

The Changing Role of Hungarian Higher Education after the Change of Regime and its Relationship with the Development Potentials of the Regions of Hungary

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Abstract

The aim of this paper is to provide an overview on the changing role of higher education on the local economic development of the regions of Hungary after the change of regime, with special focus on the rural areas. The level of qualification of the population has always been an important factor in economic development, thus the development of the human resource must be a key issue in development policies. The higher is the share of population with tertiary education, the higher is the potential for economic growth. As being lecturers in higher education for more decades, our aim was to see how the role and function of the higher education has changed over the years in Hungary and how important its role is nowadays by being a center for innovations, basis for spin-off and start-up businesses, by the establishment of regional research centers acting as knowledge-transfer hubs. We all know that SMEs, startups, businesses with innovative approach play a crucial role in the local economic development, not only in Hungary but in the whole European Union, so any measures targeting their development are inevitable, however, we need to see whether the human resource of the country at the moment is suitable for the establishment/development of such innovative enterprises. In this paper we examined the 18 counties located in the rural areas. We collected and analyzed the data for NUTS 2 regions and NUTS 3 level counties located in Hungary. Our aim was to see the tendency of the role of higher education in the development of rural areas.

Key words: higher education institutions, innovation, local economic development, research and development, start-up businesses

JEL Classification: I24, I25 R58

1. Introduction

There is general consensus in the literature on innovation-oriented regional development that the utilization of a regional knowledge base, innovation potential and cooperation between businesses and research institutions continues to play an increasing role, not only with regard to business success but also in the competitive economic performance of a region (Lackenbauer, 2004; Cooke, 1995). In many regions, universities are viewed as the core of the knowledge base and at the heart of the knowledge economy, acting as key elements of innovation systems, supporting science and innovation-based regional growth (Huggins et al., 2008).

Universities and research institutes as knowledge centers, extending and disseminating comprehensive scientific information, are playing increasing role in regional development thus in the development of businesses operating in the region. Despite of the fact that universities always highlight their international acknowledgement and internationalization endeavors, most of the higher education institutions are embedded in their own region and significantly contribute to its economic and social development by maintaining local jobs, diversifying the local economy as well as by attracting investors to the region. Nowadays, in the globalized world, there is increasing competition to reach qualified labour force and the intellectual added values. Since nowadays the value of intellectual capital has higher priority than the physical resources, a shift towards the significance of universities can be observed, since they are the institutions where the knowledge-generation and dissemination are carried out, being the basis for the knowledge-based society. However, it has been getting more and more important how the higher education institutions' impact on the region's economy and society can be really measured (Molnár-Zuti, 2015). However, it was not always the situation with universities, their primary aim was not always to live in harmony with their regions and to boost active relationship with companies. That is why we intend to provide an overview on the transformation of the Hungarian higher education after the change of regime 1989/90. It can be clearly seen how universities were reshaped to meet the market needs and to contribute to the integrated development approach.

2. Theoretical background

2.1 *The relationship between education and rural development*

Since most of the territory of Hungary falls in the category of rural, we must see the most important roles of education and higher education in the development of rural areas. FAO and UNESCO (2003) emphasize that a community cannot foster development without an educated population. Businesses, large or small, are unlikely to choose to invest in rural areas if skilled or trainable human resources are unavailable. Similarly, a community cannot retain educated people without an attractive economic environment. It is obvious that knowledge, skills and competencies acquired through any formal, informal and non-formal education are considered one of the most significant economic and social factors contributing to the development of the countryside. Knowledge transfer/exchange helps to continue growing a sustainable rural area and also contributes to finding more of the long-term solutions that rural residents can offer to society (Greser et al., 2021).

According to Farheen (2019), it is important to understand the need for good quality education in rural areas, as it helps keeping the population in the rural areas. People, especially young people tend to move to urban areas for better opportunities in education and employment, thus improved rural education is one possible strategy for keeping them in the countryside. We agree with Ninh (2021) that well-educated farmers are likely to adopt new technologies early since they get distinct access to relevant information and are capable of distinguishing between promising and unpromising innovations. Education is also supposed to reduce the perceived level of uncertainty and the aversion of the farmer toward endogenous risks arising from his own choice of production technology. Since some rural areas are still dominated by agricultural production, the education of people working in agriculture is a key to sustainable development. In an OECD (2021) report, it is highlighted that in order to maintain quality services in rural regions and close gaps further exposed by the pandemic, governments must develop innovative responses tailored to the specificities of rural places and the long-term challenges they face. We believe that such innovative responses must also include the restructuring of higher education, meeting the requirements of the rural regions of Hungary.

2.2 The transformation of the Hungarian higher education after 1990

The first wave of the transformation of the Hungarian higher education system started with the act that was passed in 1993 exclusively on higher education – first in the history of the country. That Act made it possible to establish institutions maintained by the church or private companies in addition to the state-governed institutions. From that year, the number of state higher education institutions gradually decreased (by approx. 10% by 2000), the number of church-governed institutions tripled by the academic year 1993/94, while the number of institutions maintained by foundations or the number of private institutions has gradually increased. The largest increase in the number of the higher education institutions was during the 1992/93 academic year, when 15 new institutions were created and altogether 90 institutions existed (this situation did not change much until the millennium). However, the number of students increased only slightly, thus the institutional system has become very fragmented. At the beginning, institutions had low number of students and their professional scope was quite limited, which resulted in an inflexible training structure that could not adapt to the socio-economic changes and cost a lot. Thus the higher education system needed further developments. Moreover, after the change of regime, a normative financing scheme was introduced, meaning that colleges and universities were granted the state support based on headcount. It means that it was a targeted approach by the institutions to increase the number of students but taking into account that all the institutions from the same professional field received the same state support per head, the institutions in the countryside, having students from only the region could operate with lower costs, compared to the large, historical institutions.

The next phase of development was in 1995 when an integration process was initiated with state financial support. The main aims were as follows:

- to modernize the institutional system in a rational way;
- to use the capacities as well as the infrastructure more efficiently;
- to stop the unnecessary parallel courses;
- to operate the institutions more efficiently;
- to improve the quality of courses;
- to transform the course structure;
- to allow easier change between courses/institutions with the establishment of the credit system and
- to expand the supply of courses.

By the end of the 1990s, the number of students in higher education basically tripled, since the act on higher education in 1996 allowed to introduce self-financing courses in addition to the formerly existing state-supported courses. Since the rate of those who graduated on self-financing courses was much higher than on state-supported courses, more students preferred those courses and the institutions also intended to attract more students to those trainings. It resulted in a depreciation of diploma received at the end of self-financing courses. Additionally, higher vocational courses have been created that operated as engines of higher education expansion.

At the millennium, several institutions opened the academic year in the form of large institutions, as a result of the integration of formerly independent universities/colleges. The law effect since 1 January 2000 ordered the transformation of the institutional system based on regional aspects, the integration of institutions with similar or the same profile located in the capital, Budapest. The aim was to create more efficient institutions with broader scope, considering the economy of scale, and to create institutions more adaptable to the job market needs. Due to this integration process, the number of institutions decreased by almost 30% by

the year 2007. Despite of the fact that the integration process was the part of a financial modernization plan of the higher education system, and the concept was to establish institutions dealing with more than one disciplines and to have one higher education institution in one region, the integration – in some cases – was based on rather professional reasons and not on geographical proximity, therefore faculties of the new institutions might have been far from each other, making the efficient management, leadership and coordination more difficult. One of the aims of the integration was to force the newly integrated institutions to stop the parallel courses – formerly offered by the individual institutions – but most of the institutions did not manage to do that, since it would have meant firing lecturers who had been teaching certain topics for a long time. The management of the institutions did not want to make this decision and did not have professional reason whom to fire.

The next stage of the development of the Hungarian higher education system was around the accession to the European Union in 2004. The major aims in this phase were as follows:

- to increase the number of students in higher education
- to support lifelong learning
- to modernize the institutional system
- to develop the course contents and training forms meeting the job market needs as much as possible and
- to develop the infrastructure in line with the middle-term development plans of the institutions.

A few years later Hungary also made a lot of efforts to introduce the Bologna-system in the higher education to have a harmonized system on the international higher education market. It was the 2006/2007 academic year first starting in the framework of that system. The Hungarian higher education system faced various challenges in introducing the Bologna system, since the framework of courses were based on rather curricula and lexical knowledge rather than on competencies and skills. Therefore, at that time, Hungarian higher education was considered as a non-practice-oriented education that was not able to prepare the graduates even for the job market requirements in several aspects, like foreign language, IT skills (Rappai, 2005). Based on the abovementioned, it is clear that the Hungarian higher education system has been undergoing serious transformation since the change of regime 1989/90, however, there are debates whether all the measures could be considered modernization or not.

There were significant changes in the role of higher education over the past three decades. The primary role, namely education, has lost from its importance and additional functions (research, services to businesses) have become more important. The spatial dimension of innovation had been greatly determined by the transformation of universities during the transition years in Hungary. This involves not only the extension of their research profile, but also the transformation of the traditional university into the organizational structure of a research university (Gál, 2010). We could observe radical changes in the methods and nature of knowledge-transfer, serving more the knowledge-based economy. We can also see changes in the necessary knowledge required by the economy and society as well as how much the usability, functionality and employability of knowledge has been more in the focus. In addition, more and more links, relationships have been created between higher education institutions and businesses, companies, research centers, vocational training centers, SMEs etc. to use the resources more efficiently and to find solutions more-tailored to the business needs. Over the past decade, several regional research centers have been established at universities to serve as knowledge transfer hubs. Moreover, universities also strive to encourage and support their students to set up their own businesses. Nowadays, the presence of a higher education institution creates added value in many dimensions in the region where it is located and more

and more think that they play increasingly important role in local economic development. The territorial distribution of higher education institutions is not balanced in Hungary even if there are institutions or affiliates of institutions in each region. It has also to be mentioned that the efficiency and the innovation capacity of institutions are not balanced either. As Figure 1 shows, the higher education is still concentrated in the capital (the higher is the triangle on the map, the more institutions can be found in that town). The ownership structure also shows interesting tendency, namely that many institutions at the moment are in private ownership and their number will increase gradually in the coming future due to the higher education measures of the government. Formerly state universities will become private, under the supervision of foundations (even financed by the state!).



Figure 1. The location of the headquarters of higher education institutions in Hungary, 2021

Source: based on data from Education Authority, own editing, 2021

However, we need to mention that nowadays there are significant ongoing changes in the ownership of the higher education institutions, meaning that only 6 out of 64 will remain in state ownership soon, out of which only one is located in the countryside (Baja), the rest is in Budapest. It results that soon every third in ten students will study in institutions maintained either by foundations, private companies or church due to the government's recent measures related to higher education.

3. Material and method

In order to see clearly the role of higher education in the Hungarian countryside, we need to refer to the definition of 'rural' in Hungary. Hungary's rural definition followed the definitions stated in the 1305/2013/EU regulation. An area is a rural area if a city a town or village has less than 10,000 inhabitants (even if the population density is over 120 person/m²), or has more than 10,000 inhabitants but the part of the city is an outskirts and there are rural settlements. The capital of Hungary Budapest and its agglomeration are not included in the rural category and not covered in the rural development program (<https://www.palyazat.gov.hu/node/56582#>). It means that regarding urban-rural typology, Hungary has the capital and its agglomeration as urban area and the rest of the country as the countryside.

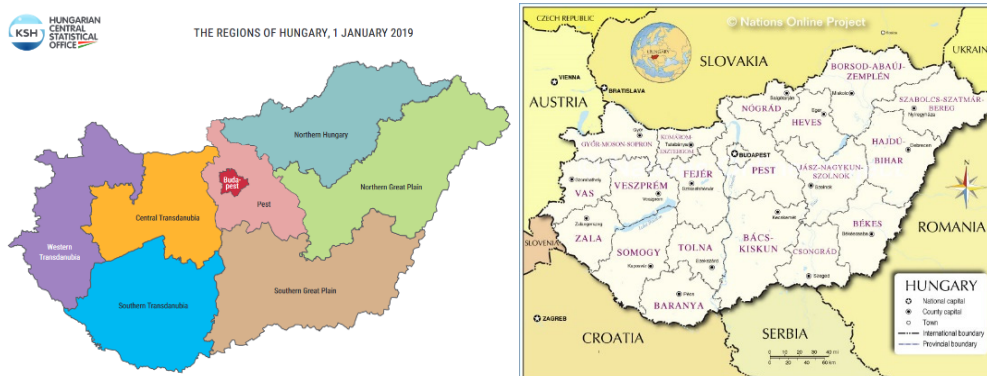


Figure 2, 3. NUTS 2 regions and NUTS 3 counties of Hungary

Source: https://www.ksh.hu/regionalatlas_regions and <https://www.nationsonline.org/oneworld/map/hungary-administrative-map.htm>

According to the general typology in the Rural Development Program of Hungary, rural is an area with population density under 120 person/m², also supports the abovementioned classification. According to the latest EU definition, rural area is an area where more than 50 % of its population lives in rural grid cells. Based on the abovementioned, we intended to highlight the discrepancies between the urban and rural areas of Hungary in terms of education. Figure 2 and 3 help to understand the regional and county-level statistics detailed below.

Regarding the national statistics, the number of students in higher education gradually increased over the past 30 years that is a benefit for all the regions of the country even if the is still a huge gap between the regions and counties. However, in general it is beneficial that the share of those who took part in higher education has been increasing, being a good and solid basis for economic development. The more educated the population is, the better is the potential for sustainable economic development. Despite of the fact that there were changes in the distribution, the share of full time students always remained dominant. There has been unequal territorial distribution of full time students in higher education over the past 2 decades. The distribution of the full-time students in higher education reflects huge concentration in the center of the country, resulting in large territorial inequalities - similarly to other macroeconomic indicators. In 2019, just a little above 100,000 people attended bachelor or master courses at higher education institutions from the countryside which might seem to be low compared to the number of population living in the 18 counties. If we look at the share of population with tertiary attainment education in the regions, we can see territorial discrepancies, since the capital reflects high concentration – similarly to other indicators. In Budapest, over 40% of the population have university degree, while in the countryside it is around 20%. This also highlights the need to strengthen the higher education institutions in the countryside so that they could attract more people primarily from the region where they are located. Regarding the number of people receiving diploma in the country showed increasing national tendency over the past decades that it is primarily due to the increasing data in the capital and its agglomeration and not due to the increase in the rural areas. Despite of the fact that compared to the beginning of the 90s, the number of people receiving diploma doubled by the millennium years (it has been around 50,000 in every year), there are significant regional discrepancies as explained above.

If we look at the potentials in the development of human resource in the regions of Hungary, we need to see the share of young population among the people aged 20-24 years with less than primary, primary or lower secondary attainment, since that age group of the society is the mostly expected to study further and show intention to go to secondary school and university

or contribute actively to the local economy be either setting up his/her own business or taking a job at a company. The situation is not favourable in the countryside. Not only because of the huge regional discrepancies, but because e.g. in Northern Hungary, nearly one in four people aged 20-24 does not have sufficient education attainment to be able to complete secondary education or to get admission to university. In the regions lagging behind regarding the potential applicants to higher education institutions, the problem is multidimensional, since the share of young people (18-24 years) neither in employment nor in education is also extremely high, meaning that there is no intention of young people to study if they are not successful in job search either. In the regions, located to the east of the Danube, one in five young people is not employed or studies and this data did not show any spectacular improvement over the past 5 years. It means that there is a massive group of young people, especially in the Eastern regions (which have low GDP per capita indicator as well), whom the nation cannot build on in short or middle terms if it comes to their economic contribution and development. It also means that in order to improve the local economic conditions, higher education institutions in the rural regions must focus on further trainings and other vocational short term trainings as well (in addition to the bachelor and master courses) to attract some of those young people who completed their secondary education. Higher education institutions have huge responsibility to improve the human resource of their regions in general, not limited to the university studies. Higher education institutions also have important task in developing the cooperation and the link with the businesses in the region, since they are the potential employers of the population of the region. This expectation is the highest in those regions which lag behind from economic point of view. As it has already been mentioned above, regions located to the east of the Danube lag behind in several aspects. It needs to be mentioned that spatial differences in economic development have serious impact on the network relationship of universities and business organizations. As the economic development level of the regions of Hungary also differs, the share of active population with tertiary education attainment also varies. The number one region is the one including the capital, it is not surprising. It is favourable that the share of population with tertiary education attainment doubled after the change of regime but based on the figures above we can see where it would still be very necessary and urgent to increase further the qualification of population. It is the regions in the countryside. The gap between the regions in this matter even increased over the past decades and the central region has shown increasingly large concentration (Aboelnaga et al. 2019).

4. Results and discussion

Universities can have an impact on the economic development of their own region in two ways: (Florax, 1992) on the one hand, through the multiplier effect of the purchasing power of students (a so-called expenditure effect) and on the other hand, through the knowledge transfer from the university into the business sector (knowledge effect) (Varga, 2004). According to Florax (1992), there are at least eight subsystems in the analysis of the regional and local impacts of universities: political, demographical, economic, infrastructural, cultural, attractiveness, educational and social. Higher education is an extremely attractive factor for capital development not only because it creates competitive advantage in the local labour market but also through its potential for creating innovation. It can be seen all over Europe that the development of large technology systems concentrated in metropolitan agglomeration was mostly determined by the research and development units of large companies. By contrast, the innovativeness of SMEs was, in the majority of cases, initiated by institutes of higher education, through the creation of local and regional clusters (Gál, 2010). The economic

attractiveness of the regions and spread of knowledge depend largely on a spatially-balanced network of university-based research facilities, and especially with regard to their relationship with companies (Gál, 2010). The role of higher education in the development of an area (country, region, county) can be interpreted from several aspects. Based on Gál (2016), the universities have different functions that fundamentally affect their commitment to the regional and local development, as follows:

1. The primary/basic function of universities is the *education*, namely giving knowledge to students that is competitive on the international and national/regional job market. However, the knowledge offered by the institutions is sometimes disharmony with the job market forecasts and the job market changes. Courses and the profile of the institutions are difficult to change in the traditional system and the role of the state cannot be replaced. This problem varies in the regions and it seems that in the peripheral regions the state has to take more role in higher education system.
2. Traditionally, the tasks of universities are primarily the education and secondly the *research*. The role of institutions in the fundamental and applied researches has gradually been determining. They have shown increasing intention to join international research networks.
3. Nowadays, universities are more likely to take the third mission, namely the *developing* role. Their role in innovation and economic development is getting more importance. Universities, especially in the peripheral regions, are determining economic actors by usually being the largest employers, attracting the purchase power of students, resulting in direct economic impacts. By supplying the regions with highly qualified human resource, they contribute to the development of various sectors.

Since there are no national statistics to measure the impact of higher education institutions within their third mission (developing and innovation), we must not forget about their impact on the number of businesses. Due to the knowledge-transfer and the innovation generating activities, universities are very much supportive and motivating environments for young students who are considering setting up their own businesses. Therefore, we can state that higher education institutions have indirect impact on business development. Several institutions have established their own startup centers within their institutions to assist the young entrepreneurs and support new innovative ideas. In the past 20 years the number of operating SMEs increased by 37% compared to the year 2000, exceeding 855,000 by 2019. Over 90% of the SMEs belong to the micro-enterprise category, which includes startups as well. Unfortunately, there is no statistics in Hungary about the startups separately, so we cannot see how the innovation influenced the establishment of new businesses in the past 2 decades but there is statistics for the newly established businesses. The capital and Pest county (the agglomeration of the capital) very much dominate the business sector regarding the newly established companies. Almost every third business was set up in the capital in 2000, while it was still over 25% in 2019. The newly established micro-enterprises in Hungary showed gradual increase after 2012, exceeding 118,000 in 2019. Except 2012, 60,000-70,000 micro enterprises were set up every year on average which reflects active entrepreneurship capacities. Micro-enterprises in this aspect cover the small businesses with maximum 9 employees. If we look at the detailed data, we can see that 99% of the newly established enterprises were those with maximum 4 employees. It means that we must consider the startups in this category, since they also usually have maximum 4 employees. The National Authority of Intellectual Property was ordered first in 2017 to register the startups, thus we could not have specific statistics about them before 2017. However, startups are not equal to new micro enterprises, but mean such businesses that have special aims. Startups are businesses that aim to enter on international market in short term based on their business model or innovative product and which has the

potential for such growth. In the followings subchapter, some information can be read about Hungarian initiatives related to universities and innovative businesses.

4.1 Initiatives to strengthen the innovation potentials in Hungary

4.1.1 Hungarian Startup University Program

The Hungarian Startup University Program (HSUP) is the first practice-oriented university-level startup course in Hungary aiming at bringing the next generations closer to the business sphere and teaching them how to think in a solution-oriented and innovative way. The idea of such a course was born in 2019. The course is for two semesters and intends to call the attention of young people that forming innovative ideas into businesses is a good career opportunity. This course may have long-term impact on the development of the Hungarian innovation ecosystem (<https://hsup.nkfi.gov.hu/>). In 2021, 21 higher education institutions joined the program and offer the course to the young talented students. It is not only the students but the partner institutions see great potentials in the program. In the second semester of the program, the students have team-work and work on over 100 project ideas. Based on the feedback of partners, the course helps to gather young innovative people with creative mentality who can get useful and applicable knowledge on innovation, making them competitive on the job market. The course focuses on the learning of innovation approach, increasing the interest on innovation. Several experts from the startup sector are also involved in the course, thus the Y and Z generations are involved in innovation environment by linking the generation, resulting in an „innovational generation”. The program also offers scholarships and business mentoring activity for the participants to support the best project ideas for the real market conditions.

University Innovation Ecosystem

According to the Hungarian National Strategy of Research and Development and Innovation, one of the overall objectives is to encourage the active knowledge- and technology transfer among the members of the innovation ecosystem as well as to exploit the knowledge transfer role of higher education institutions more efficiently. In harmony with the abovementioned objective, the National Research and Development and Innovation Authority launched the program called University Innovation Ecosystem (2019-1.2.1-EGYETEMI ÖKO). The aim of this program is to establish a separate department/unit within the universities that fosters the use of the scientific results born at the university on the market, supports the cooperation between the universities and business sphere on research, development, technology and innovation, as well as encourages the universities to take active part in EU research and innovation frameworks. One of the other aims of the program is to create an online platform where the R&D&I portfolio of universities can meet the concrete needs and inquiries from the business sphere. This match-making platform helps to contact the universities and assist in creating relationships between the academic and business sphere. In order to improve the innovation capacities and competitiveness, it is extremely important to strengthen the organizations, companies, universities, policies at regional and local level. The aim of the initiative called Territorial Innovation Platforms to create regional cooperation based on the knowledge basis of universities and to strengthen the relationship between the members of the innovation ecosystems. The constitutional agreement has been ratified by 7 universities from the countryside and 11 universities in Budapest. Moreover, 5 national professional organizations and several members of local innovation ecosystems joined the program.

5. Conclusions

Based on the overview on the transformation of the Hungarian higher education, we can see that universities and colleges have had increasingly important role in the economic development, especially in their own regions by fostering innovation, transferring knowledge, strengthening the relationship with the business sphere. Moreover, higher education institutions – due to market needs – had to realize that they must serve the businesses with their research and development activities. This process takes time, there are regional discrepancies still existing in the country, but due to the various programs and initiatives, spectacular progress can be observed. Therefore, it is not a question that higher education institutions play and must play important role in economic development at national, regional and local level. However, the more an institution is embedded in the local and regional economy and society, the stronger relationship it has with the business sphere, the more efficient is its multiplier activity in its region.

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