THE REGIONAL ENGAGEMENT OF MID-RANGE UNIVERSITIES IN CENTRAL & EASTERN EUROPE – SUSTAINABLE UNIVERSITY STRATEGIES IN THE ERA OF POST-MASS EDUCATION

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INTRODUCTION

Modern universities are viewed as the core of the knowledge base, acting as key elements of innovation systems, supporting science and innovation-based regional growth (Huggins & Kitagawa 2009). The so-called regional engagement of universities has been developed through an evolutionary process during the last 50 years. Traditionally, universities primarily focused on teaching and, to some extent, research, while university education was elite education. In many European countries, due to the gradual expansion of the higher education sector, the appearance of mass education and lifelong learning, and the declining share of grants provided by the state in the 1970's and 1980's, competition between the universities has become stronger, and they have been forced to perform their research activities on a profit-oriented basis. Universities have had to seek alternative sources of funding from business, industry, civil society and non-national state actors (Harloe & Perry, 2004). Also, public funding became increasingly competitive funding, and research activities often require public-private partnership. This is called the "entrepreneurial turn", or the servicing mission of universities (Tjedvoll, 1997; Inman & Schuetze, 2010).

Later, in addition to teaching and research universities started to adapt a third mission or developmental role, which can be described as "community service" mainly by the US literature, and "regional engagement" in Europe (Holland, 2001), "regional innovation organisation" or "academic entrepreneurialism" (OECD, 1999).

The university engagement literature, while accepting that universities may well undertake knowledge-generative activities, proposes that they adopt a broader, developmental focus on adapting their core functions of teaching and research, as well

as community service, to address regional needs (OECD 1999; Chatterton & Goddard 2000). With regard to human capital formation, the university engagement literature focuses on the importance of regionally-focused teaching (Chatterton & Goddard, 2000), which is manifested in a stronger focus on regional student recruitment and graduate retention; the development of programmes that address skills required by regional industries, particularly, small and medium-sized entreprises; and the localisation of learning processes, for example, through workplace-based learning and regional projects.

This third (developmental and engagement) mission is a somewhat indefinite concept, which refers to the economic development role motivated by the social responsibility of the institutions. According to Harloe and Perry (2004), the third role of universities in relation to sub-national (EU regions) economies and societies has been widely justified in terms of the development of the knowledge economy and the significance of the regions in economic development. This "regionalization of the economy" strengthens the links between the universities and the clusters of firms and regionally-based supply chains of small and medium-sized firms (Gunasekara, 2004). Knowledge and innovation have become increasingly important sources of economic development, and there is a pressure from government, businesses and communities for universities to align their core functions with regional needs (Chatterton & Goddard, 2000).

Huggins and Kitagawa (2009) argue that although universities emphasize their international orientation, they are embedded in their region and add to the area's economic and social strength through e.g. preserving local jobs, diversifying the local economy and attracting inward investors. Among many others, these authors state that economic development and the welfare of regions can be enhanced through universities' various engagement with the local economy, including research, infrastructure development, education, effective industry–university partnerships, technological innovation and community development.

This paper tries to adapt the models of universities' regional engagement in the case of a peripheral border region in Central and Eastern Europe, the South Transdanubia Region in Hungary. Although the study applies the concept of mid-range university to Central and Eastern Europe, the term of mid-ranged universities was borrowed from the study by Wright et al. (2009), which is focused on mid-range universities and their links with industry in British, Belgian, German and Swedish regions. In

the UK, for example, mid-range universities are defined as all universities excepting top universities and new (post-1992) universities. For example, the sample of Wright et al. (2008) included universities teaching between 8 thousand and 33 thousand students and employing between 700 and 2,500 full-time researchers. However, in the UK and other European countries there are many first-ranked universities located in non-metropolitan regions, which is not the case in Central and Eastern Europe. As the consequence of a spatial concentration of top universities in Central and Eastern European countries almost exclusively in metropolitan areas, mid-range universities are most often located in non-metropolitan regions (Gál and Ptáček, 2011).

The article examines to what extent regional, mid-range universities may enhance economic development in a lagging area and to what extent European models of the universities' third role may be relevant in this particular region. The hypothesis is that universities' developmental role is much weaker in peripheral regions where mostly mid-range universities are present, and the traditional models designed for first-ranked universities located in prosperous economic environment are not directly applicable due to e.g. the different sectoral structure of the economy and the different nature of the knowledge supply and demand (Gál and Zsibók, 2011).

The paper is structured as follows. In the next section, we briefly summarize the results of the literature concerning the economic impact of the universities and the methods of the quantitative measurement. Then, the paper presents the relevant theoretical considerations about the developmental role of universities including the traditional theories, the triple helix model and its variants and the regional engagement literature. The following section focuses on the specificities of the mid-range, peripheral universities, which have similar characteristics to those of South Transdanubia. After it, case studies are presented from the region, which may reveal the position of the universities in the system of regional and cross-border development. Finally, some concluding considerations are included in the last section.

UNIVERSITY ENGAGEMENT AND THE DEVELOPMENTAL ROLE OF UNIVERSITIES IN THE REGIONS

The literature on the "engaged university" (OECD 1999; Holland 2001; Chatterton & Goddard 2000) also focuses on the third role of universities in regional development, but it differs from the triple helix model in its emphasis on the responses of universities that adopted a stronger regional focus in their teaching and research missions. The

evolution of the engaged universities ran parallelly with the regionalization of the economy, or "the rise of the regions" which means that the salience of the regional scale increases and the regulatory capacity of the nation-state declines (Arbo & Benneworth, 2007). Essentially, universities' regional engagement means meeting the various needs of the modern client population, such as flexible structures for lifelong learning created by changing skill demands, more locally based education as public maintenance support for students declines, greater links between research and teaching, and more engagement with the end users of research (Chatterton & Goddard, 2000). Also, regional institutions including universities have gained more and more importance in the governance of the regional economy; therefore, universities as important parts of the regional networks have become more embedded in their regional environment.

The engaged university approach encompasses a range of mechanisms by which universities engage with their regions. The literature on the responsive university places less emphasis on academic entrepreneurialism, compared with the triple helix model, and more on community service. Here, community service means that the university is a community-based institution serving the needs of the society in a local area or region (Chatterton & Goddard, 2000). Unlike in the US, European higher education institutions are highly dependent on state support. However, from the point of view of their regions, they function as autonomous institutions and have control over the nature of teaching and research, since they are under national regulations and raise the majority of their funding from national sources. Therefore, regional engagement is not inherent to these institutions. There is an external pressure from government, businesses and communities for universities to align their core functions with regional needs. Universities also need to diversify sources of funding due to the rising relative costs of education, the intensifying competition for students and research contracts in conjunction with fiscal and demographic pressures, in order to maintain their academic standing and in some cases, to even survive. Taking a specific approach, OECD (1999) as well as Srinivas and Viljamaa (2008) analysed the process and motives of becoming an engaged university in the context of institutional change and institutional interactions.

University engagement can incorporate several activities. Together with the shift of the higher education sector from elite education to mass education and the prevalence of lifelong learning, there is a requirement from universities to educate

graduates in compliance with the needs of the regional labour market. This means that universities provide an interface between graduates and the labour market in their region. According to Chatterton and Goddard (2000), engaged universities provide flexible structures for lifelong learning created by changing skill demands; and more locally-based education as public maintenance support for student declines.

In the field of research, universities' engagement means greater links between research and teaching; and more engagement with the end users of research, e.g. in the form of regional research networks and joint research with participants from the academia and the industry (Chatterton & Goddard, 2000). Since university researches are conducted mainly in international academic networks, universities are able to channel the international knowledge accumulated to regional users. A considerable part of the literature, e.g. Varga (2009) build on the notion that knowledge generation becomes localized and agglomeration effects are crucial for the spillover effects to work. Evidence proves (see e.g. Drucker & Goldstein, 2007) the importance of proximity in supporting university–industry joint research efforts and other collaborations.

Universities engage with their regions not only in the fields of education and research, but also in regional institutions and governance systems. This is the consequence of the previously mentioned phenomenon that the regionalization of the state activity has been on the increase in Europe, and administrative and political decisions are increasingly made at the regional level (Chatterton & Goddard 2000). For this reason, institutional capacities have to be built and extended at the sub-national level and sub-national policy networks have to be created. As important regional actors, universities are part of these governance networks (see Arbo & Benneworth, 2007)

In addition, the community service of the universities often takes the form of developing the social and cultural infrastructure of the region in accordance with the specific needs of university students and academics.

Arbo and Benneworth (2007) review the numerous aspects through which higher education institutions are embedded in their regions. These are primarily non-economic aspects including regional policy, national and regional innovation systems, human capital development and governance systems. They concentrate on the numerous interfaces through which the university and its region may be linked.

The impact of local universities is not restricted to the technical sphere, but may spread into wider social and economic effects on their region. Commitment to social and organizational innovation is gaining more and more importance as main

barriers emerge from the social sides even if universities and regions try to introduce adopted technologies. Social and organizational innovation means in wider context the generation and implementation of new ideas and creativity in order to overcome the social barriers of innovation and it requires ongoing social interactions (Mumord – Moertl, 2003). Innovators face many social and managerial barriers, which inhibit innovations. Among others, the inadequate funding, risk avoidance, incorrect measures and forecasts, lack of partnerships and deficiencies in collaboration are the most important social and managerial constraints. Social innovations facilitate the formation of new institutions, networks and building up social capital through collective learning processes (Kitagawa, 2004).

MID-RANGE UNIVERSITIES IN PERIPHERAL REGIONS

Many of the empirical studies on universities' regional developmental role and economic impact derive their findings from investigating large, world-class research universities located in highly-developed economic environment. Nevertheless, Wright et al. (2008) argue that those findings are not necessarily relevant for all the universities, especially for mid-range universities. The main features of the mid-range, regional universities are that they are located in secondary cities where the regional demand for innovation is moderate, the density of contacts are much lower and possible spillover effects emerge more sparsely; they may not possess a base of world-class research; academics work in a smaller local scientific community in which they interact with the industry; and the creation of spin-off companies is different in its nature (Wright et al., 2008).

According to Gál and Ptáček (2011), the model of university engagement can be adopted by those mid-range universities in the less developed East European regions, which do not have the critical mass to engage in world-class scientific research, but instead *these universities* can focus on other than high-technology innovation. For the less developed, reindustrializing Central and Eastern European regions with substantial human capital resources, benefiting from the relocation of European industry but not yet fully developed knowledge creation and transfer capacities, this special situation forces mid-range universities to take on new roles in contrast with other countries/regions where university–state–industry–citizen relations have perhaps had longer time frames to evolve. This new role means a stronger regional engagement in medium-tech innovations and in social and organizational innovation.

In their paper, Huggins and Johnston (2009) compared the economic impact of universities of different types, and they found that there are significant differences in the wealth generated by universities according to regional location and the type of institution. According to their results, universities in more competitive regions are generally more productive than those located in less competitive regions, and more traditional universities are generally more productive than newer ones in the UK. Furthermore, the overall economic and innovation performance of regions in the UK is generally inversely related to their dependence on the universities located within their boundaries. This means that weaker regions tend to be more dependent on their universities for income and innovation, but often these universities underperform in comparison with similar institutions in more competitive regions. Although knowledge commercialization activity might be a source of productivity advantage for universities, markets for knowledge in less competitive regions appear to be weak on the demand side. Huggins and Johnston (2009) emphasize that the regional environment may also influence the actions of institutions, since a relatively strong knowledge-generating university in a relatively weak region may have a greater propensity to engage with firms in other regions. In weak regions the private economy's strength may be insufficient and small and medium-sized entreprises may be unable to exploit the benefits of the engagement with the universities. In the long run this may result in a leakage of knowledge from the home region, which further deepens the disparities in regional competitiveness.

Benneworth and Hospers (2007) focus on how peripheral regions—which are functionally distant from core economic activities—can reposition themselves in the knowledge economy. They argue that such regions are internally fragmented, which reduces their capacity to attract and embed external investment to reduce this distance, and upgrade their status among other regions within a technical division of labour. In regions with sub-optimal innovation systems, it is very hard to lay down the foundations of a sustainable local economic growth. According to Benneworth and Hospers (2007), a governance failure is in the root of this problem, namely the networking deficiencies. They list a range of internal and external barriers that less-favoured regions face when building local networks, which exploit the knowledge spillovers of external investments. Internal barriers include a lack of local institutional capacity, a lack of critical mass or substantive outcome, the lack of entrepreneurial resources, and a mismatch between the science base and the knowledge users.

External barriers to building and integrating local networks are the unfavourable economic specialization (to low-tech industries), externally imposed barriers to local governance integration, antipathy by external firm owners to local innovation, and poor external image discouraging potential investors.

UNIVERSITY ENGAGEMENT IN CENTRAL AND EASTERN EUROPE

Limits of economic impact of universities in Central and Eastern Europe

There is a substantial spatial concentration of top universities almost exclusively in metropolitan areas in the Central and Eastern European countries. Mid-range universities are most often located in non-metropolitan regions or to put it in another way, most of the universities outside the capital cities can be classified as mid-range, where the R&D potential and the "density of contacts" are much lower and possible spillover effects emerge more sparsely. For this very reason, mid-range universities represent the keystones of regional innovation systems and are often crucial parts of regional innovation strategies (Gál & Ptáček, 2011). During the transition in the 1990's universities were mostly facing the pressure of the state to increase their educational role. The system of universities' financing in this decade did not motivate them to search for new contacts and collaboration with industry and it was much easier to survive through the rising numbers of students.

The gradual "marketization" of the higher education sector started after 2000 as a result of several factors. In general, it was the recognition of knowledge as a source of economic growth. In the process of the marketization, universities started to use standard tools borrowed from Western Europe, but the result could not be the same because of different history and position of universities in the regional or national innovation systems. EU accession and the possibility to use EU development funds (such as cohesion funds) for building knowledge infrastructure induced an active approach from the side of universities. The establishment of the supporting innovation infrastructure (scientific parks, scientific incubators) was further developed at the universities thanks to the role of intermediaries (mostly technology transfer offices or R&D services) which focused, on the one hand, on the building of ties with industry and, on the other hand, on gaining EU funds for infrastructure building. In that period, the trend of incoming foreign direct investments shifted from the low-paid routine labour towards investments requiring a skilled and university educated labour force. In this sense multinational companies have a pioneering role in the

knowledge spillover from universities to industry (Ptáček, 2009). The regional impact of these processes is leading to the ongoing polarisation of the R&D potential between metropolitan and non-metropolitan areas; that is, R&D resources and research capacities are more and more unequally distributed among the regions (Ptáček, 2009; Gál 2005). This resulted in that mid-range universities remain the keystones of regional innovation infrastructure outside of the metropolitan regions; furthermore, their role even increases. Sectoral research institutes set up in the socialist era and sponsored by the indstry and relevant ministries were mostly closed down after the regime change, and so their role was taken over by local universities.

In sum, the role of mid-range universities in CEE countries is weaker than in more developed countries of the EU and the process of adaptation to new social and economic conditions started substantially later than in Western Europe. At the same time mid-range universities located mostly outside of the metropolitan areas have to face similar problems and disadvantages as in their western counterparts such as less intensive university-industry contacts, weak local R&D networks etc. (see Table 1 and Gál & Ptáček, 2011).

Table 1. Main indicators of mid-range universities in Western Europe and their CEE counterparts

	University of Pécs (Hu)	UP Olomouc (Cz)	**Notthingham University**	**University of Karlsruhe**	**University of Ghent**	**University of Antwerp**
N students	28,000	22,000	33,000	15,686	21,160	8,029
N FTE researchers	1051	1158		2500	1401	846
N FTE technology transfer	6	7	4	1	3	4
HERD Mill. Eur	14	19.4	150	83	122	45
N spin-offs	11	7	27	unknown	12	2
Total RSBO	n.a		n.a.		23	4
Regional GDP (Bn Eur)	6.7	11.2	103.8	316.9	157.3	157.3
GRP per capita (Eur)	6,900	9,600	24,145	29,694	26,194	26,194

Note: by the author and Wright et al. 2008

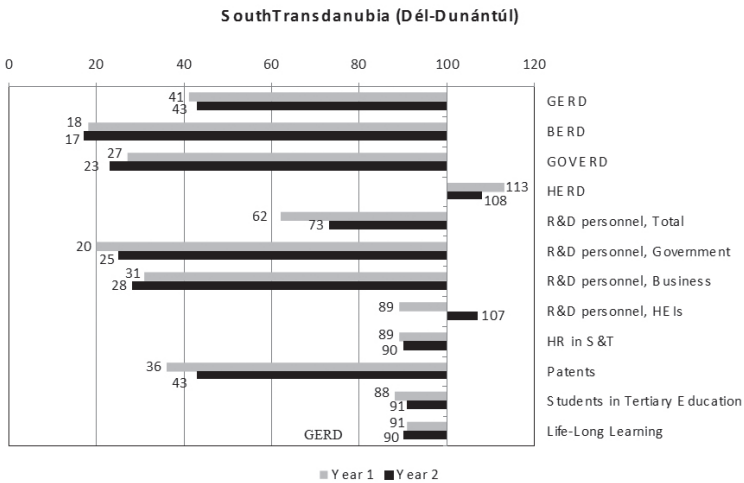
It is often argued that universities are able to generate economic effects based on knowledge spillovers and innovation transfers to businesses (Etzkowitz et al. 2000). The differences between the advanced regions of metropolitan agglomerations and the most backward regions are emphasised in the relationship between universities and their regions (Ács et al. 2000). This means that in most of the non-metropolitan Central and Eastern European regions, where the regional innovation systems and the university–industry linkages are still weak, the role of universities in local development has to be revised and, consequently, the economic impact of universities cannot be unambiguously extended to transition economies. For example, a Hungarian study concluded that the knowledge-producing ability of the academic sector did not increase the knowledge-exploitation ability of the local business sector and, moreover, both universities and the less developed local economy may be responsible for several hindering factors of intraregional knowledge transfer between universities and industries (Gál & Csonka, 2007). Similarly, Bajmóczy and Lukovics (2009) showed that university researches for local economic development may mean an outstanding instrument in case of advanced regions but not necessarily for the less developed regions where the lack of appropriate industrial base is one of the main constraints. They measured the contribution of Hungarian universities to regional economic and innovation performance between 1998 and 2004. The results showed that the presence of universities does not affect the growth rate of per capita gross value added and gross tax base per taxpayer. Therefore, general economic effects of universities and related R&D investments are hardly visible in transition economies such as many Central and Eastern European regions.

Our case study area, South Transdanubia, is a less developed reindustrializing region with lower knowledge absorption capacity and with an underdeveloped research and technology development sector relative to the national average (Figure 1). Basic conditions for change in the technology sphere are rather unfavourable. Its regional GERD was 23 M euros in 2007, which is only 2.5 per cent of Hungary's total. The region has one of the poorest R&D capacities in Hungary (in 2007 with only 4.1 per cent of the Hungarian R&D employees). The region has large public RTD infrastructure mainly based on the two universities[1] absorbing more than four fifths of regional GERD, therefore the HEI[2] sector plays dominant role in R&D performance (Table 1). Unlike the public RTD sector, the visibility and the performance of the business sector is very

[1] University of Pécs (est. 1367) and University of Kaposvár (est. 2000).
[2] Higher Education Institution

low, even in comparison with the national average. The RTD creation of the business sector in Southern Transdanubia is limited (3.4 M € BERD in 2004). Universities are the major employers of RTD personnel. The orientation of the knowledge creation activity of the region is based to a great extent on the profile of its universities, which have the strongest potential in life science (biotech) research and they also have a good reputation with measurable RTD outputs in laser physics, environmental and animal cytology research.[3] However, the strongest barrier in South Transdanubia is the clear mismatch between the knowledge-production specialisation of the universities and the economic structure of the region.

*Figure 1. Key indicators on Southern Transdanubia's knowledge-based development in comparison to the national average, in percentage**



Source: calculated by the author based on EUROSTAT and KSH (Hungarian Statistical Office) data

**BERD = Business expenditure on Research and Development,*

GERD = Gross expenditure on Research and Development

HERD = Higher Education expenditure on Research and Development

GOVERD = Government expenditure on Research and Development

Note: The following years were used for BERD, GERD, HERD, GOVERD 1999, 2003;

R&D personnel 1999, 2004; HR 1997,2004; Patents 199s, 2003 and

Lifelong learning 1999, 2004.

[3] The relative strength of biotech research base is demonstrated by its large share of total input-output indicators and also by the increase of RTD spending in this field (64.8 M in 2004). In addition, the 11 university spin-offs in the biotech sector are tightly connected to the Medical School (MS) which has 48 employees and produces a turnover of €3 million (2004).

The main findings of this section are based on an empirical survey, which listed 92 time-series indicators covering 20 different EU regions, including South Transdanubia commissioned by ERAWATCH S.A. in Brussels (Gál & Csonka, 2007). This research was focused on the constraints of knowledge transfers in the case of mid-range universities in the less developed transition regions with traditional, non-research universities. The survey on South Transdanubia identified the main reasons for the poorer performance in RTD transfers. On the one hand, there is a mismatch between the economic and research specialisations, which is combined with the low share of the business sector in RTD investment, the high share of the traditional lower tech sectors, the small size of local SMEs and the consequent lack of resources to invest into RTD and absorb its results. On the other hand, there is a lack of demand for research results from larger (mainly foreign-owned) companies and, to some extent, the necessary knowledge supply in the region for certain sectors and in certain disciplines is also lacking (Gál & Csonka 2007).[4] It should be also accepted that these regions are specialised in activities that are not highly research intensive, therefore, increased R&D expenditures cannot be easily exploited by local businesses or utilized by HEIs. In these situations, setting up a new research base that is not linked to the needs of the regional economy could be like building "*cathedrals in the desert*", as they are unlikely to be able to develop knowledge transfer and spillovers with local economic actors, particularly for high-tech industries (Dory, 2008; Gál, 2010).

Engaged universities – the Hungarian case

Universities can act as regional actors, developing stronger partnerships between universities and the regional development agencies, emphasising the key role of higher education in regional development. The policy approaches and activities in CEE regions almost exclusively concentrated only on the first two missions of the universities and the notion of regional engagement did not constitute the part of the university strategies up until very recently. Two compelling endogenous and exogenous factors have contributed to the recognition of the importance of stronger regional engagement of the universities these days. Firstly, the accumulated knowledge and the experience of the staff at the higher education institutions provide expertise in various fields, and this can be a very effective way of accelerating progress of collaboration through the

[4] A few large enterprises in high-tech electronics have been engaged in high-tech activities, but their influence on the local RTD sector is considered to be marginal, as they usually rely on the in-house RTD activities of their parent companies importing the technology from outside the region..

exploitation of economic and social interactions transmitted by spin-offs and other university-based consultants within the newly formed regional networks (Schmidt, 2012). Secondly, exogenous pressures are extorted by new market demand and policy goals, which envisage a real regional and social prosperity that integrates knowledge, social and human development. This exogenous factor facilitates connectivity among different institutions including universities and other stakeholders and will provide not only better funding opportunities, but also a collective learning platform for social interactions (Leydesdorff & Etzkovitz, 2001).

In the following sub-sections we present two case studies the author himself participated in, from South Transdanubia, which show the new types of developmental roles and community engagement that local universites can take in a peripheral, border region in order to revitalize the economy of a lagging, de-industrialized area. The first one presents an example of an urban development project based on campus (property) development in conjunction with the European Capital of Culture 2010 Project of Pécs, and a city development strategy of the health and environmental sectors; the second one provides insights into the building of a common cross-border knowledge region in the framework of universities' partnership. It is characteristic of both case studies that the strategies are strongly reliant on the contribution of the local academic sector.

University engagement in the South Transdanubia Region: The European Capital of Culture 2010 Project and the so-called "growth pole" development programmes. In the case study presented in this section we focus on the biggest city of the South Transdanubia Region and its university. The city of Pécs has adopted two strategies in strong collaboration with the University of Pécs to mobilise endogenous resources and enhance its competitiveness (the University of Pécs is the first university in Hungary that was founded in 1367). Higher education has been a strong driver of economic restructuring; in fact, it was probably the university which saved the city of Pécs from the depression experienced by other Central and Eastern European industrial regions after the change of the political regime—even if it could not fully prevent the disadvantageous processes (Lux, 2010). In the 1990's and the 2000's, Pécs, the city with 2,000 years of history dated back to the Roman and medieval times, has lost most of its economic potential which was built on coal and uranium mining and several industrial plants. Due to its peripheral situation and the adverse effects of the war in the former

Yugoslavia, foreign direct investments are insufficient in the region and there is a lack of local economic strength. In an economic environment characterized by a decreasing industrial sector, the city's cultural, educational and market services give a chance for the economy to rise again. Cultural issues first appeared markedly in local development policy in the 1995 city development strategy, which envisaged a growth path built on knowledge-based economy, services and innovation, where innovative tourism and "cultural industry" get priority (Ibid). After the integration of several local universities and a number of smaller higher education facilities in 2000, the University of Pécs has become one of the largest employers in the city and even the region. Although R&D outputs in engineering and natural sciences and the university–industry links are limited, the presence of students and employees has had a multiplier effect on the economy of Pécs, mainly in the field of rented flats, consumer products and services and culture. Of course, the university has contributed to the urban ambience and real estate site development of Pécs, as well (Ibid). One of the strategies is a comprehensive initiative, which aims to reconfigure the economy of the city to utilize the heritage and cultural basis in the framework of a singular large project of the European Capital of Culture 2010 to generate growth. The European Capital of Culture 2010 project tried to capitalize on the idea of culture-led urban regeneration and helped Pécs to reinvent itself through culture. The University of Pécs played a major role in organizing the European Cultural Capital project, which became the largest ever exercise of community service of the local university, being heavily involved not only in the cultural events, but also in the development of the new cultural, community and educational functions of the city's newly built cultural quarter (Ibid). The project is the Zsolnay Cultural Quarter: built on the site of the eponymous ceramics factory, which was originally established as a mixture between production facility, artist's colony and living environment for the owner and his family, it intends to endow a disused area with new cultural, community and educational functions serving as the new training site for the university's Faculty of Music and Visual Arts, and partly for the Faculty of Humanities. Benneworth et al. (2010) describes the universities' urban development role and the major factors conditioning the success of co-operation for both the city and the university in detail.

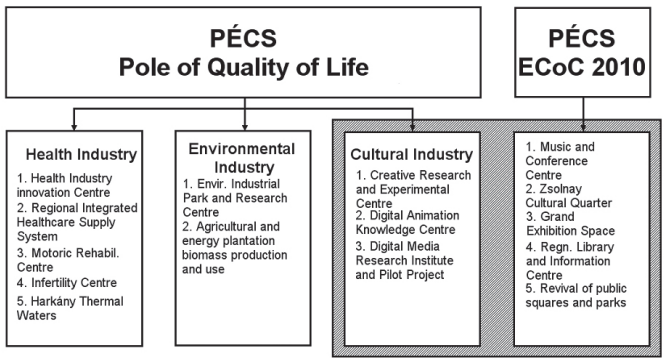
The strong university engagement in the city's development was also reflected by the development pole programme[5] called "Pécs—Pole of Quality of Life" which has

[5] The development pole-based type of development appeared in France and its main characteristic is that the central motivator of the development process is the university. The overall aim of the pole programme is to promote the formation of internationally-competitive clusters; specialization on high value-added,

three pillars: health industry, environmental industry and cultural industry. The main features of this programme are introduced by—among others—Lux (2010) as follows:

1. Similar to the European Capital of Culture 2010 project, the "growth pole" programme strongly involved the contribution of the University of Pécs during the planning period as well as in the governance and the implementation, especially within the health industry pillar and the environmental industry pillar. (Figure 2)
2. "Health industry" covers health services relying on the university's Faculty of Medicine and its clinics, which have achieved outstanding results in treating movement-related disorders. Several industrial functions are connected to these services including the manufacturing of medical and prosthetic equipment; and other services in the field of human recreation.
3. The "Cultural industry" pillar of the programme is expected to benefit from the European Capital of Culture 2010 programme, and this returns to the idea of promoting the urban culture of Pécs as a complex, innovative product.
4. The "Environmental industry" pillar is both narrower and wider than the "quality of life" concept: it might be helpful in fostering a cleaner, more attractive environment, but the actual elements of the development project have a prioritized focus on alternative energy sources.

Figure 2. The system of cluster initiatives and projects in Pécs



Note: Lux (2010) p. 115

innovative activities; strong cooperation primarily between businesses and additionally between universities and local governments; to strengthen the regions through the increasing competitiveness and better business environment of the pole cities. The expected results (for the period between 2007 and 2013) include that the businesses – through clustering and the cooperation with the academic and university sector – reach the critical size which is necessary for being competitive in Europe and pole cities emerge as centres which are able to strengthen and sustain competitiveness for both themselves and their surrounding regions on an international scale.

CONCLUSIONS

This paper has applied the regional and community engagement literature to mid-range universities of Central and Eastern Europe and explored the peculiarities and specificities of these mid-range universities facing a number of extra constraints in the less developed CEE regions. After summing up the ways in which universities may contribute to the economic development of their regions and presenting the measurement methodologies and the theoretical considerations, the paper focused on the problem of adapting the literature on peripheral regions with mid-range universities. From the presented theories, the literature on the universities' regional engagement is the most relevant in the context of our investigation. There are several facilitating and hindering factors concerning the process of becoming a regionally-engaged university, and our main lesson is that the whole regional innovation system should be developed in an integrated manner in order to reach this goal.

The mentioned constraints impede peripheral, mid-range universities to build linkages to the local economy and develop internationally recognized areas of research excellence, with the associated critical mass, and exploit the advantages of global knowledge networks. The research found that not only the position of universities in the collaboration with business sector but their role in the innovation system is quite different, which is mainly due to the different development path of innovation systems and development trajectories in post-communist countries described in the paper. Because of historical path-dependence, mid-range universities, unlike top-universities, are very often located in non-metropolitan regions in CEE countries where the RTD potential and "density of contacts" are much lower and possible spillovers emerge more sparsely than in capital city regions.

We argued that in these regions, setting up new university-based research directions that are not linked to the needs of the regional economy are unlikely to be able to develop knowledge transfer and spillovers with local economic actors. In peripheral situation the lack of research capacity in science and engineering RTD can be also a serious obstacle to the modernisation of the industrial structure. Universities are looking for contacts out of the regions and their contribution to the regional innovation infrastructure cannot fulfil the possible expectations. Rather, these universities need to take careful strategic decisions to build up those areas and the related intermediaries where they have the scope to make an international impact but also to differentiate investment in those areas where they can make a regional contribution.

Economic policy practices suggest that the support of university researches for stimulating local economic development may be an outstanding instrument in case of advanced regions but not necessarily for the less developed CEE regions where the lack of appropriate industrial base is one of the main constraints. It can be also argued that business-led networks connecting different actors have much higher importance in economically-advanced regions while in the less advanced ones universities and public agencies play more significant role in network building and in catalysing activities of the key actors. If universities are embedded in a region it has a clear impact upon the intensity and nature of the relationships and, hence, their ability to effect tacit and codified knowledge transfers. Regionally-focused teaching and research are manifest in a stronger focus on regional student recruitment and graduate retention (in order to combat brain drains in R&D), the innovation-oriented regional development programmes addressing skills required by regional industries and the localisation of learning processes.

The paper also argued that mid-range universities in the reindustrializing CEE regions have to take on new roles, which means a stronger regional engagement also in medium-tech innovations and in social and organizational innovations. Universities have to be practically relevant in the development and evaluation of regional policy that fosters 'new combinations' of partnership-based, innovation-centred approaches, which maximise the development of human capacities such as skills and mobility, and the formation of social capital through networking, collective learning and building up trust. In the less developed CEE regions there is a need for much more comprehensive and complex economic policies initiating not only the support of the university sector but also the starting of developing high-tech industries, small-scale enterprises and constructing regional advantage with the stronger developmental role and community involvement of universities. This contributes towards the third mission of universities through meeting learning needs of the region. This might be achieved by exchanging knowledge between higher education and the business community or through outreach to local communities to combat social exclusion and to improve cultural understanding.

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