

The Barriers of knowledge transfer between knowledge exploration institutions and the economy

Dolores Modic
Urša Lamut¹³

Abstract

The paper's aim is an attempt to reflect on the barriers of transfer of knowledge between the so-called knowledge exploration actors in specific the higher education institutions and the economy as the knowledge exploitation actors in form of economic actors (explicitly firms).

In the paper we will initially present a short historical context of the (changing) role of the academic sphere and its deviation from the needs of the economy. We turn then to the status quo in knowledge transfer; firstly asking ourselves on the input from universities in terms of competence building and knowledge creation in accordance to the needs of the environment and secondly on the output side; the knowledge transfer from universities back to the economy especially in the light of intellectual property protection.

¹³ Dolores Modic, PhD candidate, Faculty of Applied Social Studies, Slovenia
Dolores.modic@gmail.com;

Urša Lamut, PhD candidate, Faculty of Applied Social Studies, Slovenia,
Lamut.ursa@gmail.com

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Introduction

The starting point of our paper is that there exists a gap between the so-called knowledge exploration sub-system (Asheim 2008), in specific the higher education institutions and the knowledge exploitation subsystem, that is the economy.

We have, as a result of the estranged relationship between higher education institutions and economy, encountered the following barriers on which we shall deliberate in our paper:

Firstly, the formation of knowledge in higher education institutions is not in "chord" with the needs of the economy.

Secondly, the creation of "new" professional knowledge for specific areas of work is based on the "tailor made" knowledge, increases the structural differences between higher education and the economic sphere.

And thirdly: the lack of efficient intellectual property protection is preventing a stronger cooperation and transfer of knowledge between formal institutions and the economy.

Hence in the paper we will initially present a short historical context of the (changing) role of the academic sphere and its deviation from the needs of the economy. We turn then to the status quo in knowledge transfer; firstly asking ourselves on the input from universities in terms of competence building and knowledge creation in accordance to the needs of the environment and secondly on the output side; the

knowledge transfer from universities back to the economy especially in the light of intellectual property regulations.

The empirical part is based on two different researches: firstly the depiction of status quo in the so-called academic and academy-economy patents and the licensing of patents by higher education institutions (HEI), and the second one is the research focused on the Dolenjska region and the relationship between HEI and the economic entities. The information gathered from both is viewed upon from the point of view of the above mentioned barriers and also especially from the intellectual property protection point of view, since this was identified as one of the most problematic issues of knowledge transfer between the HEI and the economy (Kos 2009; Cvelbar et al 2008).

Historical context of the gap between HEI and the economy

The gap between the output of the higher education sphere and needs of the economy was created by the very "birth" of the University, which represents the starting point of our problem. Thus the gap dates back to the middle Ages, when a large number of secular and ecclesiastical universities were founded. The emergence of universities and the need for greater and deeper knowledge - education was primarily affected by the economic development, alongside the strengthening of citizenry. Thus, the economic development also resulted in an expansion of the network of universities (Žlebničnik 1978). Despite the fact the universities sprouted on the basis of the needs of the economy, education was conducted in the form of reading lessons and disputations with exclusion of free debate and with a goal of transferring the theoretical knowledge. The gap between the output of the higher education sphere and needs of the economy was created by the very "birth" of the University.

Today's society, its economy and other activities are dependent on the quality of education of the population. Knowledge is no longer a result of development, but is a prerequisite for development and is becoming an important competitive value of the individual. Based on the aforementioned, the knowledge-based development could be identified as a new centre of power. Academic sphere can be attributed the role of a catalyst of development, with a strong educational and research function, which aims to improvement, namely more effective functioning of modern society. To attain the purpose, the academic sphere as a catalyst, its integration into society is essential. The integration into society in the context of knowing society's needs and working hand in hand with the society.

The key to better understand the directions and positions of the relationship between, academic sphere, namely the institutions of higher education and society, lay the understanding the relationship between them. It is traditionally based on the concept of academic sphere as a cultural institution and as a customer service. At the same time the academic sphere is facing the dilemma based (Kump 1999), on two alternatives: in case of refusal or failure to comply with the utilitarian requirements of society, namely with the failure to function as a customer service, the academic sphere will become / remain an end in itself. On the other hand, failure to retain the culture of impractical values of civilization will no longer deserve the title of "academia". Therefore Kump (ibid.) notes that the very maintaining of the balance of aforementioned alternatives represents a challenge and the only chance for survival of institutions of higher education / academic sphere. Its situation has changed fundamentally in recent decades. We could say that during the recent few decades it lost the unconditional trust of society, which it enjoyed in the first half century (Kump 1999). The

critiques on the lack of self-reflection and also a clear vision of the role of the academic sphere in the future, is increasing.

In addition, despite the enormous tendency to link in the society itself, a strong tendency to exclusivity can be observed. The exclusivity is a way for individuals or organizations wishing to protect their own specific characteristics (Majerhold 1999). One could say that one of the consequences of academic sphere's exclusivity is exactly the lack of its cooperation with companies, namely the economy. The academic sphere maintains its exclusivity in order to preserve its autonomy or, slightly overstated, its elite social status.

In most former communist / socialist countries institutions of higher education were state-run. The financing of higher education was in the domain of the state. State (public) financing caused the academic sphere to become complacent in terms of obtaining additional financial resources by carrying out research work not contracted by the state government.

But in the transition to a market economy a shift occurred. The result was that most of HEI's did not have the ability to cope with the changed reality of the economy, with its new needs and requirements. They often encountered the logic of academic self-sufficiency, which holds a similar position as to the state - as a source of funds, which should not interfere and to the substantive issues (Zgaga 1999, 71). Withdrawal of state, as (almost), the sole source of funding of institutions of higher education and advanced market economy required from HEI a descent from the pedestal of provider of knowledge. They had to focus on finding ways of cooperation with economy, identifying, designing, developing and providing the necessary skills for effective adaptation to the new reality and greater social cohesion.

The trend in Europe, is taking place in the context of the Bologna Process (Magna Charta Universitatum, the Lisbon Convention, Sorbonne Declaration, Bologna Declaration, Lisbon, Prague Communiqué, the Berlin Communiqué, the London and Bergen Communiqué). In countries with long tradition of strong national educational system, Bologna reform shattered the system of higher education, based on "hardcore" theoretical knowledge taught generally with an "ex-cathedra« approach and lack of practical work (Pinterič 2010). The Bologna reform also demanded that the new study programmes maximize the employability of graduates with the skills already obtained in the (bachelor) period of study. Compared to the old programmes, the Bologna study programmes should include a number of practical skills.

On the creation of »tailor made« knowledge as the increasing factor of the structural gap between heigher education ant the economy

The problem Nooteboom (1999), considers that different people and different organizations, have different knowledge on the basis of different experience, or as he puts it, yielding "cognitive distance" between them (ibid.). Such distance is both a problem for mutual understanding and agreement, and an opportunity for learning. Here, the challenge is to find optimal "cognitive distance", small enough to allow for understanding and collaboration, and large enough to generate novelty (Wuyts et al. 2005 and Nooteboom 2007) or in our case - formation and transfer of knowledge in cooperation between higher education and economy.

Rončević (2003) also notes that the knowledge accumulated through the learning process, does not save itself in people's minds, but rather in the

relationships that develop between individuals during the process of learning. After the knowledge is stored in the “cognitive space”, individuals or organizations differ in their ability to detect and to tap into this knowledge. The ability to detect key knowledge stored in the “cognitive distance” is, in our opinion, highly dependent upon the willingness of individuals (or organizations) to share their knowledge with others. That goes even more for the intensity of bonds and the degree of trust among individuals or organizations, which are the key elements of social capital.

One important attribute of social capital is that it can make other types of capital and their productive combination more efficient (Grootaert 1998). Social capital is an input into development process together with the other forms of capital. However it is also an output of this process – a feature it shares with intellectual capital (ibid.). Should this be translated into the language of social capital between higher education and economic sphere we could say that social capital could appear as an important component of (successful) cooperation in terms of creating social networks with optimal cognitive distance among key stakeholders in the process of knowledge creation and transfer. In contrast, lack of social capital results in cognitive distance that is too large and therefore impedes cooperation/communication between higher education and economy sphere in process of producing “in core” knowledge.

Social capital could be defined as an aggregate of actual or potential resources which are available through (sustained) networks with more or less institutionalized relationships. In this context, social networks are the source of social capital (Bourdieu 1986). For our discussion on the effective use of the optimal gap/cognitive distance between higher education and economic sphere in the context of the formation and exchange of knowledge, definition of Bourdieu social capital is

particularly important to highlight that: (1) in the process of knowledge transfer, the primary importance is existence of ties/relationship based on reciprocity among stakeholders and (2) creation and maintenance of ties between the stakeholders is not self-evident process but requires a certain amount of attention.

In search to answer “what impacts the willingness of individuals and/or organizations in the establishment of closer ties between higher education and economic sphere in the process of identification and formation of the relevant knowledge and by that the establishment of optimum distance between them?” Coleman (1988) findings arising from the theory of rational choice are relevant. Rational choice theory assumes that individual’s behaviour is based on personal interest with contributing benefits. Cooperation is subject to the personal interests of individuals and social capital is created as a public good and provides benefits to all individuals who are part of a specific structure/network. Thus, social capital is seen as a source. Relationships between individuals or groups - contributing to the establishment of obligations and expectations between individuals in networks with high level of trust and shared norms and values – are presented as source. In Coleman’s perspective social capital is thus formed on the basis of mutual cooperation in order to cater for individual interests. Furthermore, Putnam (2000) pointed out the importance of norms and values that can also help to improve the exploitation of gap and optimize knowledge transfer between higher education and economic sphere, by contributing to formation of (bridging) social capital.

Definitions of social capital anticipate a certain level of cooperativeness (Makarovič 2004: 137) between individuals, groups or organizations within the social structure. They also refer to a metaphorical "advantage" (for individuals/groups/organizations) in which social structure can create a competitive advantage in pursuing their goals

(Burt, 2001; Makarovič, 2004) – formation and dissemination of social relevant knowledge.

Shortly on intellectual property rights

Let us start by citing Thurow, who wrote: “Whatever the process for establishing clear, enforceable property rights, capitalism does not work unless who owns what is clear.... With the advent of the third industrial revolution, skills and knowledge become the only source of sustainable long term competitive advantage. Intellectual property lies in the centre of the modern company's economic success and failure.” (Thurow 1999, 116-117) Bearing that in mind we must add that “intellectual property rights are generated by creative activity, such as artistic expression, and research & development” (SIPR 2009, 1). Following Palmers definition the IPRs are “rights on ideal objects, which are distinguished from material substrata in which they are instantiated” (Palmer 1990, 818)

In this paper we are following the view that every IPR is building on previously gathered knowledge (Stiglitz 1999, 308) and the notion of non-linear creation of IP. The predominant view on intellectual property rights (IPR) is that they represent a monopoly over knowledge contained in them, also due to the fact that the majority of writing on IPR was done in the legal sphere, where a lot of times the literature has emphasized the negative role of the IPR rights; for example Cornish (Cornish 1999, 6) wrote, that »one characteristics shared by all types of IP to date is that the rights granted are essentially negative: they are rights to stop others doing certain things – rights in order to stop pirates, counterfeiters, imitators and even in some cases third persons who have independently reached the same ideas from exploiting them without the license of the right over«. However less authors have truly dealt with the topic of IPR

holistically, bearing in mind that intellectual property is marked by its multiple nature; firstly it is an independent law field, secondly they are private entrepreneurship rights, which gives them their economical nature and thirdly the very essence of the intellectual property rights demands their successful management... thus the intellectual property is definitely an interdisciplinary and fourthly its societal context must be considered. Less are those authors who interpret IPR in its various contexts and try to give a holistic view (one of such authors being for example Pretnar, 2002).

But therewith we must mark that the IPR does not in general allow the monopoly over information, since the majority of information is reachable for the other actors that would desire it. The latter is due to the fact that the IPR theory is based on the bipolar nature of IPR; one being the possibility to be the sole economical beneficiary of the IPR rights and the other one the IPR as a public good in accordance with the societal theory (see also for example Maskus 2000). Looking at the problematic from a public goods point of view entails that the IPR should also have both public goods characteristic: non-rivalious consumption and non-excludability. Stiglitz (1999) has said both applies to knowledge in a limited scope. For the non-rivalious consumption he cites Thomas Jefferson saying describing knowledge as “he who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening mine.” (Jefferson in Stiglitz 1999, 308). However saying there is no marginal cost to sharing IPR is though incorrect, since ensuring a marginal cost for the IPR holder is one of the key elements of the whole IPR system. Secondly, even Stiglitz as an exception to knowledge as unexcludable good, lists IPR; though breaking it down to different types of IPR (Stiglitz 1999, 309-310). But subsequently we must add that all IPR must and does contain a certain amount of information and knowledge to be released,

wherefrom the possibility for the other actors to use the knowledge contained in the IP as a basis for the creation of new knowledge is derived from.

Attempts to justify the patent system (as one of the types of IPR) can be based on three grounds (Sterckx 2006): (1) natural rights (this is how the copyright is still considered today (for e.g., in Slovenia), (2) distributive justice (which is mainly directed against so-called »free riders« in the theory of public goods), and (3) utilitarian, consequentialist (economic) arguments (saying that patents enhance innovativity). However Sterckx taxonomy has its imperfection; the theory of "free riders" is in fact a part of the distributive justice, since his justification of distributive justice coincides with the consequentialist arguments, thus partially relinquishing the need for three categories, whereby we consider distributive justice as advocating the allocation of equal material goods to all members of society and distributive justice as championing the giving of the benefits to those who are "fitted" or "in title" to receive them, rather than by distributing them equitably. But putting this aside, we shall follow "his" last justification (the consequentialist justification), which entails two arguments (ibidem):

(a) The incentive to invent and innovate argument: without the prospect of an exclusive right to use the invention, and hence a possibility of recouping the money invested in the development of the invention, too little inventing would be done. The patent system offers inventors an indispensable incentive.

(b) The incentive to disclose argument: the patent system encourages inventors to disclose their inventions instead of keeping them a secret. Thanks to the patent system, technological information is disseminated and this promotes technological progress, which in turn fosters economic growth.

The consequentialist justification, which, in order to be convincing must entail the following (Sterckx 2006): (i) that the patent system (and IPR system in general) encourages inventions and innovations, (ii) that no better alternative system exists to achieve this, and (iii) that the encouragement of inventions and innovations can itself be justified on consequentialist grounds. Moreover, if the patent system turns out to be the most suitable model, it must be shown that the advantages of this system outweigh its costs.

All three above mentioned elements are hard to prove and achieve. We could generally agree with the first one, if we argue that a) IP is (always) built on the commutation of previously gathered knowledge, b) that through IPR and the publication of therein knowledge and information the knowledge is disseminated, c) that there is sufficient incentive (economic etc.) for actors to develop further IPR, thus encouraging innovations and d) that knowledge is central to successful development (Stiglitz 1999, 308) and since the very essence of IPR is that of entailing knowledge, thus also IPR is contributing to development. The second one is more dubious, since the research (we shall return to this further on in the paper), shows that the companies use other mechanisms (such as trade secrets) very often. The third element is in a way unneeded, since it brings no further justification and only turns back to the starting point of Sterckx justification. However, generally speaking the research does show (we will also return to this point further on) that the advantages of the system do outweigh its costs.

As last in this segment of the paper, we would like to take a little detour and point out the opinion by Stallman (2004), who in contrast to current trends, warns that because of historical and other contextual elements of different types of IPR, the term »IPR« should not be used,

be we should rather speak of specific types of IPR (such as for example patents). There is also some more »drastic« opposition to patents and copyright, which dates back a long time, but modern opponents include authors like Rothbard, McElroy, Palmer, Lepage, Bouckaert, and Kinsella (see also Kinsella 2001).

The patents and licensing of IPR of higher education institutions in Slovenia

This part of the paper joins two different issues: firstly the issue of Intellectual property rights, with particularly focusing on academy patents and academy- industry patents, and secondly the licensing of patents by higher education institutions. However it is not always clear whether patents are an input for licenses or vice-versa. In fact, in many cases, patents are led only after a license is negotiated between an academic institution and the industry counterpart. Moreover, universities often consider patents outputs per se. Furthermore, licenses are not always backed by patents, as in the case of software technology. Finally, in Europe, the drawback of using invention disclosures also applies here, since the universities do not always have a record of the patents led by the researchers at their institution (Conti et Gaule 2010).

The transfer of knowledge from the universities undertakes a variety of forms: 1) through mentoring students' research, 2) through giving conference presentations, and, 3) through the (free) publication of ideas in refereed scientific publications, 4) through so-called university spin-offs etc. However these modalities are difficult to observe in terms of the transfer of knowledge from universities.

Thus there are several reasons why patent data has become especially important in the context of knowledge transfer from higher education institutions to economy: 1) the data in the patent applications is abundant, 2) the patents per se are expected to be commercially useful and 3) the data bases for patents make them publically available (Agrawal et Handerson 2001, 2).

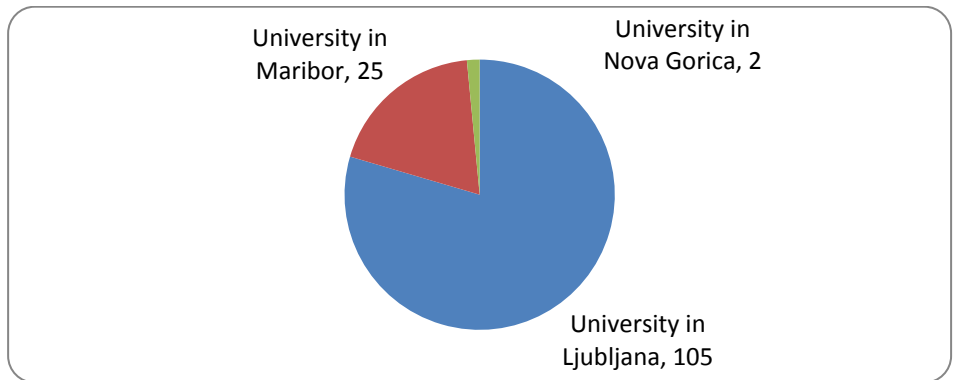
However we are also aware of the downsides of this approach: 1) in the industry-universities contacts in terms of transfer of knowledge the research shows that the prevalent are informal contacts and that contacts among firms outnumber those between economy and universities (Ostergaard 2008), 2) the collaborative forms of interaction, such as collaborative research, contract research and consulting, are seen by industry as more important and valuable than IP transfer, such as licensing (Parkmann et Walsh 2009), 3) only a small fraction of the faculty patent at all. The study by Agrawal et Handerson (2001) showed that on average, only about 10-20% of the faculties patent in any given year, and nearly half of the faculty in our sample never filed a patent during the 15-year period under investigation. In contrast, on average of 60% of the faculty publish in any given year and less than 3% never publish over the same period. Indeed, even amongst those faculty that do patent, our informants estimated patents were responsible for as little as 7% of the knowledge that was transferred from their labs to industry, a number very consistent with the Cohen et al finding that only about 11% of the information obtained from university research was transferred through patents (Agrawal et Handerson, 2001, p. 2).

The research on the university patents and university-industry patents is based on the online database of Slovenian Intellectual Property Office. We identify university patents as patents where at least one of the patents holders in the patent application is a university subject (meaning

either one of the Faculties or one of the Universities itself). As university-industry patents we see those university patents where at least one of the patent holders is a firm and the can be university subjects. Though the database includes patents by individual faculties as well of universities themselves for the past 15 years, we can see that university patents are scarce, since we can only identify 132 such patents in total (whereas there are around 200 patent applications per year in Slovenia). As "patents" we here acknowledge successful patent applications and are thus using the term patent as a synonym for successful patent applications.

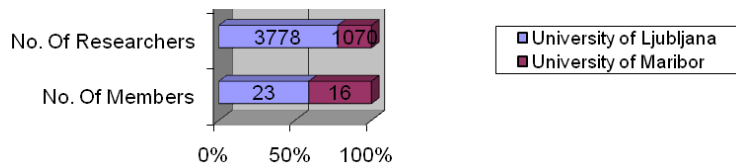
Among them the majority of university patents (80 %) belong to members of University of Ljubljana (UL) and to University of Ljubljana itself, which is understandable, since it is also the biggest university in Ljubljana.. University of Maribor (UM) entails for 19 % of all registered university patents, the much younger University of Nova Gorica and University of Primorska are however not significant (see Picture 1).

Picture 1: University patents



If we take now into account the size of patentees in the field of economy the size of universities (for the economy it was often showed that the size of the patentees matters, however for the patenting of the HEI this isn't so conclusive), we can see that deriving from the SICRIS research database University in Ljubljana currently has 3778 registered researchers and University of Maribor 1070 registered researchers (a more detailed comparison can be seen in Picture 2). The other two Universities (University of Nova Gorica and University of Primorska), also being considerably smaller; do not play any significant role and have been left out in the next comparison.

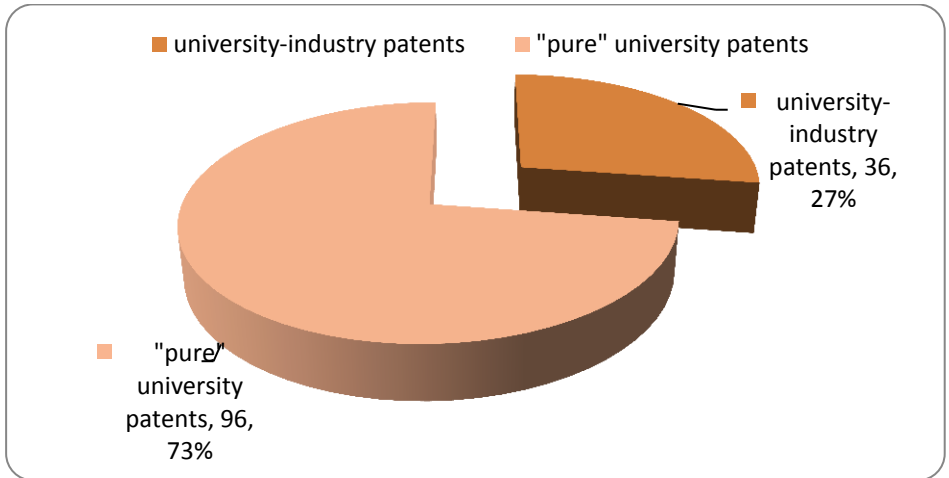
Picture 2: Comparison between UL and UM (derived from SICRIS research database)



If we look at the ratio of no. of patents to no. of researchers we can see that for University of Ljubljana this ratio is 0,0278 and for the University of Maribor 0,0233. Taking this into account we see that the comparison shows a very similar patents-researchers ratio, but the number has relatively small comparative value due to the different time spans of the data.

Among those patents the university-industry patents are not very often and the so-called “pure” university patents are more often, where the patent holder is (are) only university subject(s). Only approximately 30% of all university patents are university-industry patents.

Picture 3: University patents structure



Next we can see that it is the technical faculties who “produce” the most patents; in both cases the faculties of mechanical engineering (at both Faculty of Mechanical Engineering) and the faculties of electrical engineering (Faculty of Electrical Engineering at UL and Faculty of Electrical Engineering and Computer Science et UM) are very successful patentees, which is correspondent to research by Thursby and Kemp (2000 in Conti et Gaule 2010) which showed that institutions with a strong focus on engineering and life science tend to produce output that is more easily transferred to the industry sector, either because of its applied nature or because industry is interested in absorbing this output. However it is especially the Faculty of Pharmacy at UL that has the most stable relationship for patent applications with the pharmaceutical company (Lek, d.d.). We can see that universities are not inclined to so-

called “process patents”, nor do they give major emphasis on so-called “non-technological patents”, although we must add this is also a general trend in Slovenia.

The second part is devoted to the issues of licensing, which are a necessary companion of HEI patents, though there are those who also emphasize that sometimes the patents are a goal for themselves for the HEI. The data relies on the data by Srnovršnik (2010) and was gathered from 4 interviews with university deans and representatives of TTO's (technology transfer offices at Universities) at University of Ljubljana, University of Maribor and University of Primorska. However we can mark the following: 1) the information on licensing of HEI is incomplete, 2) the universities do not have strong general policies on licensing, 3) the relative youth of university TTOs and especially of internal law regulations and 4) taking into account the percentage of market derived incomes of Universities the similar structure as for patents can be seen.

University in Ljubljana has 12% of market derived incomes; however most of them are not made from licensing agreements but rather projects made specifically for certain companies. Among the faculties the Faculty of Engineering is the one making the most income from the industry and also in the area of university-industry contracts it is the engineering faculties that are in general taking the lead (again in Ljubljana together with the pharmaceutical). However, also the philosophical faculty and the economical faculty have a considerable amount of contracts with the economy. However this year the member faculties of UL have signed three license agreements, in all cases the owners of the firms have been so-called “university people”, which is consistent with the importance of the so-called “academic entrepreneurship (d'Este et al 2010). They were able to identify 5 major companies with which the faculties cooperate frequently (the other Slovenian pharmaceutical Krka was named among them), however the

relationships are dealt with many on the level of individual faculties. From internal legal acts the Rules on innovations have been named specifically.

At the University in Maribor they do not have a clear vision on the amount of cooperation between the faculties and corporations, since the university does not play any role in the contracts between them. It is the same faculties that are doing well in the area of patents that were named here again, together with the Faculty of Chemical Engineering. University of Ljubljana has made 8% (half less than UL) of its income on the market. The TTO office at the University was able to identify 7 companies with which they cooperate more steadily and among them again the Slovenian pharmaceutical Krka (in both cases (at UL and UM) the company Helios was also named).

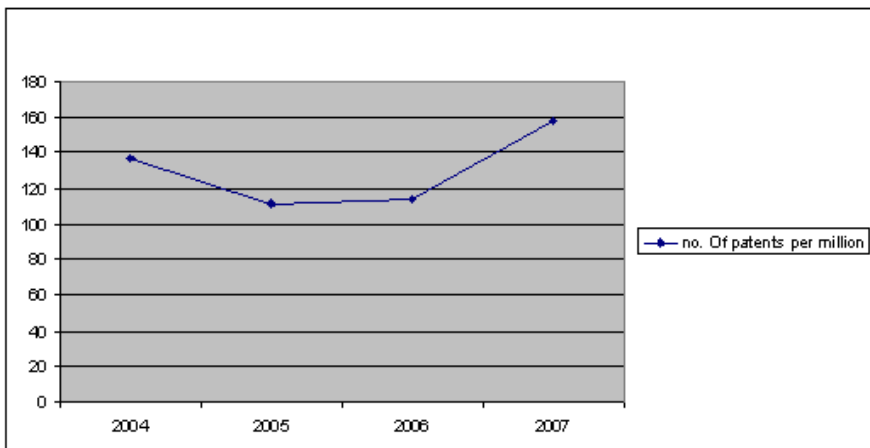
At the University of Primorska they are currently conducting 49 projects for the economy and have last year made 4% of its total income in the market. Due to prevalently non-technical university members, the fields of cooperation with the economy are a bit different: management, ICT technologies, ergonomics and kinesiology. The most active were the faculty of management and the university- research centre. They have put in focus the Rules on spin-offs and start-ups.

As one of the major problems the mostly poorly regulated area of intellectual rights at universities is put forward. The interviewers have also put in focus the problem of using university goods for private use in terms of innovations.

A regional focus: The Dolenjska region and the transfer of knowledge

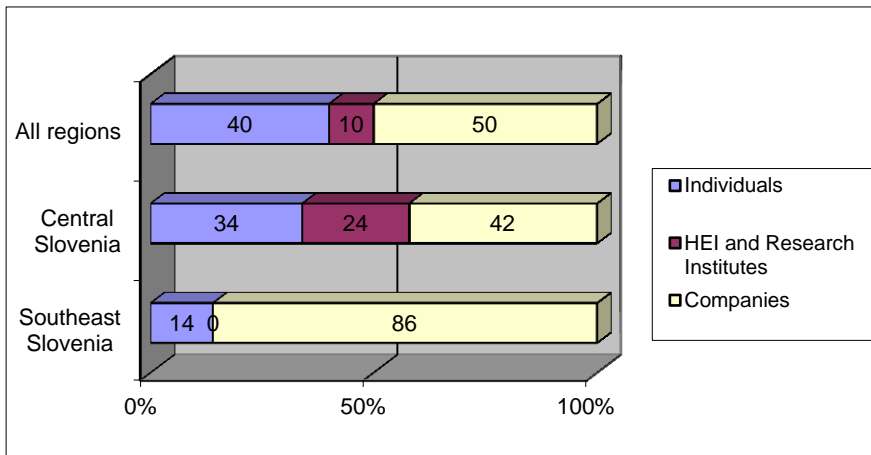
The conducted qualitative research was orientated in the socio-cultural and organizational aspects of knowledge transfer and technology in Southeast Slovenia (Dolenjska and Bela Krajina). In terms of patents the Southeast Slovenia is somewhere above the average of Slovenian regions for the years 2003-2007, whereby the average for Slovenian regions is 97,75 patents per million inhabitants and the Southeast average is 121 patents per million inhabitants or differently it is on the fourth place among the twelve Slovenian regions (Adam et al, 2010). Thereby one of the above already mentioned pharmaceutical companies is situated in this region (the pharmaceutical company Krka).

Picture 4: No. of patents per million inhabitants for Southeast Slovenia (2003-2007)



However the no. of HEI patentees is much below the average since such patents are unexisting (see also the below Picture).

Picture 5: Patents 2007 by regions (extracted from Adam et al, 2010)



The above comparison is done between the average values for all Slovene regions, the values for Central Slovenia, where the most patentees are situated for any given year and in the Southeast region. As we can see the HEI per se are here not direct patentees, therefore we must examine other modes of knowledge transfer in this region.

Thus, the particular emphasis of the above mentioned qualitative research was placed on the flow of knowledge between creative players in the region, their intensity of integration between them and to evaluate the region's potential for development and innovative breakthroughs. The aims of qualitative research were:

- to determine whether there is a flow of knowledge, in the sense that there is mutual cooperation and two-way communication between key players in the region;

- assess the capacity of regions for development and innovative breakthroughs and identification of key factors for innovation in the region;
- explore the integration of high-technology companies (hereinafter referred to as VTP) with other firms and supporting institutions (hereafter PI) in the region and the most frequent forms of these links;
- identify key (or innovative) players in the region and their characteristics;
- determine the intensity of contacts VTP and PI with local or regional authorities and representatives of civil society;
- seek the opinion of representatives of the VTP and PI on the role of countries in promoting regional development centres.

We decided to carry out focus group with key representatives of high-tech companies and supporting institutions in the region identified as potential actors in the development of region. We conducted one focus group with 7 representatives of the VTP and PI, and two semi-structured interviews with representatives of PI.

Research results

Representatives of the VTP and PI highlight disorderly development in various fields as the key factor, affecting the intensity of integration between companies and institutions within the region. Especially they highlight the uneven development of economy with the development of specific knowledge. In other words, the current status in the field of expertise is not adequate to meet the needs of the economic sphere. VTP representatives emphasized that the problem of lacking the specific knowledge is faced with on-line education (via the Internet). The advantages of such education is that the implementation and application of new knowledge (or products) in the region is much easier and less

time consuming. An indirect consequence of this is the active involvement of companies in developing higher education curricula.

However, in the region, an exemplary form of cooperation between the VTP and the PI emerged based on mutual exchange of knowledge and experience. The result of this cooperation was the establishment of the Faculty of Information Studies in the region. Similarly, cooperation between PI and economy is currently being done in the process of establishment of the Faculty of Industrial Engineering, where Faculty would act as a leading representative of the economic sphere – more specific - Revoz Company which is a part of Renault Company.

The primary objective of cooperation is to create a higher education program, which will first and foremost provide technical competences - diagnosed as a region deficit - and by that give the region a possibility to breakthrough with specific knowledge in to other regions and abroad. In addition, the cooperation between the VTP and PI will try to prevent the brain drain from the region and will try to create conditions for the recruitment of new, young and promising scholars from other regions or other countries. Respondents perceive, in the past two or three years, a greater degree of integration and knowledge transfer between companies (VTP) and PI. These positive trends are attributed to the region's encouraging environment, which they believe to be conducive to innovation and "clustering".

The respondents place the focus of regional development in the establishment of universities, described as "fundamental point" of theoretical and practical knowledge accumulation. The latter should provide a university the pillar position of new knowledge and innovation. While respondents note that for successful performance of university size is not important, but rather its capacity of adaptation to the environment ("elasticity"), constantly tracking the new knowledge and

focus on the use of new technologies and new technological skills. University needs to be closely embedded in the existing (regional) economy.

Respondents estimate that there is potential for development and innovative breakthrough in the region. The first tendency started in 2006 by changing the state policy of promoting the development of the region ... "state policy gave greater emphasis on the regional tendency, including the establishment of regions".

Respondents indicate as fundamental factor for regional breakthrough the occurrence of the key creative players. In particular, they highlighted the importance of synergy between the Chamber of Commerce Dolenjska and Bela Krajina (hereinafter GZDBK) and the University and Research Centre Novo mesto (hereinafter referred to as URS) and Development Centre (hereinafter referred to as RC).

The University and Research Centre Novo mesto, which (first) started to systematically integrate the existing (knowledge) institutions and one of the results, is the established Faculty of Information Studies. Whether, Chamber of Commerce Dolenjska and Bela Krajina, has a very good position to increase the integration of enterprises, entrepreneurs, large and small companies in the region.

Therefore, URS and GZDBK are perceived as key regional players, which have, according to respondents, the role of facilitator of knowledge transfer between existing institutions and the economy. URS and GZDBK accelerated the intensity of knowledge transfer and information flows, which are directly visible in the creation and accreditation of higher education programs in the region.

As a third innovative player in the region the respondents indicate a

strong economy, which "is known for its fields - automotive industry and pharmaceutical industry". These (two) large enterprises in the region promote (the emergence) "clustering".

In addition to the work of innovative actors, respondents note that clearly defined policy objectives of regional development are important as well. In this context "critical mass is needed and I think that in Dolenjska region this critical mass exist and that is why we know what we want".

As an inhibitory factors in the process of regional development prompted: (1) absence of creative integration of regional actors on the local level; (2) difficulty at knowledge transfer between the academic and economic sphere, whose origin is inadequate protection or even the vulnerability of patent/innovative ideas; (3) a small number of research organizations; (4) a clear regional development strategy, and (5) (even) more intense cooperation among key players.

Given the frequency of collaboration PI and VTP with representatives of local or regional authorities, the perception is ambivalent. PI representatives assess the cooperation with representatives of local authorities as good and regular. They notice that the representatives of local authorities perceive a general desire for cooperation especially in higher education field in order to prevent brain drain of young, promising scholars from the region. On the other hand, VTP representatives evaluate the cooperation with the local and regional authorities as critical and periodical.

Respondents involved in the study highlighted the key factors which inhibit cooperation between the PI, VTP and local authorities: (1) uneven perception among the "intellectuals" on the further regional

development and, consequently, (2) insufficient operation on the local level, and (3), low educational structure of employees in the Municipality of Novo Mesto.

In the Dolenjska region there are mechanisms for innovative breakthrough in the context of creative human resources or critical mass. This critical mass of highly educated individuals should form the core of regional development potential.

According to the gathered data we could argue that knowledge transfer between innovative actors in the region does occur and by that it reduces the leverage of uneven economic and academic sphere development. Consequently, this is weakening economy deficit needs of key - professional competencies.

It is not necessary to point out the fact that IPs are in the context of the knowledge society important particularly in terms of (transfer) knowledge mediation between academia as producer and high-technological companies as entities that are able to apply this knowledge into innovative products and/or services and are competitive in the labour market. Supportive environment, such as technology parks, universities, business incubators and local and regional development agencies provide high-technological companies institutional and infrastructure frame, and at the same time present (equally important) framework for flexible organizational approaches and for establishment of cooperative informal networks (Annual Report).

The conducted research points out to the problem of insufficient activity of local authorities in the context of regional development policy. Opportunities for regional innovative breakthrough would be enhanced if local authorities would play a better role as facilitator and

integrator...“if the mayor would be more ambitious /.../ the development would be significantly faster”.

Conclusion

In the researches in the field of transfer of knowledge between higher education institutions and the economy the notion of intellectual property does not play a positive role. The first two barriers furthermore contribute to the fact that the formation of cooperation between HEI and the economy through the mechanism of intellectual property is additionally difficult.

The research on university patents and licensing of universities shows that these are but scarce. Here the data for the research institutes is put aside and not taken into consideration, since the focus is only on HEI patenting directly. The perception for why this is so, is partly (beside taking into consideration also the first and the second barrier) the inadequately regulated area of intellectual rights, both on the state level and on the level of internal regulations.

The Dolenjska region research as a model regional research shows as one of the inhibitory factors “difficulty at knowledge transfer between the academic and economic sphere whose origin is inadequate protection or vulnerability of patent/innovative ideas”. This is consistent with the research by Kos (2009: 43) where insufficient intellectual property protection is seen as one of the crucial reasons for the lack of cooperation and lack of transfer of knowledge between HEI and the economy. To put this in focus we have to take into consideration also the general tendencies of the economy towards intellectual property rights. The research by Cvelbar et al (2008) shows that the companies see as the least effective way of protecting innovation patents (76% of

companies have not applied (or not been successful in applying) for any patent in the last three years), however as the most efficient way of protecting innovations trade secrets are seen. Additionally Slovenian companies do not so any market for licensing (which is concurring with the fact that 91% of Slovenian companies have not closed any contracts for product innovation and 95% none for product innovation (ibidem).

Taking into account also these general tendencies, we can see that the intellectual property system in Slovenia does not play its designated role, neither among companies nor in university-industry relationships. Practically all of the research shows the general doubtful inclination towards intellectual property rights as a mechanism for knowledge transfer between organizations in general and specifically between higher education institutions and the economy. However we suggest that in depth research on the reasons for this should be conducted in the future.

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Book Review: Hugh Heclo and the Immortality of Institutional Values (Shane Gunderson)¹⁴

Hugh Heclo's, *On Thinking Institutionally*, conjures up thoughts of fervent, high-mindedness for the study of institutions in society. The societal conditions and general malaise he diagnosis elicits a quest for public administration theorists and practitioners to act as agents for meaningful actions in our public sphere. First, I will explain what I mean when I say meaningful actions. Heclo expends tremendous effort to guide us into corrective behaviors for avoidance of soulless institutions and soulless institutional thinking. I argue that much of what Heclo describes as our views towards institutions is based on narcissistic behavior. The second part of this essay focuses on a presumed immortality within Heclo's description of the functions of institutions. Heclo argues for the importance of enduring immortality of institutional values. Hugh Heclo wants us to strive for institutional thinking as a process for delivery of goods which is important but delivering societal good is the sine qua non of our essence.

Meaningful Actions

I see his analysis of our condition as a malaise because of what Heclo views as our problematic tendencies to distrust institutions, problematic "display effects" that magnifies institutional failures, and nebulous distinctions between thinking about institutions and thinking institutionally. Human fulfillment and meaningfulness are consequences of thinking institutionally from within an institution, he says. He is

¹⁴ Adjunct Professor, Miami Dade College, Miami, Florida, Phone number: +1 954 684 7015. E-mail: sgunders@mdc.edu