

Leading role of Higher Education Institutions on the development of peripheral regions

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Abstract This paper focuses on the leading role of Higher Education Institutions (HEIs) on the development and growth of lagging-behind and peripheral regions. We demonstrate that higher education has the ability to lead, foster and promote the industries, enterprises, and economic agents under the condition of adequate interplay with the local government and business sector. If these conditions are not met, the contribution of Higher Educational Institution to regional economic development is limited.

Thence, it is in the best interest of local governments, public authorities, as well as scientists and researchers, to foster this cooperation and to establish extensive links with universities and research facilities.

The findings presented in our paper might be of a particular importance for the peripheral regions which lack other decisive factors of enhancement. Our results might be relevant not only for the academics but also for the policymakers and stakeholders responsible for the regional development.

1 Introduction

Generally, one can see that peripheral regions are exploited by the centres in a same way as peripheral nations are exploited by core countries. However, the unequal exchange of goods has a purpose. For the majority of times, the core countries have a profit incentive that allows the world market to continue to grow. At times, the trade balance between the periphery and the core countries changes. Nowadays many European countries spend a lot of resources in order to bring less-developed regions closer to the central economic trends of the countries. In order to address low level of education in the regions the central governments establish and support local Higher Educational Institutions (HEIs) (see e.g. Bennewort and Charles 2005; or Gulicheva and Osipova 2017).

This paper describes the importance of the Higher Education Institutions (HEIs) in fostering economic development and growth in peripheral regions. The paper presents some strategies, actions and outcomes that might be relevant for successful regional development and the promotion of regional higher educational policies worldwide.

We argue that the role of universities in peripheral regions is different from the one in the centre (see Cabelkova et al. 2017). Traditionally, the third mission is structurally decoupled from the core functions of teaching and research. Most HEIs fulfil their regional mandate by providing competences for the region (teaching function) rather than knowledge transfer (research) in the classical sense. In addition, the effectiveness of fulfilling of all the three roles is subject to numerous local, regional and country factors. We argue, that only if these factors are met, the region can get full benefit from the local higher education.

2 Innovation and renewal in peripheral regions

The classical economic literature has long been investigation the factors influencing the variability of growth rates across countries. The main outcome if this research is that improving quantity and quality of production factors is most potent way to achieve greater economic performance. The quality of human capital as the production factor can vary in terms of (primary, secondary and higher education). The other factors of production are physical capital, and land. Petrakis and Stamatakis (2002) studied the role of education in more and less developed countries and regions. It seems that primary and secondary education is more important for economic growth in less developed countries. In terms of the five political productivity factors, it seems only to be a national industrial policy implemented at local level (Von Weizsacker et al. 2009; Romanova and Akberdina 2013).

Industry 4.0 which comes hand in hand with digitisation and rapid globalisation of our economy is about creating significant impact and opportunities when business, technology, services and innovation overlap (Lasi 2014). The technological aspect will automatize the repetitive office work leaving the employees more time to concentrate on the different aspects of business such as better CRM, improved quality of products, more client-specific marketing, or develop business strategies further. In general firms will get more opportunities to innovate and be creative. The downward side of this process is the steady redundancy of the traditional industries and services which are often characteristic for the peripheral regions. As a result, the region which will not go through the process of innovation will slowly but steadily become even more economically fragile which also lead to social vulnerability.

The aspect of innovation in all the type of the regions is also important nowadays in the context of the overall globalized competition of the industries, countries and regions (Gerybadze, and Reger 1999). Given the considerable profits from scaling the production in the globalised world, where both the transfer of information and the transport of products become more and more easy and cheap, the non-innovating regions may face a destiny of being just a living place for economically and socially challenged population which is supported by the social security benefits from the central government.

The way out of such a pitiful destiny is to find a transdisciplinary approach that would support higher education, regional development and enterprise renewal in test laboratories while providing new growth opportunities in the region (Čábelková and Kohoutek 2018). However, many peripheral regions lack educated workforce for such an endeavour. In case there is a Higher Educational Institution (HEI) located in the region the graduates have a tendency to leave the region for better job opportunities elsewhere. The brain drain weakens the region even further both in the sense of active and entrepreneurially able population and in the sense of age and gender structure. The first goal of the region in this case is to keep young educated people within the region hoping for new enterprises coming to the region attracted by educated workforce. This approach is often combined with strong policy that attracts foreign direct investment such as building industrial zones, providing tax exempts, and attracting the investors in other ways (Čábelková et al. 2015; or Čábelková and Kohoutek 2018). In some cases, these efforts bring the success the local government hope for, but in the other all the efforts may be fruitless. There little knowledge nowadays as for why and how some regions are successful, while the others are not. Often it is an interplay of interrelated factors such as economic condition of the industries and the countries as a whole, the fields in which the HEI educate their students, the predictability and the willingness of local administration and the attractiveness of the opportunities the graduates have elsewhere. In the case of newly created industrial clusters it is also dependent upon the interrelation and integration of the firms that are supposed to constitute the cluster, the levels of competition and innovation (Čábelková et al. 2017).

The regions which have already established their local HEI are in somewhat preferable position comparing to the regions which do not host the HEI within their boundaries. More often than not in this case the first step is to establish the brand new local HEI within the region. There are several reasons to do this. Besides the innovation and general economic reason, in order to fulfil their social needs, these regions need to create an institution to educate such socially relevant professions as their secondary school teachers or nurses for the local hospitals (Šebková et al. 2018). While these professions are of extreme importance for the region, since few of graduates would come to these regions from the other, more developed ones, the direct innovative effect of these faculties of HEI is not much visible. According to the current economic and job market conditions, more important for Industry 4.0 related innovations are the graduates in the field of programming, mathematics, or engineering of all the types.

The profile of the HEI is not the only aspect that influence the probability of the success of the region as innovative region. The other factor concerns the overall regulation of the market for Higher Education in the country that includes the importance that is assigned the job-relevant experiences of the students versus academic research and overall general knowledge (Strielkowski 2018; Pinheiro et al. 2018). While in some industries such as biochemistry the academic related research may cause spin-offs, which increase the overall innovative potential of the region, in others, such as engineering, more practice related experience is needed. Here, the HEIs established directly by corporations may help. One examples of such is the HEI established by Skoda Auto in the Czech Republic. However, few such corporation will come to the region which poor secondary education and low overall

economic activity of the population. Therefore, the first step is to improve the last two, which closes the loop. Population with poor secondary education used to live on social security benefits and little economic prospects would not likely to invest to their education and to education of their children, and the well paid jobs will not come to the region with poor secondary and no higher educated workforce.

The other, not yet discussed option is to bring the educated workforce from elsewhere, hoping that the people will be attracted by a lucrative work position. However, the question remains as for how to create this position at the first place in peripheral regions with few potent firms. One of the frequent reasons for attraction of the firms to the peripheral region is the cheapness of the infrastructure and labour. If this are the main points of attraction, the firms will move to the regions the parts of production which are not knowledge intensive and employ mostly low-paid manual work. Low wages of inhabitants do not allow the region to develop the infrastructure necessary to attract more educated and more paid workforce such as above average shopping malls, theatres and night clubs, good schools for their children, etc. In most cases their regions are not attractive for the people with higher living and social standards. Because of the reasons above, the region is again locked in the position of peripheral region with the need of external force to move it from there.

An important task of the universities is to support companies through applied research and the creation of research and learning environments for the continuous testing of new technologies and the development of new business models for Industry 4.0 (Benešová and Tupa 2017). Therefore, it would be beneficial to support regional development while building competencies through joint projects and development activities. It is often expected that public sector organizations will look after the development of the infrastructure and the business environment.

While the existence, type and qualification of the relevant workforce is one of the problems of the peripheral regions, the other one lies in the choice of the industry(-ies) which is to be primarily developed within the region (Neffke et al. 2011). When defining the smart, at least the following aspects should be taken into account: the strengths of the region, the competence (students and universities), the size, intent, development prospects, history, inheritance and logistical position. Some experts think that perspectives and trend of industry 4.0 focus on the fourth major phase of transition in an industry partnership covering all industries and areas of life. Few regions start from a scratch, and if there is historically existing industry in the region with strong ties to output markets it deems advisable to develop it further so that the existing market niche is not lost. However, the production may use better and more customer friendly production technologies. The biggest challenge lies in the use of transdisciplinary knowledge and implementation work. From a regional development perspective, it is important to see that production itself generates new innovations and services.

Within the European Union (EU), certain regions (called NUTS to mark the regional division units) have repeatedly been used as examples of how successful smart specialization strategies have been defined and implemented by regional innovation coalitions with strong university engagement (Balland et al. 2018). An example of these success stories may be the clusters that developed in southern Germany around industries such as engineering, automotive, printing and electronics, where universities, together with regional public and private players, developed existing technologies to drive strong growth in related fields and industries achieve.

In order to support the entrepreneurs, the measures to attract or maintain international mobile investment, to improve the competitiveness of companies in less-favoured areas, and in particular to create or secure jobs should be applied to peripheral regions and areas. HEIs might be of a great help here as this happened, for example, in the United States. Both public and private sector investment created jobs, built industries, promoted innovation, and pushed the United State forward fostering its leadership in a number of different areas.

Besides HEIs and local governments and firms, the other factor which may facilitate regional development in the central government and the whole stage of the deployment of the economy of the county including the industries present. Overall, there is a strong correlation between telecommunications investment and economic growth, especially after recessions. The decline in stock market valuations, the rise in unemployment and the decline in macroeconomic growth have underlined the need to target financial resources and develop national priorities. In times of economic scarcity, countries no longer have the luxury of being passive and reactive. In many places, broadband is seen as a means of promoting economic development, social connections and civic engagement.

One of the possible ways the central government can help regional development is by increasing public demand in the region by building infrastructural projects. The infrastructure will help to attract new investors and will also create jobs for the current workforce. Keynesian theory, where public sector interventions (increasing public demand) were seen as the main driver of economic growth in the times of recession may be of great help on this process.

3 Higher Education Institutions and peripheral regions

The rapid expansion of universities and other colleges around the world in recent decades raised a question of the social responsibility of educational establishments (Kuokkanen 2011) and the economic return to the public and

private investment to education. The level of responsibility that a university assumes as part of the definition of smart specialization strategies ultimately depends on many regional factors.

The regional role of the university is threefold similarly to the role of the university in general: education, research, regional engagement (or the third role) (see Kohoutek et al. 2017). Though regional engagement is separated as the third role, the first two are also region related. As was discussed above, the first role is probably the most important for the region from the point of view of educating the work force. However, the relevance of the field of education to the industrial profile of the region is of paramount importance. On the other hand, one should not forget the social function of education in the sense of both socially relevant professions (such as teachers of primary and secondary schools, social workers, nurses and other relevant professions) and social function of better understanding the environment and people including social responsibility which usually education in Europe brings. The character development and the value effect is the other indirect effect of education for the regions. Last but not least, the education opportunities decrease unemployment levels of young adults and reduce the levels of crime.

Research is the second role of the university in the region (Fritsch and Schwirten 1999; Forida and Cohen 1999). The level of relevancy of research to the regional industries is of the most importance. Currently, most of the European universities strive for the position of the internationally recognised research universities which is reflected in their position on the international university rank list. However, the internationally relevant research may be misleading for the region as at first the regional industries might need much applied incremental research strategies. This type of research, thought may have substantial commercial value, can hardly be published in international peer reviewed outlets. Moreover, in the case of commercial secrets it is not advisable to publish it anywhere, not to support free riding. Thence, paradoxically the run for internationally recognised research university may damage the regional impact of the university. On the other hand, the internationalization of research and students may bring new ideas, people and firms into the region, which in long run may lead to substantial benefits for the regional industries. Asian economies in India, Singapore, Hong Kong, Malaysia, South Korea and other Middle East economies have started education projects. The emerging regional education centres in Asia have inevitably led to a shift in students' international mobility patterns and led to intense competition between universities in the region competing for students. The internationalization of higher education and the increasing mobility of students are not new social phenomena.

Understandably, not all the universities need to be the world best. In most countries regional universities are not really required to strive for this position and vocational universities are also existing. However, for example in the Czech Republic, the regulations are such, that the university in order to have accredited educational programs need to have professors with internationally recognised research expertise who are to guarantee the quality of the programs and to teach there. This condition, and the requirement to do research in order to get part of the finances from the government, effectively pushes the university to the track of world-recognised research university and limit it regional role.

The third role of the university is the regional role (Gulbrandsen and Slipersaeter 2007; Laredo 2007). There are various interpretation of regional role depending on a country and region, but in general it implies linking the activities of the university to the demands of the local community. In practice it may imply the University of the Third Age and lifelong learning, various exhibitions and activities within and for the region, collaboration with the regional authorities in regional projects, participation in activities of local secondary schools, etc. Furthermore, universities can make an important contribution to regional capacities in terms of institutional and social characteristics. By networking and participating in projects with actors in the regional and international knowledge community (inside and outside these coalitions), universities contribute to the development and consolidation of norms and values in their local environment. While in general this role is a socially responsive one, it burdens the university with additional time and financial expenses and if not covered by the local government, the universities may have a tendency to limit it to the minimum.

To sum it all up, all the three roles of the university may contribute to its regional development under certain conditions. If these conditions are not met, the extent of contribution is substantially limited.

4 Conclusions and policy implications

Generally, it is obvious that the role of HEIs in less-developed regions is difficult to overestimate. This is partly because less economically successful regions do not have often the educated workforce or substantial research capacities. European innovation performance is high and has developed significantly in recent years, however, there is substantial competition of regions for the placement of highly technological and value adding enterprises. Thus, less developed regions are supposed to compete with the more developed ones.

One of the competitive advantages of the led developed regions is the cheapness of its labour force and possibly well created invitation packages for the new coming firms including infrastructure and tax exempts. However, if there is a lack of well-educated workforce, this policy attracts mostly the low technological parts of

production process, which further on conserves the region in the position of economically peripheral one. The well-functioning local HEI seems to be one of the most important factors which may break the circle.

In recent decades, a series of new burdens has become increasingly clear for the universities. The most common point is whether a university that recognizes that regional engagement is a strategic mission can really take precedence in the face of increasing pressure on universities. In addition, the low level of secondary education makes the university to partially substitute for the education its students should have gotten before entering it. Government regulation and the stress on the world recognised research and publication divert the attention of the researchers from the needs of the local industry. The stress on the implementation of the third role redirects the resources even further. As a result, universities in these less innovative regions, where innovation policy must be successful if it can make a difference, are exposed to a series of specific tensions that could interfere with their capacity to constructively contribute to the implementation of regional strategic improvement measures. All these factors need to be considered in order to make the regional role of the university efficient.

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