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The role of smart specializations in regional innovation policy – an analysis based on blue-economy sectors

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Abstract

This paper explores the role of regional policy in strengthening the EU's research and innovation policy paradigm, with a particular focus on smart specializations. These specializations play a major role in stimulating R&I at the regional level in less-developed regions of the EU. Smart specialization is the EU's new concept for the regions; it assumes improvement in both innovation and competitiveness, based on endogenic potential; in particular, in already existing branches of the economy. Smart specializations should, by definition, concentrate economic resources on chosen priorities; one of these priorities is the growth of the blue economy. Smart specializations need to be clearly defined, only then can they contribute to economic growth when combined with proper management of public financial means. The objective of this paper is to introduce and characterize the assumptions for smart specializations and to assess the progress of their implementation and the necessary conditions required in Polish regions; particularly when referring to sectors of the blue economy.

Introduction

The concept of smart specialization introduces a general outlook on the issue of specialization in science, technology and the economy in the European Union. Being a new idea in the European Union's Cohesion Policies, its assumptions refer to theories which have been presented in the literature for many years, especially those covering regional development, i.e.: the theories of: economic base, basic product, industrial district, territorial production systems, cluster, "the learning region" and the new geography of the economy.

Smart specializations have become a new philosophy for innovative policies that are shaping the European Union and therefore they have been a focus for many analyses and references in the European Union's programmes. The following papers are of particular importance for understanding and implementing the concept (Nowakowska, 2015, p. 59):

- Regional Policy Contributing to Smart Growth in Europe 2020: the document describes the role of regional policy in the implementation of the Europe 2020 Strategy within the intelligent growth concept, and, in particular, the implementation of the lead project: "The Union of Innovation" (European Commission, 2010, p. 553).
- Connecting Smart and Sustainable Growth through Smart Specializations: the document indicates the ways to connect smart specializations with stable and well – balanced economic development (European Commission, 2012).
- Guide to Research and Innovation Strategies for Smart Specialization RIS 3 which looks at the ways of designing smart specializations and the instruments for their implementation (Foray et al., 2012).

The documents present how the concept converges with the policies of the European Union and they give practical recommendations for constructing

regional policy aimed at the creation of smart specializations.

Purpose and research methods

The basic idea of the smart specialization concept is to enhance the innovativeness and competitiveness of regions by taking advantage of their assets and developing the most promising areas of specialization, with the aim of building a competitive advantage at the international level (Gralak, 2015).

The objective of this paper is to introduce and characterize the assumptions for smart specializations and indicate the progress of their implementation and the necessary conditions required in the Polish regions located along the Baltic Sea coast. Moreover, this paper reviews and analyses major documents exposing the question of smart specializations. The empirical part deals with the identification and assessment of the progress in the implementation of the concept in Polish regions, with particular focus on the blue-economy regions. The main findings outline the principles of innovation policies and position regional policy in that context, they also evaluate the novelty of smart specialization in the context of blue-economy development in the Polish regions stretching along the Baltic Sea.

The research performed on the matter in question includes various analyses of the literature, development projects and innovation strategies, both European and national. The research applies the method of induction (at the stage of the literature studies) as well as analysis and synthesis (the empirical stage), and finally the method of deduction (the conceptual stage).

The idea of smart specialization

The difference between the concept of smart specializations and the traditional concepts of innovation management, is the notion which can be defined as entrepreneurial discovery – an interactive process in which the forces that influence the market and the private sector of the economy search for information on new fields of activity, and government agencies assess the influence of selected areas on regional development and they support the regions which possess the greatest potential for achieving a competitive advantage (Wolniak & Hąbek, 2016, p. 133).

Smart specialization is based on the conviction that no country or region can be a leader in all areas of science and innovation, and that each of them has a certain potential which enables them to only achieve a competitive edge in some areas. According to the European Commission, in knowledge based economies, each region has its own role to play, under the condition that they are able to find their competitive advantage as well as their potential and ambition to excel in selected market sectors or niches.

The notion of "smart specialization" does not have a standard definition. For the needs of strategic planning, it is defined as a new or evolving economic specialization which bases its competitiveness and development on specific and unique regional resources as well as their innovative combinations and applications (Gralak, 2015).

The concept supports the development of smart specialization in an attempt to improve the effectiveness of the innovative process, particularly in the context of public sector expenditure (Foray, David & Hall, 2011). It takes into consideration the assumption that regions should not and cannot develop activities in all areas at the same time. Regional authorities should choose such domains in which they have adequately developed resources, within which they should concentrate their research and development activities (McCann & Ortega-Agiles, 2015).

The necessary conditions for the implementation of smart specialization (UMWZ, 2015; 2016a; 2016b) are as follows:

- changing the traditional behavioral patterns in society (fear of the unknown);
- assurances of the efficiency and quality of the educational system and the ability to adjust that system to the market's needs and readiness to adequately respond to changes in the situation of the region;
- shaping of pro-innovation views and actions among entrepreneurs, giving incentives for implementation of innovations, especially those developed in co-operation with the research and development sector;
- implementation of innovative ideas in the market through actions aimed at lowering the risks connected with the process;
- support for research and development activities in research centers and companies;
- increasing the number and quality of innovative implementations, especially those based on research and development projects and with the participation of the institutions involved;
- support for innovative applications and new communication technologies which meet the needs of modern society;

- facilitation of access to the financial instruments that are necessary for innovative projects, including the newest solutions in this respect worldwide;
- effective allocation of financial means for research and development projects aimed at bringing innovative projects to the market;
- assistance for international cooperation and internationalization of companies in order to reinforce their competitive edge and to enhance their importance in international or global commercial supply chains;
- assistance given for cooperation between the scientific research sector and the economy through legal regulations that encourage the participants of the process to act more effectively;
- advancement and broadening of offers from institutions to support implementation of innovations and technology transfer as well as assurance of easier access to such services.

When analyzing the conditions required for the implementation of smart specialization in regional innovation policy it needs to be stressed that promotion of pro-innovative solutions, as well as openness towards new elements, are necessary for the development of the modern economy. The changes should be accompanied by initiatives supporting innovations in many aspects of life, relating to social, environmental and economic issues. The authorities need to focus on the human factor by creating opportunities for people to obtain better job qualifications that are indispensable for research and development activity. Programmes supporting all levels of education are helpful, especially those aimed at creativity and innovation development.

It should be remembered that one of the key factors that contribute to the creation of innovative markets is the possibility of obtaining financial means for realization of ground-breaking projects. Such projects are perceived to be risky by commercial financial institutions; therefore they must be supported by access to other sources of financing. In the long run, effective allocation of financial means for research and development projects will enable the creation of well-balanced financial instruments that will support the stable growth of innovative economies and create new added value to companies introducing new ideas to the market.

Innovative potential in Poland in the context of smart specializations

Having analyzed the potential for innovation in Poland, there appears to be a plethora of social, economic and urbanization factors that influence the level of innovativeness. On one hand, the innovation process is strongly determined by the wealth factor and abundance of human capital which reinforce the search for new ideas, services or products. On the other, the ground breaking process depends on the preexisting technological capacities of the economy and also on the existing level of scientific research.

Taking into consideration some more important factors, particularly the ones connected with technological strength, it needs to be indicated that the regions of northern and western Poland feature a relatively low level in the R&D sector, when compared with, for example, Małopolskie or Mazowieckie; which are the national leaders in this respect. Internal outlays on the R&D to GDP ratio (the GERD) have been maintained considerably below the Polish average. The Lubuskie and Zachodniopomorskie regions occupy the last two places among all the regions in Poland with ratios of 0.20 and 0.27 respectively. Furthermore, the total internal outlays of the industrial sector on R&D (the BERD) in relation to GDP in 2017 were only 0.25% in the "microregion" (the Lubuskie and Zachodniopomorskie regions combined) and the outlay per head was lower than the average in Poland. The tendencies concerning the innovative activity of companies in Poland have been similar in recent years. The latest period has featured a drop in the number of companies actively innovating when compared with their overall number, in both the industrial and service sectors.

The above analysis, based on some important ratios, indicates that the existing innovation potential has not been applied at a satisfactory level. This has been happening despite the presence of academic centres and the intersectoral co-operation which has been attempted.

A solution for this situation can be well constructed policies that are pursued with the aim of establishing a proper system to create effective connections between science, technology, administration and the market. Such links will provide opportunities for the fast introduction of innovation which will improve competitiveness in the markets and will contribute to the enhancement of living standards.

The blue economy sector in Poland in the context of smart specializations

The improvement in the competitive advantage of some regions makes it possible to implement innovative solutions in transport and maritime industries. Such potential in the so-called blue economy is

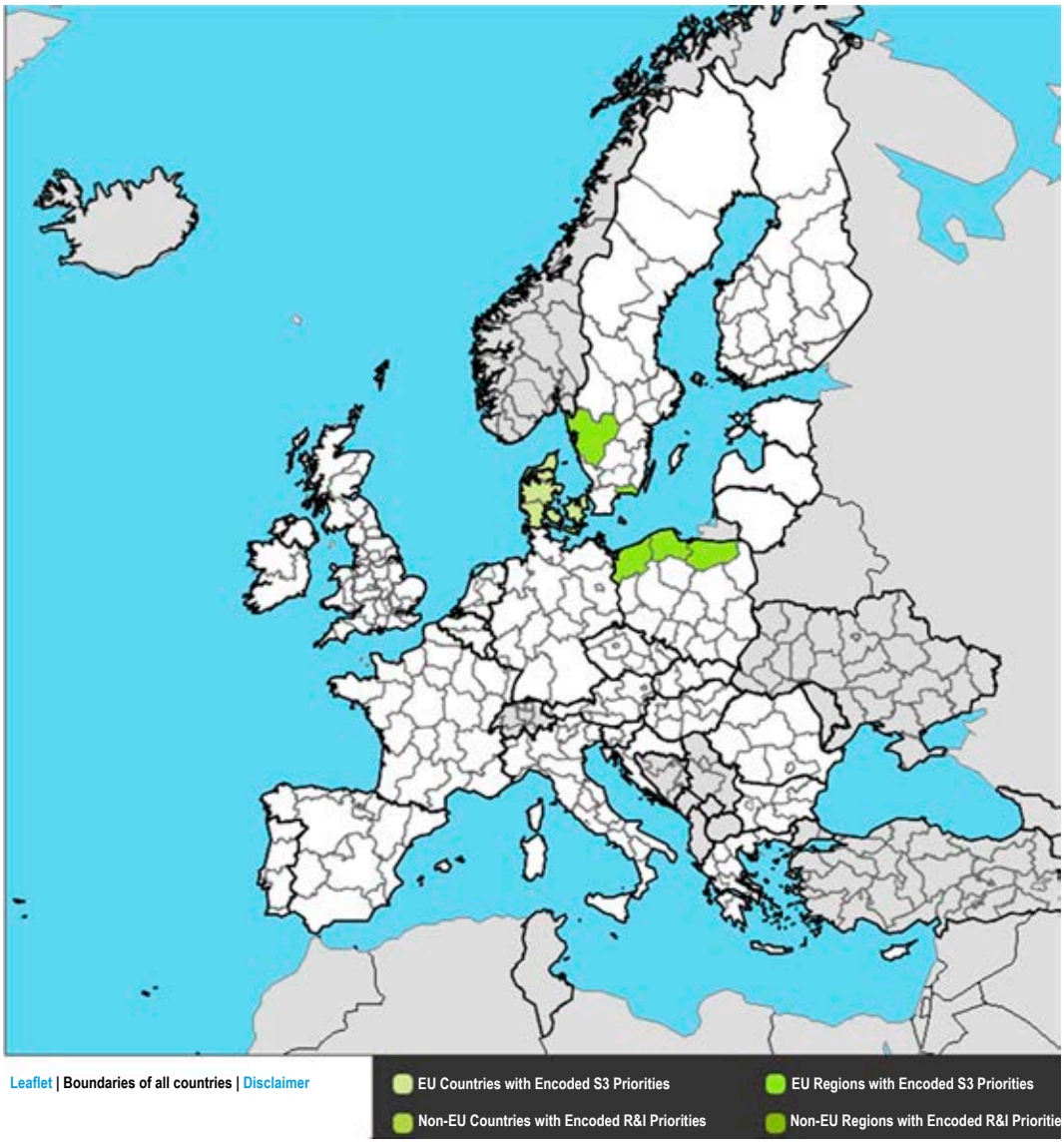

Figure 1. EU regions which have incorporated "blue growth" (The Smart Specialization Platform, 2019)

particularly visible in the northern regions of Poland; especially the Pomorskie, Zachodniopomorskie and Warmińsko-Mazurskie regions (see Figure 1).

As the authors of the report indicate, Poland's blue economy employs 162,000 people and generates over 3.3 billion Euros in GVA. Poland's blue economy is dominated by the coastal tourism sector, which contributed 27% of jobs and 20% to GVA in 2017. The ports, warehousing and the shipbuilding sectors are also important contributors to the blue economy; providing 18%, 23% and 14% of the jobs and 20%, 16% and 17% of the GVA in 2017 respectively. Even though Poland's national GDP growth has been rising by 47%, growth in the blue economy GVA has been sluggish (8%). At 0.71% in 2017, the share of the blue economy GVA to national GDP fell 27% compared to 2009; blue economy employment also decreased. While national employment grew by almost 3%, blue economy jobs fell 7% compared to 2009 (cit. (European Commission, 2019)).

Blue economy specializations as smart specializations of Polish regions

The choice of smart specialization in Polish regions features similar characteristics. Identification of a specialization is mainly based on statistical data: mainly on the GDP level generated by a particular branch of the economy, on the employment level and on the percentage of the workforce that is educated and prepared for the branch. Another important element are comparative analyses that are made in order to show the potential of key branches. In parallel, consultations are performed in all the regions, involving entrepreneurs, business environment institutions and non-governmental organizations.

It needs to be stressed that the level of diversification of smart specialization is different in particular regions of Poland; this causes significant difficulty when making comparisons between them. According to the methodology of comparative research, specializations are selected by referring to branch standardization. Specializations are put into groups and the groups are shown in sectors. The aim of such a rating system is to specify a direction for the development of a particular branch, based on a broader description in the strategic document. The research has taken into account the level of importance of each branch for the smart branch specialization strategy of a particular region as a whole. Unfortunately, the level of detail for each region ("voivodship"), and the number of specializations selected did not adhere to standardized rules.

The analysis of the selected smart specializations in the regions shows that the most popular Polish specializations do not belong to a specialization related to the maritime economy. The majority of Polish intelligent specializations remain beyond the sectors of "blue-growth". The particular selection of regional choices concerning specializations are as follows: telecommunications, IT and multimedia have been chosen by Dolnośląskie and Wielkopolskie regions. Medicine and health-promoting tourism are supported by Dolnośląskie, Lubuskie and Zachodniopomorskie; within their innovative regional policies. Health food production and promotion is a feature of Dolnośląskie, Lubuskie and Opolskie. Bioeconomy will be supported in Dolnośląskie, Lubuskie and Zachodniopomorskie. The Opolskie region wants to focus its regional policy on energy production; including renewable sources of energy. Machine building and metal industries is another popular specialization which is supported in Dolnośląskie, Lubuskie, Opolskie and Zachodniopomorskie.

The table below presents the smart specializations which are divided into groups and branch sectors (see Table 1).

The above analysis shows that the blue economy specialization only appears in the group of intelligent specializations in the three voivodships (regions) located on the Baltic coast: Pomorskie, Zachodniopomorskie and Warmińsko-Mazurskie. The priorities of blue growth mainly refer to the following activities: port management, shipbuilding, transport, logistics and construction of sea infrastructure. The coastal locations of the three regions are crucial for the development of the sea-based economy. However, the smart specialization generated there belongs to a group of traditional sectors which feature a lower level of innovation. Therefore it should be concluded that the smart specializations of Pomorskie, Zachodniopomorskie, and Warmińsko-Mazurskie regions have to work on more promising prospects of future development in order to fulfil their functions and support interregional competitiveness.

This is particularly important in the context of the data shown earlier in this paper which mirror the deeper and deeper decreases in the blue economy evaluation indicators of the Polish coastal regions in comparison with other regions in the European Union.

In summary, it must be concluded that smart specializations pose quite a challenge for many regions in Poland. Inadequate levels of experience and know-how were a feature of the early stages of setting priorities and resulted in differences in the abilities of various regions to implement strategies for research and innovation within the smart specialization policy. In case of the blue economy regions, the new instrument of progress is not only the innovation strategies, but the very concept of the blue economy as such. It should be stressed that the traditional

Table 1. Smart specializations in the chosen regions in Poland (author's own compilation based on the RIS, 2019)

Region	Smart specialization
Pomorskie	Off-shore, port and logistics technologies Interactive technologies in a high level IT environment Eco-effective technologies in production, transport, distribution and consumption of energy and fuels Medical technologies for the diseases of civilization and for anti-ongoing cures
Zachodnio-pomorskie	Bioeconomic (based on the natural resources of the region and its economic and scientific potential) Maritime industries and logistics (including ship building and off shore technologies) Machine building and metal industries. Extensive experience in ship-building is a precious asset here. The region features fast growth in this line of business. Services of the future (dynamic development of ICT, IT and KPO branches), as well as creative industries.
Warmińsko-Mazurskie	Water areas as an economic asset (including yacht and boat production, water sports, transport and construction of water infrastructure) Woodworking, timber and furniture industries High quality food production

maritime industries (i.e. shipping and fishing) have been the subject of European, national and regional policies for decades. On the other hand, the "blue branches" within such industries either lack adequate support, or the support is given at a very limited extent. The following conclusion indicates that, at the European level, particular guidelines on the strategies for research and innovation within the "blue regions" have not yet been highlighted.

"Blue growth" requires intensive action in order to enhance the potential for balanced innovation, which, in turn, requires streamlining of the means of support. Implementation of the smart specialization project in the regions around the Baltic Sea needs a high level of operational abilities and a system of common monitoring. The program of implementation of the project is part of a broader management, focused on smart development of the "blue regions". The system of monitoring and assessment of smart specialization in the "blue growth" regions can be helpful in overhauling the strategies for research and innovation, and also to intensify the necessary actions to make the "blue regions" more visible.

Conclusions

Smart specialization strategies differ from typical innovation strategies through their references to the reality, i.e., not only taking into consideration research methodology, terminology or statistics, but also various conditions and features like geographical location or historical, social, economic and political background as well. It must be stressed that smart specializations should not be perceived as an inflexible element of economic development. On the contrary, the research should assume the evolution of smart specialization strategies and their modifications according to the changing needs or conditions.

The three regions analyzed in this paper, i.e., Pomorskie, Zachodniopomorskie and Warmińsko-Mazurskie have declared blue growth in their package of specializations. By definition, blue growth should lead to intelligent, socially inclusive and steady economic growth, aimed at innovation and also at the enhancement of the blue economy.

However, as mentioned above, the traditional economy sectors prevail within blue growth in Poland; predominately transport and harbor operations. These activities, enhancing and improving Polish ports, are necessary for the future development of the regions in question. At the same time, more emphasis should be put on diversification and the support given to other aspects of the blue economy. One of the most important elements will be a well-qualified and flexible workforce that is prepared for the implementation of advanced solutions. Blue economy innovations will maintain the commercial utilization of the traditional maritime industries and will ensure well – balanced exploration of the sea's resources, placing significant emphasis on protecting the natural environment.

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