

The interpretations of social capital in the Hungarian innovation studies

Ákos BODOR

The success of innovation process in the theoretical conception of innovation systems principally depends on the quality and quantity of interactions between different types of actors. Cooperation and networking between them are essential requirements and different activities are embedded in the social structure. Therefore it is not surprising that the question of interactions between actors and social context often appear in innovation research. The appearances and the notions of these are diverse but each of these forms are connected to some interpretations of social capital. The paper collects these different approaches based on the latest research in the field of Hungarian innovation processes

Keywords: *innovation systems, embeddedness, social context, social capital*

Managing the Hungarian innovation system: evaluations in the fields of science, technology and innovation between 2005 and 2012

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The presented research – building on the innovation systems approach – empirically analyses how independent evaluation, an important means for institutional learning, was used in Hungary between 2005 and 2012 in the field of science, technology and innovation policy. Based on the collected information, the framework for evaluations is present in the Hungarian legal system and according to the STI-related strategic documents, the concepts about independent evaluation are slowly developing. Between 2007 and 2010 nine evaluation exercises were carried out directly concerning the governance of the the fileds science, technology and innovation. There are examples of comprehensive evaluations and evaluations of the direct support schemes as well. The research reviews independent evaluations following the logic of policy support. The paper concludes that despite the started and observable development, the potential of evaluations to boost the innovation system is yet to be exploited.

Keywords: *evaluation, innovation systems, science, technology and innovation policy, new public sector management*

University technology transfer in the innovation systems

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Universities are crucial actors of the regionally or sectorally organized innovation systems. Successful utilization of the knowledge created by the academic sector is of utmost importance in the maintenance and development of the innovation systems. Throughout the world more and more organisations have been founded at universities not only for the business utilization of scientific results, but also for building new industrial relationships. The establishment of these organizations were necessary, since universities compete not just for the students, but also for finding and keeping industrial partners. By the shortening of the distances universities have to face global competition with other actors of the market.

While universities may act as generators and developer elements within the innovation systems, technology transfer offices operated by the universities can function as a tool for the realization of different activities. The aim of this study is to create a theoretical framework of academic technology transfer activities and their possible roles in the innovation systems.

Keywords: *technology transfer, university-industry relations, innovation systems*

The role of potential analysis and partnership in the utilization of early-stage research results

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The intellectual property market is dealing with the same challenge as marketing had in the second half of the last century, when the main task was no longer the manufacturing but the selling of products. This situation is particularly challenging for basic research stakeholders – especially universities. In our paper we shed light on the above situation as we analyze the opportunities and challenges universities face during their attempt to commercialize their intellectual property. As a theoretical framework for our investigation we have chosen the science-to-business (S2B) marketing. In our previous studies we developed a unique marketing mix model for contextualizing the general marketing approaches of S2B marketing. We have applied McCarthy's well known 4P marketing-mix model on one hand, and extended it with two additional factors on the other, thus we have developed a 6P marketing mix model based on McCarthy's 4P model. The two additional factors are Potential and Partnership.

Keywords: *innovation management, S2B marketing, technology transfer*

The role of R&D and technology transfer agreements in the European competition rules: permissible market distortion at the service of economic growth

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Growing international competition has brought about a new dilemma for Community legislation. Partial loosening of competition regulation could actively contribute to economic growth, while this shift of the regulation system would lead to distortions in the conditions of competition. The core task is to determine the manner and extent to which competition regulation should be reviewed; these changes should lead to an economic growth that overweights the negative effects of the allowed distortions to competition.

In our paper we examine how the R&D and technology transfer agreements between horizontally competing undertakings contribute to achieving this goal. To this end, it is essential to demonstrate the updated R&D and technology transfer block exemption regulations. The legal framework (that is, the two block exemption regulations) ensures the EU-level protection of competition while it provides legal certainty for the cooperating enterprises in the internal market of the EU. By introducing the block exemption regulations, the aim of policy makers was to spur economic growth as exempting the R&D and technology transfer agreements from the cartel ban enhances the competitiveness of undertakings and thus that of the EU as well. Sharing the R&D costs gives further impetus to this process.

On the other hand, in order to avoid the misuse of the exemptions, agreements, which contain hardcore restrictions, are prohibited. Competition regulation could be dedicated to economic stimulation only to the extent at which competition is not eliminated. The expansion of the above described function of competition regulation has to be substantially considered. The increased significance of economic approach in the regulation shows into this direction but evaluation of the block exemption regulations could also serve these objectives.

Keywords: *market distortion, block exemption, economic growth, R&D, technology transfer*

Evaluative framework for analyzing the potential for system innovation of sustainable innovations

Nikolett DEUTSCH

In recent decades, the investigation of the relationship between sustainable development and innovation became one of the main topics in the empirical and

theoretical researches regarding sustainable development. Simultaneously, passive innovations, end-of-pipe solutions, and pollution prevention methods have been replaced by sustainable innovations generating systemic changes. The goal of this paper is to highlight the role of system innovations in achieving sustainability, to methodise the different concepts regarding the changes of technological systems, and to present the recent analytical approaches serving the identification of system innovations.

Keywords: *sustainable development, system innovation, potential for system innovation*

Regional innovation policy and policy learning from the aspect of complex systems

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Increasing attention is paid to the complex systems approach in connection with the analysis of the innovation processes. Evolutionary economics, which is one of the most influential contemporary body of theorizing in this field, explicitly relies on this approach. We argue that regional innovation systems can be interpreted as complex adaptive systems, where interactive knowledge and information flows are of key importance.

This approach might provide useful consequences for policy makers intending to intervene into the operation of regional innovation systems. Policy makers must pay attention to the peculiarities of complex systems and the radical uncertainty stemming from them. In such a situation the role of innovation policy experts must be genuinely reinterpreted, because neither the accurate depiction of the “possible states of the world”, nor value-neutrality can be sustained. We argue that the so called “hybrid forums” may be useful in dealing with uncertainties (perhaps reducing them) and fostering policy learning

Keywords: *complex adaptive systems, regional innovation system, evolutionary economics, hybrid forums*

Means for open innovation: Living Lab?

Anita FÜZI

In the year 2003 a book by Professor Henry Chesbrough was published with the title “Open Innovation: The new imperative for creating and profiting from technology”. Open innovation is the use of purposive inflows and outflows of knowledge in order to accelerate internal innovation, and expand the markets for external use of

innovation, respectively. Despite of the fact that his book dealt mostly with large high-tech companies, the lessons of open innovation have been extended to the realm of SME as well.

One of the most important recent trends is integrating users into the innovation process where value is co-created. For that purpose, the use of Living Labs has emerged as a novel form of creating competitive advantages. The Living Lab collaboration is an open innovation environment in a real-life setting, in which user-driven innovation is fully integrated within the co-creation process of new services, products and societal infrastructures.

The paper therefore aims to clarify the theoretical background of open innovation and Living Labs. Furthermore, conclusions are drawn on the possibilities of small-and medium sized companies (SMEs) in Living Lab environments through the example of Botnia Living Lab.

Keywords: *open innovation, user-driven innovation, Living Lab*

On sectoral level organizability of pre-competitive innovation with regard to Moore's law

Imre HRONSZKY

The study investigates the story of the so called Moore's Law. It identifies this 'law' as recognition of the technological and economic importance of the exploitation of miniaturization, an overall technological paradigm in microelectronics. Moore's Law became a conscious self-fulfilling prediction that got a fundamental role in the organization of precompetitive innovation in this industrial sector. Organization of precompetitive innovation has been profoundly promoted by the repeated preparation of a global technology roadmap in semiconductor industry in the last nearly 15 years. The study assesses the reconstruction made by Hutcheson that Moore's Law's main importance is that it sets the pace of the precompetitive innovation efforts needed for that sector of industry. It also assesses the analysis Project Catrene made in 2011 on the necessary preconditions of roadmapping. The study emphasises that the formation of a precompetitive innovation community around roadmapping on sectoral level is a crucial factor in the success of the industrial sector, but in more complicated cases roadmapping efforts must be harmonized with scenario approach.

Keywords: *Moore's law, industrial technological roadmap, self-fulfilling predictions, pre-competitive research and innovation organised at sectoral level*

The “obstacle map” of academic spin-offs

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The research aims to explore the factors impeding Hungarian academic technology-transfer and spin-off processes. For this purpose, we have reviewed the international literature, and prepared and analysed twelve structured in-depth interviews in the course of research. As a result of international experiences and the primary research, an obstacle map has been outlined, which analyzes the spin-off process in the projection of the birth and marketization of the innovation, where the most important problems have been emphasized through focusing on four points. The four most important obstacles based on the research are: the researcher him/herself as a potential entrepreneur, improper institutional environment, surrounding business sphere and insufficient governmental contribution. The main message of the experiences is that only a complex and at the same time specific approach can be efficient in supporting and facilitating spin-off processes.

Keywords: academic spin-off, start-up, spin-off process

The role of enterprises in the Hungarian innovation system

János KISS

The study investigates the Hungarian innovation system based on firm-level data from “In Global Competition 2009” survey, which was organised by Competitive-ness Research Centre at Corvinus University of Budapest. The results show that large and foreign owned companies were the most innovative. Export had a positive impact on innovation. Companies were less open to external sources of innovation; intra-company knowledge sources played a more important role. Among the barriers of innovation, regulations and taxations were considered to be the most important.

Keywords: innovation system, Hungary, econometric analysis

The characteristics and the funding process of university spin-offs in the light of the international literature

Zsolt MAKRA

Due to the successes of the top universities in the USA and other developed countries, increased attention has been paid to university spin-off companies by policy makers and scientists worldwide. In Hungary the issue became timely as a

consequence of the 2004 innovation law. Present paper was prepared as theoretical underlying part of a comprehensive research project on Hungarian university spin-off companies, covering several universities. The paper aims to define university spin-offs and synthesize the diversified and often controversial definitions based on the literature. In addition, the study describes the spin-off process and the theories explaining it.

Keywords: *university spin-off company, university researcher, enterprise, research result*

Regional knowledge base from the aspect of the knowledge-intensive industries of Southern Great Plain

Zsófia VAS

Literature of innovation systems shows that different knowledge conditions, including knowledge base and its analytic, synthetic and symbolic type, are key factors for sectoral innovation activities and performance. Even for determining regional specialization it is required to map the specificities of regional industries. By identifying the dominant knowledge base of sectors and mapping the most relevant knowledge-intensive industries, we can reveal some specific features of the regions, and so the regional knowledge base.

The study attempts to analyze the regional knowledge base of the Southern Great Plain region on the level of its subregions, in the light of knowledge-intensive industries located in the region. It turns out that the regional knowledge base is dominated by the synthetic knowledge base, except for larger urban areas, where sectors with analytic and symbolic knowledge bases are also present.

Keywords: *regional knowledge base, knowledge-intensive industries, Southern Great Plain Region (Hungary)*