Smart Specialization Concept as a Way of Regional Innovation Performance Boosting

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Abstract

The concept of smart specialization represents a theoretical approach that suggests an entrepreneurial process of discovery as a way to reveal the areas in which a country or region does the best. In practice, this concept focuses on priorities of regional innovation policy. The concept has been developed within the "Knowledge for Growth" Expert Group advising the EU Commissioner for Research in the field of achieving of Lisbon Strategy goals. Based on this concept, the initiative Research and Innovation Strategies for Smart Specialization RIS3 was launched. All countries and regions have to design their own RIS3 strategies if they want to use the European Structural and Investment Funds to support innovation activities. The paper analyses these key strategic documents for the 2014-20 programming period in Czech regions. It deals with the visions of individual regions as well as the definition of key areas of change and strategic objectives. The evaluation is focused on definitions of individual concepts, particularly regional visions, the specification of areas of change and the reality of the objectives set.

1. Introduction

In developed countries, innovations represent a key factor for economic growth and socio-economic development. However, the innovation activity is spatially uneven and many countries and regions are not able to exploit their innovation potential (Prokop et al., 2017). This topic is strongly emphasized by institutional theories whose ideas have a significant impact on public policy. In the last about 30 years, innovation policy has shifted increasingly to the regional level (e.g. Hlaváček, 2017). Particularly, this is caused by two facts: The first of them is that innovations are perceived as a territorial phenomenon. Innovations are often the result of specific local conditions that cannot be quickly and cheaply copied or transferred elsewhere. Thus, the regional environment has an important role as the background of the innovation processes (Páger, 2015). The second one is the heterogeneity of the regions, which makes it impossible to create a policy mix that is universally applicable in each region. Policy tools have to be rather tailored to the specific conditions of a particular region. (Isaksen and Nilsson, 2013)

The fundamental requirement for a regional innovation policy is that it has to be based on the region's socio-economic environment and has to focus on the specific needs and problems of

the region. This approach is often called "place-specificity" (e.g. Morgan, 2017). Creation of regional innovation strategies is quite a new phenomenon in the Czech Republic and individual regions differ in experience with it. Another problem can be the fact that regions have limited financial resources for innovations directly governed by regional bodies and they often depend on the sources from the European Union (Šipikal and Parízková, 2009).

The objectives of our article are to compare the application of the smart specialization concept in the Czech regions with low knowledge and innovation potential and to evaluate the visions and strategic objectives of their Research and Innovation Strategies for Smart Specialization (RIS3) strategies with respect to the reality of their achievement. The Ústí, South Bohemian, Hradec Králové and Vysočina Regions have been selected as the regions with low knowledge and innovation potential.

2. Development of Smart Strategy Concept in the European Union

The European Union (EU) approved innovation policy as its political priority, because through its implementation many problems can be solved (Lipková, 2012). In the context of adapting public policy to specific regional conditions, the place-based approach is broadly discussed in scientific literature as well as policy debates. Place-based policy is defined as a long-term strategy oriented to the fight against unexploited potential and elimination of persistent social exclusion at specific locations through external interventions and multi-level governance. The core idea of the approach is that geographical context really matters. Another important feature of this approach is the interventions based on the partnership among different government levels and a combination of knowledge from local and external resources. A place-based approach accents that there are different development paths and that it is necessary to pay attention to details and the institutional context. (Barca et al., 2012) For policy purposes, this approach has been further developed by Barca (2009) in his report for the European Commission that dealt with the reform of the European Cohesion Policy. This report emphasized that the reform of cohesion policy requires a strong political concept and a focus on priorities. It recommended defining about 3 or 4 key priorities for which approximately 60% of resources will be allocated. Innovation was mentioned as the first priority.

While the place-based approach is focused on general public policy, the concept of constructing regional advantage approach (CRA) concentrates more on innovation. This concept stems from similar theoretical ideas. The CRA approach builds on theory development: comparative advantage - competitive advantage - constructed advantage (Cooke, 2007). This concept builds on the theory of competitive advantage developed by M. Porter (1998), but enriches it with the ideas of the concept of innovation systems (Asheim et al., 2011), particularly knowledge base concept (Asheim and Coenen, 2009) and theory of related variety (Boschma and Iammarino, 2009). Constructing regional advantage has to be based on the unique capabilities of regional actors, not just research efforts. Each industry can be innovative, the division of the industries into high-tech and low-tech is not relevant and the regions should build their advantage on the development of the industries that have tradition there. (Asheim et al., 2011) In the practical policy context, the CRA concept is used by the expert group set up by the European Commission (DG Research) and led by professor P. Cooke (European Commission, 2006).

Recently, the greatest attention of the political sphere has been put on the concept of smart specialization, which also stems from the above-mentioned theoretical ideas. This concept deals with the selection of regional innovation policy priorities, in particular (McCann and Ortega-Argilés, 2013). The emergence of the concept is attributed to the expert group Knowledge for Growth led by prof. Dominique Foray, that acted as an advisory body to

Commissioner Janez Potočnik in the area of achieving the objectives of the Lisbon Strategy (European Commission, 2010). The concept suggests entrepreneurial processes of discovery to help identify where the region is doing best. In other words, it is about finding out the research and innovation domains in which the region can excel. Subsequently, the region should orient its specialization around these domains. (Foray et al., 2009) Innovation policy should reinforce strategic technological diversification around key domains and, in particular, build on "technology of general purpose" (sometimes called as key enabling technologies).

An important milestone of the regional innovation policy in Europe was the launch of the RIS3 initiative (Research and Innovation Strategy for Smart Specialization) in 2014, which was inspired primarily by the smart specialization concept, but also by the CRA concept. This initiative has a significant impact on the allocation of resources from the European Structural and Investment Funds to research, development and innovation. In other words, if any EU member state wants to get funds for this field, the ex-ante conditionality is to prepare its own national RIS3 strategy and possibly its regional annexes. The national / regional RIS3 strategies represent an integrated and place-based approach to economic transformation that is built on these 5 key characteristics: focus on national and regional priorities, based on strengths in each country / region, support for practice-based innovation, involvement of stakeholders, and monitoring and evaluation (European Commission, 2012).

3. RIS3 Strategies in Regions with Low Innovation Potential

In our paper, we have focused on four regions in the Czech Republic that have a low knowledge and innovation potential in the long term. According to the analysis by Žítek and Klímová (2016), the Ústí (ULR), South Bohemian (SBR), Hradec Králové (HKR) and Vysočina (VYS) Regions belong to this group of regions. The analysis evaluates the period from 2006 to 2012, and although some of these regions have made some improvements in some indicators, no significant structural change has been detected. There has not been observed any larger differences among the selected regions in terms of overall rating.

The analysed regions have the lowest R&D expenditures expressed as a percentage of GDP (values between 0.45 and 1.24% in 2012). The Ústí Region and the Vysočina Region have below-average share of employees with university degree in the total number of employees. The Ústí and Hradec Králové Regions have a strongly below-average share of enterprises that have introduced technology innovation (according to the survey on innovation activities, CSO 2014). These regions have a logic natural need to eliminate the mentioned shortcomings. However, the extent to which the regions can be successful by 2020 remains a question.

3.1 Strategic Visions

The introductory point of the design part of RIS3 strategies is their strategic vision. Table 1 shows how the four regions defined their vision. Although we cannot expect more than general ideas from the formulation of strategic visions, let us comment on some facts about the practicability of achieving the vision. The statement "The Usti Region's economy is growing" is quite universal and the economic situation will depend on the general economic situation in 2020. It will show over time, whether the knowledge-intensive industries are developed in the region. Nevertheless, we appreciate the intention to cooperate more intensively with Saxony and this can be good opportunity for this region. A problematic is the question of cooperation "with enhanced regional research" in the region without greater tradition of research. The vision of the South Bohemian Region is limited to a statement of general conditions for the implementation of the mentioned activities, and therefore can be considered realistic.

However, this vision is not sufficiently concrete and ambitious. The Hradec Kralove Region is in a different situation. Although it has the potential of qualified people, it does not achieve good results in innovation enterprise and excellent research. The essence of the Vysočina Region's vision is "systemic support". On the one hand, the Vysočina Region practically does not have R&D capacities in the public sphere, on the other hand, there are many companies with their own R&D activities. It is therefore a question how the policy makers will manage to propose a stimulating support system that will be attractive to the relevant industries in the region.

Table 1: Strategic Visions of the Selected Regions

Ústí Region
The Ústí Region's economy is growing and creating job opportunities for educated people. Traditional industries are upgrading, increasing their added value and looking for new directions for development. There is an increase in the number of enterprises that actively use and exploit knowledge and new technologies. This is reinforced by cooperation with enhanced regional research as well as R&D centres in the Czech Republic and Saxony.
South Bohemian Region
The South Bohemian Region is attractive for living and work of talented people, offering attractive conditions for business, investments and innovations, both in the traditional and the new industries that use the knowledge base of the emerging local science and research sphere.
Hradec Králové Region
The Hradec Králové Region – A competitive region with developed innovation enterprise, excellent research and qualified people.
Vysočina Region
The Vysočina Region will be ranked among the regions systematically supporting research, development and innovations by 2020, through specialization on selected traditional as well as new prospective industries with a significant growth potential.

Source: JČK (2014), KHK (2014), ÚLK (2014), VYS (2014)

3.2 Key Areas of Change and Specific Objectives

The crucial element of the implementation of the RIS3 strategy is the identification of the key areas of change (KAC), strategic (SC) and specific objectives. Their structure is significantly different in the analysed regions and to a certain extent illustrates the approach of regional authorities to knowledge and innovation management. In general, the RIS3 strategy of the Hradec Králové and Ústí Regions seems to be the most sophisticated.

3.2.1 Ústí Region

The Ústí Region considers human resources and technology transfer as a key focus of the RIS3 strategy. In particular, the former is an important barrier to the development of the region. The strategic objectives within the first KAC are oriented to all levels of education. Popularization of technical fields is primarily concerned to primary schools. The region expects to increase interest in technical secondary schools that produce an insufficient number of graduates. It also expects a close cooperation with businesses. In the case of university graduates it is stated that the only public university in the region produces other type of graduates than those that are demanded in the region. At the same time, graduates are not usually willing to do business themselves. The region will therefore strive for changing the situation. For the second KAC, the starting situation is more complicated for especially two reasons: a lack of information of research organizations and enterprises about the needs and possibilities of the other part, and companies in the region are often not innovative and do not need R&D results. The stated objectives aim at overcoming barriers and support for research activities in the region.

With regard to the indicators that determine the success of the RIS3 implementation (low R&D expenditures expressed as a percentage of GDP, low share of enterprises with R&D as the main activity, low share of enterprises that have introduced technical innovation), it is clear that it will be difficult to achieve targets concentrated on R&D and technology transfer. The region correctly perceives their importance and has to apply various measures to make progress in these areas. On the contrary, some progress can be achieved in the area of human resources through cooperation with businesses, as the strategy rightly supposes.

3.2.2 Hradec Králové Region

The Hradec Králové Region has developed its key areas of change into four domains. In particular, the first three of them (the fourth is the implementation of RIS3) demonstrate the rich experience of strategy makers: increase in innovation performance, excellent public research and the development of human resources for R&D. These domains can certainly be crucial for competitiveness increase. As regards innovation performance, which is very low in the region, the strategy searches for a way of raising interest in doing business in general through consultancy, education and popularization activities. At the same time, it tries to create a system of support for R&D activities in enterprises, particularly to support their ability to cooperate and network. In the case of the second KAC, like the Ústí Region, the Hradec Králové Region also tries to declare its ambition to support R&D transfer. The suggested ways are both promotion of applied research in public research organizations and an increase in the motivation of companies to exploit the results of public R&D. In the field of human resources, it is considered important to popularize science and technology already at primary schools, and to increase the share and quality of graduates of vocational schools. Strong emphasis is put on cooperation of enterprises and schools. According to the RIS3 strategy, it is necessary to set up mechanisms for timely capture of talented students. Simultaneously, the need to improve the quality of secondary schools and university teachers is explicitly mentioned.

The Hradec Králové Region is not only characterized by a low share of enterprises that have introduced technology innovation but also a low degree of cooperation on innovation. The research potential of the region is low too. Support for technology transfer will be similarly difficult as in the case of the Ústí Region. Some of these steps can positively stimulate both research organizations and businesses. The orientation on activities that support education corresponding to the demand in the labour market can be perceived as a suitable approach.

3.2.3 South Bohemian Region

The South Bohemian Region has only set one strategic objective for each of the three key areas of change. The strategic objectives are very similar to the KAC and do not actually develop them. In the area of quality human resources, it is a priority to improve the quality of the workforce so that it meets the requirements of the labour market. This is also related to the need to increase interest in technical fields already at primary schools. At the same time, the region considers it important to positively influence mobility of workforce. The region wants to prevent the departure of qualified people from the region, but also to attract mainly technically educated and researchers from other regions. The second key area is technological transfer. The main problem is the lack of cooperation between academic institutions and the business sphere. The solution is to introduce appropriate policy tools to increase the incentive for enterprises to collaborate with R&D organizations and their willingness to engage in industry platforms and cluster initiatives. The third area of change is the development of enterprise, which means its support in various ways (support for start-ups, consultancy, intellectual property rights protection, support for internationalization).

The South Bohemian Region has the highest level of knowledge indicators among the analysed regions: the highest number of students of natural sciences and engineering & technology, the highest expenditures on R&D expressed as a percentage of GDP, and the highest share of employees with university degree in the total number of employees. This fact increases the chances of the region to succeed in implementing the RIS3 strategy, especially in the first two key areas of change. The impact of measures to promote entrepreneurship depends on the ability of the public administration to connect with businesses through a good communication strategy.

3.2.4 Vysočina Region

The Vysočina Region has defined three key areas of change: higher innovation performance of companies, accessible and skilled workforce and ICT infrastructure. The aim of the first KAC is to increase the share of innovative enterprises and businesses with their own R&D. This aim should be reached mainly through providing various types of business consultancy. In the field of quality of workforce, the emphasis is put on increasing the interest in technical fields (popularization) and increasing cooperation of schools (secondary schools and universities) and enterprises (internships, professional practices, excursions, competitions). The only goal in KAC ICT infrastructure is to cover "gray and white spots" of the region where high-speed internet is not available. This is considered a barrier to enterprise development in these parts of the region.

Evaluating the potential success of the RIS3 strategy in the Vysočina Region, it is worth mentioning, in particular, that the share of enterprises with technology innovation in all enterprises exceeds the average share of the Czech Republic. It also has a sufficient number of students of technical and natural fields. In terms of achieving the specific goals, the building of the ICT infrastructure appears to be the easiest one (if financial resources are available). The question is whether its existence will automatically lead to an increase in entrepreneurial activity.

4. Conclusion

The article dealt with application of the smart specialization concept in selected Czech regions that have a low level of knowledge and innovation potential in a long-time period. We have selected four regions, which are the Ústí, South Bohemian, Hradec Králové and Vysočina Regions. Their common characteristic is mainly a low level of R&D activity, but also other structural problems.

By analysing the key areas of change and strategic objectives of the RIS3 strategies, it was found out that the regions mainly focus on improving the quality and availability of the workforce in technical fields as well as on improvements in the technology transfer. The ambitions of the individual regions are similar, but the prerequisites of their success are different. For the regions with little tradition of research, it is certainly difficult to achieve a qualitative change. The effectiveness of various measures in the education sphere or in the field of business consultancy depends on a number of other aspects. The RIS3 strategies can be an important positive incentive on the way to increasing the competitiveness of the regions.

The concept of smart specialization also recommends regions to focus their strategies on those industries that have tradition and good prerequisites there. In the Czech Republic, seven industries representing the areas of national specializations have been identified. Furthermore, most of Czech regions have added special areas that are concentrated in their territory. Only

two of the four analysed regions, the Ústí and Hradec Králové Regions, defined their own areas of regional specialization.

We are aware of the fact that our research has some limitations. We focused on some basic characteristics of the RIS3 strategies, but more detailed analysis is needed. Further research should be aimed at two main topics. The first of them is the relation and harmony between RIS3 strategies and the Initiative Industry 4.0 that was approved by the Government of the Czech Republic in 2016. The second topic represents the efficiency of implemented policy interventions and their real impact on innovation development and achieving strategy targets.

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