

# HIGHER EDUCATION SPILLOVER - THE HIGHWAY TO REGIONAL SUCCESS

---

Štimac, Helena; Drvenkar, Nataša; Ham, Marija

Source / Izvornik: **Ekonomski vjesnik : Review of Contemporary Entrepreneurship, Business, and Economic Issues, 2015, 28, 567 - 580**

Journal article, Published version

Rad u časopisu, Objavljena verzija rada (izdavačev PDF)

Permanent link / Trajna poveznica: <https://um.nsk.hr/um:nbn:hr:145:444478>

Rights / Prava: [Attribution-NonCommercial-NoDerivatives 4.0 International/Imenovanje-Nekomercijalno-Bez prerada 4.0 međunarodna](#)

Download date / Datum preuzimanja: **2024-06-23**



Repository / Repozitorij:

[EFOS REPOSITORY - Repository of the Faculty of Economics in Osijek](#)



**Helena Štimac**

Josip Juraj Strossmayer University of Osijek  
Faculty of Economics in Osijek  
Trg Ljudevita Gaja 7,  
31000 Osijek, Croatia  
shelena@efos.hr  
Phone: +38531224400

**Marija Ham**

Josip Juraj Strossmayer  
University of Osijek  
Faculty of Economics in Osijek  
Trg Ljudevita Gaja 7,  
31000 Osijek, Croatia  
mham@efos.hr  
Phone: +38531224400

UDK: 378.014.3:332.1

Review article

Received: November 23, 2015

Accepted for publishing:  
December 16, 2015

**Nataša Drvenkar**

Josip Juraj Strossmayer University of Osijek  
Faculty of Economics in Osijek  
Trg Ljudevita Gaja 7,  
31000 Osijek, Croatia  
natasad@efos.hr  
Phone: +38531224400

# HIGHER EDUCATION SPILLOVER – THE HIGHWAY TO REGIONAL SUCCESS

## ABSTRACT

The aim of this paper is to answer how regional sector influences higher education. These regional differences generate interest in the study of economic growth and regional development. The crucial role in spillover process is played by higher education institutions as they are the promoters of research and knowledge that stems from it. Higher education institutions should be involved in the innovation system at regional level in order to create a stimulating and competitive environment for the future growth and development.

Additionally, the paper presents, compares and analyses contemporary phenomena related to the regional dimension of innovation and the role of higher education institutions in Croatia, Hungary and Slovenia. Besides teaching and research, higher education institutions must develop and emerge a “third mission” through research and technology commercialization, joint research projects, spin-off formation, mobility of researchers/teachers/students to industry and vice versa, and involvement in local and regional development projects as well. However, this is not only about knowledge spillover in some delimited sectors, but transforming and reinvigorating the whole society on regional level.

**Keywords:** Higher education, regional dimension of innovation, regional development

## 1. Introduction

In order to be competitive in “global knowledge economy”, countries should invest in their innovation systems on national and regional level. With parallel processes of globalization and localization, regional accessibility of knowledge and skills is becoming increasingly significant, and the agents of these processes are higher education institutions. Recent history was marked by greater focus of educational and scientific policy on national goals,

while the regional effect was completely neglected. Across the world there is growing dissatisfaction with ‘blueprint’ and ‘one size fits all’ development strategies which, particularly in the case of lagging regions, seem less able to deliver results than a few decades ago (Rodríguez-Pose, 2013: 6). The starting points of regional prosperity are regional industries, regional higher education institutions and their agents. North’s “Institutional Hypothesis” (see North, 1990; 1993) could be applied in this case: the economy, in this case regional, will grow

as far as the existing institutions are efficient. In the post-Keynesian era, regional and local institutions assume, 'an increasingly formative role in shaping economic activity' as part of a general shift from macro-economic regulation to a more decentralized regime of 'micro-socio-institutional regulation' (Martin, 2000: 91, in: Tomaney, 2014: 137). Local and regional institutions hence become much more than simple regulators of economic activity. They determine the level of activity and its efficiency (Rodríguez-Pose, 2013: 11). Jones (2001: 1186) emphasizes that the national scale is being challenged by the local and the regional scale as the breeding ground for regulatory experiments in the governance of economic development. Bringing together these claims, and often drawing empirical inspiration from growth regions such as Silicon Valley, Tuscany, Bavaria, Baden-Württemberg, and Emilia-Romagna, there is increasing evidence that a new regionalist orthodoxy is emerging (compare Keating, 1998; Lovering, 1999; Scott, 1998, in: Jones, 2001). During the last few decades, growth models have emphasized the importance of knowledge and research spillovers in increasing innovative activity and productivity (Riviera-Batiz & Romer, 1991; Grossman & Helpman, 1994). Stough & Nijkamp (2009) define knowledge spillover as diffusion or sharing of knowledge from where it is created or from one to another agent in society. The crucial role in this process is played by universities as they are promoters of research and knowledge that stems from them.

## 2. Higher education spillover and regional success

The economic effects of education, besides quantity and quality of educational output (internal efficiency), also depend on compatibility of educational production with the needs of economy and social services, regional and organizational arrangement of people with higher education, as well as the utilization of their work potentials in organizations where they are employed. Data on unemployment rate of university graduates, suboptimal regional arrangement of educated people, part of nonprofessional criteria in managing personnel policy when dealing with desirable work positions, and especially data on so called "brain drain" tell us of low level of utilization of high quality human resources

in economy and the society in general. This significantly decreases the economic efficiency of higher education and increases the economic instability (according to Pastuović, 2001: 67-73). It is believed that high-tech ventures derive significant benefits from localized knowledge spillovers emanating from the two common tasks performed by universities; i.e., basic research and human capital creation (Audretsch & Lehmann, 2005, in: Bathelt, Kogler & Munro, 2010). Fast-paced global competition and technological change also add significance to the linkage of firms to universities not only to discover knowledge but also to aid in industrialization (Bettis and Hitt, 1995; Etzkowitz & Leydesdorff, 1997; Hwang et al., 2003, in: Eom & Lee, 2010). Also, Casper (2013) emphasizes the importance of university researchers in knowledge spillover from university, but also the importance of university environment for developing knowledge flows.

However, according to Rothwell (1984: 161), certain regional "efforts" through innovation centres, higher education institutions and scientific parks, would have a positive innovations impact on the region if the basic preconditions were fulfilled – greater emphasis on industrial needs and a good local supply of technical knowledge, which is almost a primary issue in transitional countries such as Croatia.

Although many researches confirmed a positive connection between higher education institutions and entrepreneurial activities (see: Fritsch & Slavtchev, 2007; Audretsch & Lehmann, 2005; Andersson, Quigley & Wilhelmson, 2004), some researches have shown that this connection is not as crucial as it was thought, especially if it is „transitional economy“ and relevant „institutional unarrangement“ (see: Eom & Lee, 2010). The processes that transform an academic idea into a market-ready product or process innovation require resources and skills that most universities and academic entrepreneurs lack (Bathelt et al., 2010: 521). A research made by Bathelt, Kogler & Munro (2010: 531) surprisingly concludes that companies which had some kind of direct university support (University of Waterloo, Canada), describe that support as relatively limiting and not so significant, where most of "merits" are based on a strong localized connection by similar/supporting industries (see Table 1 and Appendix 1.). Although the research showed such results, they imply the necessity of transforming higher education institutions and study programs according to contemporary economic trends and

**Table 1** Typology of start-ups according to the character of university knowledge applied and co-localization of the founders

Character of university knowledge applied	Co-localization of start-up founders	
	Co-localized	Not co-localized
Generic, broad knowledge	Broad epistemic knowledge, largely based on the capabilities and focus of the local incubator university; limited potential for innovation.	Broad epistemic knowledge drawing from a wider set of experiences at different places; innovation benefits from broader access to generic knowledge pools.
Specific knowledge	Drawing on specific knowledge in the university's competencies, including tacit knowledge pools (particularly in dynamic technology fields).	Drawing from different specific knowledge pools (e.g., different research projects/specializations); large potential for innovation; access to different specialized regional knowledge pools.

market requirements.

Source: Bathelt, Kogler & Munro, 2010: 524

Examples of higher education helping to serve the needs of regional economies can be found in various countries in the past 150 years. However, these links have been sporadic rather than systematic. This has changed dramatically with recent expansion of higher education, particularly in the non-university sector, which in some cases has consciously aimed to address regional disparities and to widen access. Another important factor changing the context of regional development has been a switch towards more indigenous development, which emphasizes the building of skills, entrepreneurialism and innovation within regions. (OECD, 2007: 12). Nevertheless, a question arises – how to measure it and then, what is the purpose of the “measurement” results. Currently the productivity of scientific work at university is measured in the number of published articles in well-known journals, not taking into consideration the real value, impact and their contribution to socio-economic development. Putting the number of published articles as one of the key requirements for being promoted to a higher academic rank is encouraging “publishing just to publish” without encouraging publishing of research-based scholarly work that could contribute to social and economic development.

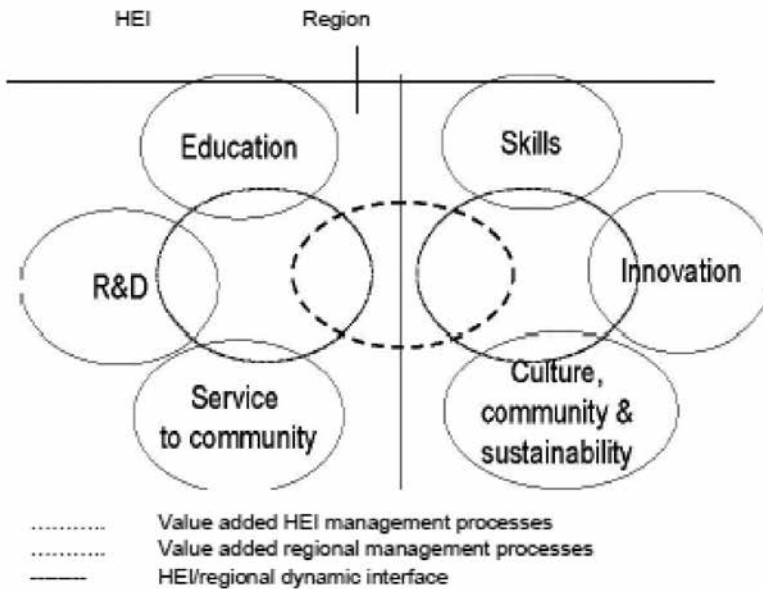
Higher education institutions need to contribute to regional economic development, be involved in the region and contribute to the development of new knowledge, opening of new work places and employment of the local population. Regions and

higher education institutions build partnerships on common interests which are firstly economic. Partnerships can be efficient in several domains (Gajić, 2010: 21):

- balancing supply and demand on the local labour market,
- advancement of regional management systems,
- increased generation of taxes and other income,
- increased investments in the private sector,
- increased human capital, keeping the educated workforce in the region, including e-learning (long distance learning),
- development of local cultural programs, social involvement, health care, tourism and so on.

Building on this analysis of drivers towards engagement, the conceptual framework underpinning the OECD study initially adopted a closed model of the interface between a region and a higher education institution (Figure 1). The left hand side of the diagram refers to the three conventionally identified roles of higher education institutions (teaching, research and service to the community). The right hand side summarizes the three key dimensions to regional development, namely innovation, skills and cultural and community cohesion including environmental sustainability. Just as successful regional development requires drawing together these strands so the higher education institutions' effective engagement with the region involves bringing together teaching, research and service in a coherent manner and establishing effective mechanisms for bridging the boundary between the higher education institution and the region (OECD, 2007a: 12).

Figure 1 Close model of higher education institutions/regions interface



Source: OECD, 2007: 40

### 3. Higher education – sources of new and transformed knowledge

*'More sophisticated company strategies require more highly skilled people, better information, improved infrastructure, better suppliers, more advanced research institutions, and stronger competitive pressures, among other things'*  
(Porter, 2003: 25).

Education has a pivotal role in economic and social progress of developed countries. The quality of education is becoming more important for those who, directly or indirectly, participate in it, or for those who use its services. The higher the level of society growth becomes, the more rigid are the demands for education quality (Fundu, 2008: 9-13). Economic and cultural globalization imposed new challenges for the higher education system. Higher education aspires to opening up to the international market so that higher education institutions could expand their knowledge and enable their "products" to be

come integrated in the European labour market smoothly.

At the most basic level, it is clear that having more education helped people to keep or change their jobs during the recession. For instance, between the start of the downturn in 2008 and 2010, overall unemployment rates jumped from an already high 8.8% to 12.5% for people without an upper secondary education, and from 4.9% to 7.6% for people with an upper secondary education, on average across OECD countries. By contrast, unemployment rates for people with higher education remained much lower, rising from 3.3% to 4.7% during this same period (OECD, 2012). OECD (2007) launched a review project of 14 regions across 12 countries and concluded that there are three different dimensions of overcoming barriers: 1) overcoming barriers to promoting innovation with regional focus (for example in France, Finland, Japan, Mexico and the United Kingdom national governments have taken steps to identify and support regional centres and innovation), 2) overcoming barriers to developing human capital within regions (helping local employers by responding to new skills requirements, improving the balance between labour market supply and demand, ensuring continuous professional development and lifelong learning) and 3) overcom-

ing barriers to promoting the social, cultural and environmental development of regions (growth of creative industry, quality of life and development environment).

Despite existing limitations, goals of higher education have grown. Autonomy of higher education institutions and improvement of framework conditions, as well as better cooperation with the private sector is encouraged. Emphasis is put on reinforcing the role of higher education in the regional innovation framework, as well as increasing the participation of higher education institutions in cluster-like initiatives. To be able to play their regional role, institutions of higher education must do more than simply educate and research – they must engage with others in their regions, provide opportunities for lifelong learning and contribute to the development of knowledge-intensive jobs which will enable graduates to find local employment and remain in their communities (OECD, 2007: 11). Countries of OECD are seeking to mobilise higher education in support of regional economic, social and cultural development. Initiative in supporting of innovation and competitiveness occurs in the concept of the triple-helix of university-industry-government relationships.

For a system to be of high quality, it is necessary to regularly monitor all the system components which could eventually affect the quality of the entire system and according to that make certain interventions in order to remove insufficient quality, or to improve it. Pastuović emphasizes (2001: 82) that development of higher education also implies the development of quality assurance system. The development of this system is an indicator of the development of higher education system itself. Therefore, it is necessary to evaluate the way of accepting and renewing the programs, their implementation, criteria for selection and advancement of faculty staff, sustainability of enrolment policy, criteria of student enrolment and the assessment of their achievements during studies, flexibility of the system with respect to the mobility of students and faculty staff, scientific productivity of the faculty staff, the criteria of financing the studies and scientific research projects, as well as all other internal and external efficiency factors. Evaluating all the aforementioned factors gives a clear insight into the quality of all individual components, and the quality of the entire system can be assessed. Such evaluation affects the regional sector. However, despite the

desire to improve, the problem occurs when individuals and the society oppose such changes, which is mostly the result of not informing the society of such changes on time.

The main demands for quality in higher education institutions are determined by changes and new tendencies, such as significant increase in higher education demand, international aspect of education, research projects, development of effective cooperation between higher education institutions and the economy, regionalization of knowledge, new demands in education, increasing number of students and institutions, more private institutions and so on. A greater focus on quality in higher education resulted from a range of competing factors. Among the most prominent were (Mertova, Webster, 2009: 141): 1) political control over higher education (exerted particularly by national governments), 2) growing number of students in higher education (including general changes in the student population and their expectations), and 3) financial control on the part of national governments (frequently interacting with the previous two factors).

#### **4. Comparative overview of the impact of regional sector on higher education**

Under a constant influence of political, cultural and economic changes on the global, national, as well as on the regional level, each economy and its business micro systems must develop their comparative advantages in order to keep and improve their competitive position on the market. Occasionally, it can be seen that some higher education institutions are withdrawing into their environment and are not using the possibilities given to them, such as cooperation with other higher education institutions for the purpose of student and faculty staff exchange in order to improve the educational program and increase their competitive ability on the higher education market.

Although many regions across the OECD are looking to institutions of higher education to contribute to their economic, social, cultural and environmental development, the capacity of the regions to “reach into” higher education is often constrained by a wide range of factors. At the most general level, the public governance of a territory operates within closed boundaries. Local and regional govern-

ments are responsible for administratively defined areas and these are usually linked to unambiguous political mandates. By contrast, research intensive universities cannot have a mandatory geographical sphere of influence; indeed such institutions operate at the local, regional, national and international scales. Some lower tier institutions do have a specific regional mandate but it is increasingly less likely to be enforced by national, regional and local governments as the institutions compete for students and contracts wherever these can be obtained. So the delimitation of its “region” is a challenge for many institutions of higher education (OECD, 2007a: 20).

The environment of a higher education system consists of all the components around it that have certain impact on its activity in the society and on the market. There are two types of environment factors (Pastuović, 2001: 85): general and specific ones. General factors are those affecting all the organizations (not just higher education institutions) and are not critical for their existence as such. For example, those are economic and cultural contexts. Specific factors are those directly affecting the ability of a higher education institution to attain its objective. Those are the state, the market and the international higher education area (the so-called triangle of power in the higher education system). Therefore, the efficiency of higher education depends on the characteristics of political and economic configuration of a certain country, as well as the connection of the higher education system to the international academic community. The function of these environmental factors is co-dependent. Decreasing the role of the state in regulating higher education not only facilitates but opens up a way to an active market. The flexibility of a certain country facilitates the connection between the national higher education system and the international higher education area.

The global environment is characterized by fast changes, intensive information flow and greater competition. High quality in education is the key factor in the “invisible” competition between higher education institutions. Hammond et al. (2004) state that the competition between the American, Australian and Asian higher education institutions has made European countries start planning their common education policy, by introducing the Bologna process in higher education.

A national education policy tends to cause turbulences and complexity for higher education institutions since they are asked to monitor a larger number of students despite the fact that the resources are not increasing. Also, there are structural changes in the higher education institutions, as well as the increase of efficiency in public sector (Kettunen, 2008: 4). A higher education institution should be oriented firstly on the quality of teaching and other activities (Umashankar, Dutta, 2007). Therefore, internal processes and structures are under pressure to adjust too many changes in the environment (“blueprint” and “one size fits all” development, Rodriguez-Pose, 2013: 6; “micro-socio-institutional regulation”, Martin, 2009: 91, in: Tomaney, 2014: 137). The relation between higher education and economy is extremely important. It directs educational and research activities and ensures additional funds. The nature and the intensity of these relations depend on the readiness and their competence for such mutual cooperation. If the economic growth is based on the strategy of a society that learns and understands economy, the economy will be a partner that is interested in higher education and ready to invest in applied and development research, and will create mutually beneficial cooperation. The quality map is a visual representation of how the environment is taken into account in strategic planning. It also provides an insight into the strategic planning, management process and internal processes and helps the managers, personnel, external evaluators and other stakeholders to see the “big picture” regarding the quality assurance system of the institution (see Appendix 2, Kettunen, 2008: 324).

This paper reflects on three different, but still geographically close countries – Croatia, Slovenia and Hungary. Croatia, Slovenia and Hungary face greater competition on the higher education market in Europe, which imposes a need for the local economy to constantly invest and strive to obtain and develop a knowledge society model, which has for some time now been seen as an imperative of modern survival and active participation on the global market. The ability to create, expand and utilize knowledge and information seems to be getting more important and is often considered as the most important factor in determining the economic growth and life quality improvement.

#### 4.1 Croatia

The Ministry of Science, Education and Sports manages administrative and other affairs referring to the preschool education system as well as primary and secondary education in Croatia. The Ministry also deals with other affairs referring to: higher education development; achieving national strategies and programs for higher education; ensuring and monitoring of financial and material conditions which enable the work of higher education institutions; preparation and introduction of reports about the work and evaluation of higher education institutions and study programs, etc. In the academic year 2012/13, about 150 000 students were enrolled in higher education institutions, and 35 000 graduated (MZOS, 2015). The development strategy of Croatian higher education should be based on the assessment of long term needs of national development, as well as on the comparison of national higher education system to the systems of advanced countries and development tendencies of the European higher education. The inclusion of Croatian higher education in the European higher education area assumes certain changes in managing higher education institutions and their education for the new way of functioning. Croatia has bilateral agreements on educational, scientific and technological level with 29 countries. In higher education there are scholarships for those who wish to study abroad, for foreigners who wish to study in Croatia, grants for studying in Croatian language and Croatian educational culture in other countries. On regional level, there are scholarships granted by companies that offer financial support to students under the condition that they do not repeat an academic year and that upon finishing their studies they work for a certain period in that company. Apart from that, banks offer student loans as an aid during studying and students are supposed to start paying them off upon graduation. A regional problem in Croatia is "brain drain", as well as unfavourable position of certain regions which can limit the demand due to financial limitations. There are indicators of change, although they are more of an exception than a rule (a newly started process of university spin-offs, student internships, guest lecturers etc.).

#### 4.2 Slovenia

The Ministry of Higher Education, Science and Technology establishes the educational policy. In 2004, Slovenian higher education institutions were introduced to public financing based on a formula and a lump-sum model. The Slovenian Ministry compiles yearly calculations based on enrolled and graduate student information, as well as on budget fund grants from the previous year (IRO, 2012: 37). In the academic year 2012/13, about 86 000 students were enrolled in higher education institutions, and 15 000 graduated (OECD.Stat).

In elementary and secondary education the Government is responsible for making decisions, creating legislations and development plans, while in higher education the Ministry makes decisions on the policy of higher education and prepares organizational and development plans. In Slovenia higher education institutions get their funds from third parties through "international research projects, researches connected to business sector and other market activities" (IRO, 2012: 33, according to CHEPS, 2010: 179). On the national level, the education sector has been within the scope of the Ministry of Higher Education, Science and Technology since 2006. Sectors within their scope are universities and individual higher education institutions, student buildings and educational libraries. Regional responsibility is mainly directed towards preschool and elementary education. Local communities and schools have limited influence on educational and financial structure in the education sector. All the existing tasks are being managed by the Ministry of Higher Education, Science and Technology, since there are no established regions in Slovenia and the new regional legislation is still in its development phase. Since the academic year 2008/2009, regional level (certain counties and larger cities) has taken up more responsibilities. Local levels (municipalities) have no legislative powers over higher education. On an institutional level and, according to the Constitution, higher education institutions are independent, which assures their full freedom to research, artistic expression and autonomous internal organization and work (Eurydice, 2009/10: 8, 9; Eurydice, 2008/2009: 33).



### 4.3 Hungary

The entire education policy is a priority in the Government which has a great influence in creating economic growth and social cohesion, as well as creating a competitive labour market and knowledge market. There are four pieces of legislation in Hungary in this specific area; public education (1993), vocational education (1993), adult education (2001) and higher education (2005). Each of these laws follows the main democratic principles and humanistic values comprised in the Hungarian Constitution. Horizontally, the responsibility is divided between the Ministry of Education and other Ministries (Ministry of Finance, Ministry of Interior, Ministry of Labour and Social Welfare). Vertically, administrative control is decentralized and the responsibility is divided between the central (national), local (regional) and institutional administration (Ministry of National Resources of Hungary, 2011). In the academic year 2012/13, about 340 000 students were enrolled in higher education institutions, and 60 000 graduated (OECD.Stat).

In Hungary, higher education institutions are allowed to keep and accumulate remaining funds, store their own income on a separate account, perform business activities with no obligation to pay taxes or fees (under certain conditions), sell their own real estate, form limited liability companies,

take over long-term commitments in public-private partnership programs, as well as government stock subscription. In other words, Hungarian higher education institutions are able to acquire income through a number of different financial strategies (IRO, 2012: 33). All the development programs in higher education are compliant to those in the EU, and they include support to lifelong learning, modernization of institutional network system, further development of knowledge which is in agreement with labour market demands, forming regional knowledge and innovation centres, developing research units, as well as developing programs focused on infrastructure. Managing and decision making, as well as responsibility, are divided into different levels which results in a rather complicated responsibility distribution system. There is no strong regional structure in management which could be geographically orientated. Therefore, a large part of the responsibility in higher education needs to be transferred onto the state level, which is difficult to do for several reasons. First, the managerial system on internal level is mostly inadequate regarding its responsibility. Second, there is a problem with harmonizing the goals of different faculties (i.e. individual institutions) which are parts of universities. Finally, local self-governments are numerous and heterogeneous, in terms of size and socio-economic criteria (Keczer, 2008).

**Table 2 Comparative overview of the impact of regional sector on HE**

	CROATIA	SLOVENIA	HUNGARY
+	<ul style="list-style-type: none"> <li>• scholarships granted by business entities (financial support)</li> <li>• student loans by banks</li> </ul>	<ul style="list-style-type: none"> <li>• Since 2008, the regional level (certain counties and larger cities) has taken up more responsibilities</li> </ul>	<ul style="list-style-type: none"> <li>• regional level is starting to have more responsibility</li> <li>• forming regional knowledge and innovation centres</li> </ul>
-	<ul style="list-style-type: none"> <li>• „brain drain”</li> <li>• unfavourable position of certain regions</li> </ul>	<ul style="list-style-type: none"> <li>• regional responsibility is mainly directed towards preschool and elementary education</li> <li>• new regional legislation is still in its development phase</li> </ul>	<ul style="list-style-type: none"> <li>• weak regional structure<sup>a</sup> responsibility in HE needs to be transferred onto the state level</li> </ul>
<ul style="list-style-type: none"> <li>• Indicators of change: university spin-offs, student internships, guest lecturers</li> <li>• Constant improvement of all processes is a necessity due to changes à better strategic planning of HE institutions</li> </ul>			

Source: Authors

Independent activities of higher education institutions in the regional environment are not possible in the long run. To create a high quality educational service, there is the need to connect higher education institutions to other organizations which are active in the same environment. All the regional protagonists can, with the help of higher education institutions, play a key role in creating a globally competitive country. There are many positive examples of synergy, but there is still room for improvement despite many barriers (see Table 2).

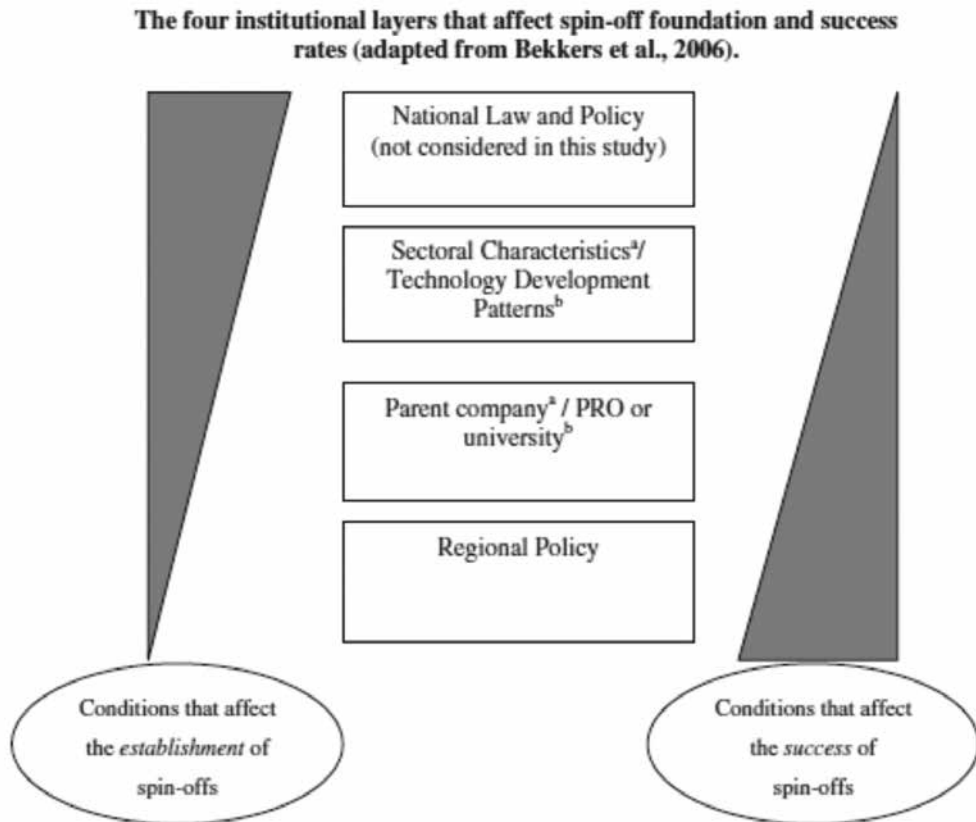
## 5. Conclusions

The Ministries of Higher Education in Croatia, Slovenia and Hungary, acting on the national level, are generally responsible for the education policy in their countries. Slovenia has no regional division, so all the responsibility is on the national level, while the new regional legislation is in the development phase. In Hungary, regional level is starting to have more responsibility, though a strong regional structure in the management is still missing. Constant improvement of all processes (operational and internal) is becoming a necessity due to changes in the environment, and the feedback between the aforementioned processes should be a result of better strategic planning of higher education institutions while assuring quality.

Finally, action lines include: 1) knowledge creation through research and its exploitation (spin outs, IPR, business advisory service), 2) knowledge transfer via teaching (work-based learning, graduate recruitment, professional development/continuing education), 3) cultural provision and campus development contributing to vibrant places that attract and retain creative people, 4) social inclusion embracing different communities (urban, rural, ethnic), 5) marketing the region nationally and internationally (via student recruitment, research links, alumni linkages, conference activity) and 6) monitoring “knock on” effect of HE in the region.

**APPENDIX 1.**

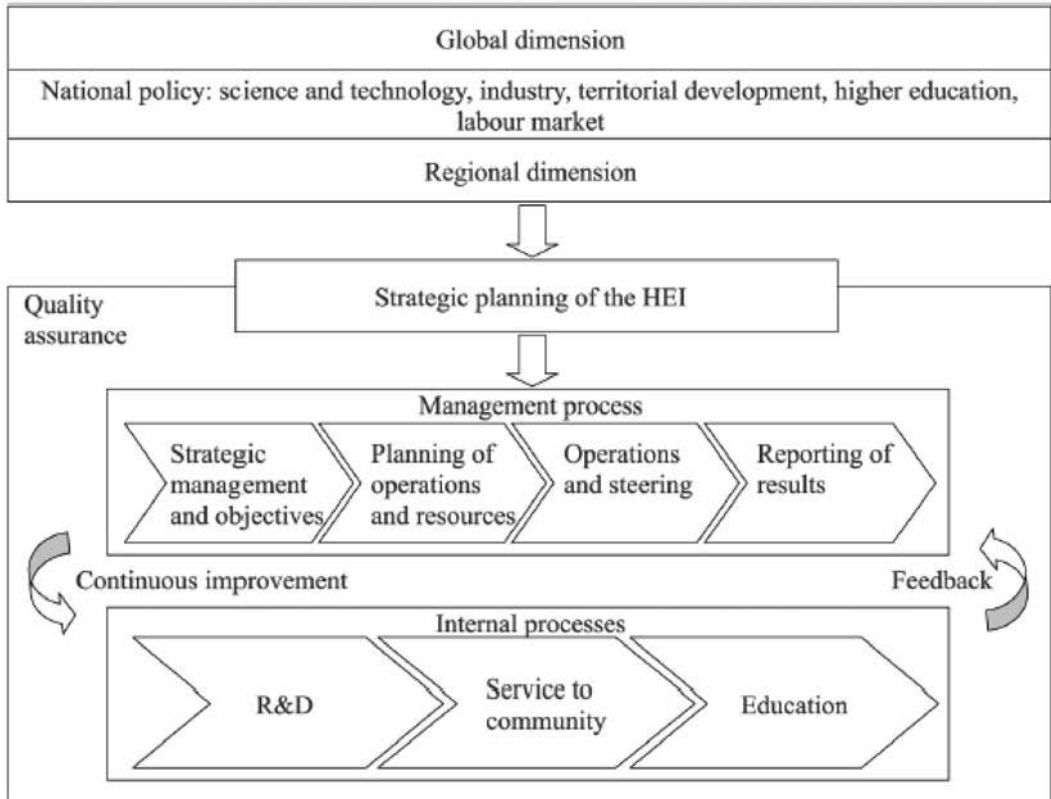
The four institutional layers that affect spin-off foundation and success rates (adapted from Bekkers et al., 2006). (a) In case of a corporate spin-off and (b) in case of a spin-off from a university or PRO (public research organization).



Source: Gilsing, Burg & Romme, 2010:14

**APPENDIX 2.**

Quality map of a higher education institution



Source: Kettunen, 2008: 324.

## REFERENCES

1. Andersson, R., Quigley, J. M., Wilhelmson, M. (2004), "University decentralization as regional policy: the Swedish experiment", *Journal of Economic Geography*, Vol. 4, No. 4, pp. 371-388.
2. Bathelt, H., Kogler, D., F., Munro, A. K. (2010), "A knowledge-based typology of university spin-offs in the context of regional economic development", *Technovation*, Vol. 30, No. 9-10, pp. 519-532.
3. Casper, S. (2013), "The spill-over theory reversed: The impact of regional economics on the commercialization of university science", *Research Policy*, Vol. 42, No. 8, pp. 1313-1324.
4. Eom, B.-Y., Lee, K. (2010), "Determinants of industry–academy linkages and, their impact on firm performance: The case of Korea as a latecomer in knowledge industrialization", *Research Policy*, Vol. 39, No. 5, pp. 625-639.
5. Eurydice (2008/09), *Organisation of the education system in Slovenia*, European Commission, EA-CEA.
6. Eurydice (2009/10), *Structures of Education and Training Systems in Europe, Slovenia*, European Commission, CEDEFOP.
7. Fritsch, M., Slavtchev, V. (2007), "Universities and innovation in space", *Industry and Innovation*, Vol. 14, No. 2, pp. 201-218.
8. Funda, D. (2008). *Potpuno upravljanje kvalitetom u obrazovanju*. Zagreb: Kigen.
9. Gajić, J. (2010), *Marketing strategija u visokom obrazovanju, doktorska disertacija*, Ekonomski fakultet u Beogradu, Beograd.
10. Gilsing, V., A., Van Burg, E., Romme, A. G. L. (2010), "Policy principles for the creation and success of corporate and academic spin-offs", *Technovation*, Vol. 30, No. 1, pp. 12-23.
11. Grossman, G. M., Helpman, E. (1994), "Endogenous Innovation in the Theory of Growth", *Journal of Economic Perspectives*, Vol. 8, No. 1, pp. 23-44.
12. Hammond, K., Harmon, H., Webster, R., Rayburn, M. (2004), "University strategic marketing activities and business school performance", *Marketing Intelligence and Planning*, Vol. 22, No. 7, pp. 732-741.
13. Institut za razvoj obrazovanja (2012), *Hrvatski sustav financiranja visokog obrazovanja u europskom kontekstu: komparativna studija*, Zagreb.
14. Jones, M. (2001), "The rise of the regional state in economic governance: 'partnerships for prosperity' or new scales of state power?", *Environment and Planning*, Vol. 33, No. 7, pp. 1185-1211.
15. Puukka, J., Marmolejo, F. (2008), "Higher Education Institutions and Regional Mission: Lessons Learnt from the OECD Review Project", *Higher Education Policy*, Vol. 21, No. June, pp. 217-244.
16. Keczer, G. (2008), "Weaknesses of the management system of traditional Hungarian universities", *Management & Marketing*, Vol. 1, No. 6, pp. 74-82.
17. Kettunen, J. (2008), "A conceptual framework to help evaluate the quality of institutional performance", *Quality Assurance in Education*, Vol. 16, No. 4, pp. 322-332.
18. Laredo, P. (2007), "Revisiting the third mission of universities: Toward a renewed categorization of university activities?" *Higher Education Policy*, Vol. 20, No. 4, pp. 441-456.
19. Mertova, P., Webster, L. (2009), "The academic voice in English and Czech higher education quality", *Quality Assurance in Education*, Vol. 17, No. 2, pp. 140-155.
20. Ministry of National Resources of Hungary, Available at: <http://www.nefmi.gov.hu> (Accessed on: May 03, 2011)

21. Ministarstvo znanosti, obrazovanja i sporta, Available at: <http://public.mzos.hr/Default.aspx?sec=1934> (Accessed on: August 26, 2015)
22. North, D., C. (1990). *Institutions, Institutional Change and Economic Performance*. New York: Cambridge University Press.
23. North, D. C. (1993), *The New Institutional Economics and Development*, Economic History, Econ-WPA, Available at: <http://www2.econ.iastate.edu/tesfatsi/NewInstE.North.pdf> (Accessed on: May 4, 2008)
24. OECD (2007), *Higher Education and Regions: Globally Competitive, Locally Engaged*.
25. OECD (2007a), *Globally Competitive, Locally Engaged Higher Education and Regions*, OECD/IMHE International Conference, September, Valencia, Spain.
26. OECD (2012), *Education at a Glance 2012: OECD Indicators*, OECD Publishing.
27. OECD.Stat, Available at: <http://stats.oecd.org/Index.aspx?DatasetCode=RGRADSTY#> (Accessed on: December 15, 2015)
28. Pastuović, N. (2001), *Odgoj i obrazovanje: Bijeli dokument o hrvatskom obrazovanju*, projekt: Strategija razvitka Republike Hrvatske, Hrvatska u 21. stoljeću, Vlada RH, Ured za strategiju razvitka RH, Zagreb.
29. Porter, M. E. (2003), "Building the microeconomic foundations of prosperity: findings from the micro-economic competitiveness index", in: *World Economic Forum, The Global Competitiveness Report 2002–2003*, World Economic Forum: Oxford University Press.
30. Riviera-Batiz, L. A., Romer, P. M. (1991), "Economic Integration and Endogenous Growth", NBER Working Paper No. 3528, *The quarterly Journal of Economics*, Vol. 106, No. 2, pp. 531-555.
31. Rodríguez-Pose, A. (2013), "Do institutions matter for regional development in the EU?" *Regional Studies*, Vol. 47, No. 7, pp. 1034-1047, Available at: [ec.europa.eu/dgs/.../13\\_paper\\_rodriguez\\_pose.pdf](http://ec.europa.eu/dgs/.../13_paper_rodriguez_pose.pdf) (Accessed on: September 7, 2015)
32. Rothwell, R. (1984), "Creating a Regional Innovation-Oriented Infrastructure: The Role of Public Procurement", *Annals of Public and Cooperative Economics*, Vol. 55, No. 2, pp. 159-172.
33. Stough, R., Nijkamp, P. (2009), "Knowledge spillovers, entrepreneurship and economic development", *The Annals of Regional Science*, Vol. 43, No. 4, pp. 835-838.
34. Tomaney, J. (2014), "Region and place I: Institutions, *Progress in Human Geography*", Vol. 38, No. 1, pp. 131-140.
35. Tsiakkios, A., Pashiardis, P. (2002), "Strategic planning and education: The case of Cyprus", *International Journal of Educational Management*, Vol. 16, No. 1, pp. 6-17.
36. Umashankar, V., Dutta, K. (2007), "Balanced Score card in managing higher education institutions: An Indian perspective", *International Journal of Educational Management*, Vol. 21, No. 1, pp. 54-67.

Helena Štimac  
Nataša Drvenkar  
Marija Ham

## **RAZVOJ VISOKOGA OBRAZOVANJA – PUT K REGIONALNOME USPJEHU**

### **SAŽETAK**

Cilj je rada utvrditi na koji način regionalni sektor utječe na visokoškolsko obrazovanje. Upravo regionalne razlike bude interes u proučavanju gospodarskoga rasta i regionalnoga razvoja. Ključnu ulogu u spillover procesu imaju visokoškolske institucije kao što su promotori istraživanja i znanja koje proizlaze iz njih. Visokoškolske institucije trebaju biti uključene u inovacijski sustav na regionalnoj razini u cilju stvaranja poticajnoga okruženja i konkurentnosti za budući rast i razvoj.

U radu se prezentiraju, uspoređuju i analiziraju suvremene pojave vezane uz regionalnu dimenziju inovacije i ulogu institucija visokoškolskoga obrazovanja u Hrvatskoj, Mađarskoj i Sloveniji. Osim nastavne i istraživačke djelatnosti, visokoškolske institucije trebaju razvijati „treću misiju“ kroz istraživanje i tehnologiju, zajedničke istraživačke projekte, spin-off formacije, mobilnosti istraživača / nastavnika / studenata, te sudjelovanje u razvoju lokalnih i regionalnih projekata. Međutim, ne radi se samo o prelijevanju znanja u nekim ograničavajućim područjima, već preobrazbi cijeloga društva na regionalnoj razini.

**Ključne riječi:** visokoškolsko obrazovanje, regionalni razvoj, Hrvatska, Slovenija, Mađarska