreneurships would be a key element to strengthen the economics of these regions. But the process requires a relatively stable economic background and environment which depends on the national government.

In sum it can be stated that important elements are lacking in the Hungarian regions from the aspect of innovation processes. Trust and stable environment would require to optimal operated innovation systems. However the lack of these elements will cause problems in the next times. If the Hungarian regions would like to strengthen their economic performance through knowledge-based industries, it is important to improve the adequate institutions which can help the actors to find the optimal competencies of each other.

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