THE CHALLENGES OF SMART SPECIALISATION IN THE LESS DEVELOPED REGIONS

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Abstract*:

Smart specialisation is an industrial and innovation framework for regional economies that aims to illustrate how public policies, framework conditions, but especially R&D and innovation policies can influence economic, scientific and technological specialisation of a region and consequently its productivity, competitiveness and economic growth paths. At the European Union level, smart specialisation has become a flagship policy and the EU has translated the principles of smart specialisation into operational elements of regional innovation strategies (RIS3) and has claimed for differentiated approaches for the less developed territories that are far from the technology frontier and lack the critical mass for R&D. Within this context, the purpose of our study is to explore the challenges related to smart specialization in the less developed regions and to shed light on the most recurrent policy recommendations that are responsive to their specific needs.

Key words: smart specialisation, R&D, innovation, less developed regions

JEL classification: O3, O4, R1

1. Introduction. Smart specialisation introduced

The financial crisis that started in 2008 with the collapse of the Lehman Brothers investment bank highlighted the vulnerabilities of the banking system, as well as of the entire world economy. There have been multiple questions about the systems development and their sustainability. With these questions, a number of responses and concepts have been formulated, with the ”smart specialisation” being among the most successful ones both in theory and practice. At the European Union level, Dominique Foray, a key member of the ”Knowledge for Growth” Working Group introduced the basic concept of "smart specialisation" and highlighted its main rationales, i.e. ”to encourage investment in programs that will complement the country’s other productive assets to create future domestic capability and interregional comparative advantage” (Foray et al., 2009, p. 1). Since 2009, there have also been discussions at the OECD level on smart specialization in the context of the “New Industrial Policy”, “New Sources of Growth” and “New Approaches to Economic Challenges. In this regard, the OECD decided to revisit the financial, economic and social policies frameworks, so as to make them more competitive, more social and more protective (to “go structural” to make economies more competitive; “go social” to address the increased inequality and lack of jobs; to “go green” to promote a growth path that takes due account of environmental constraints; and to “go institutional” to address the current confidence gap in institutions and markets) (OECD, 2013).

From its very beginnings to date, the smart specialisation has evolved into ”the most ambitious regional innovation programme ever launched in the European Union” (Morgan, 2017), which is very likely to continue and be further strengthened in the post-2020 framework. Less developed regions are deemed a special attention in the context of smart specialisation, in an attempt to foster their research and development capacities (R&D), improve the framework conditions for business to innovate and finally drive smart, sustainable and inclusive growth. Here below are the some of the key milestones in the development of smart specialisation approaches at the European level, with an emphasis on the case of the less developed regions:

1) In 2010, Europe’s 2020 Strategy (EC COM(2010) 2020) coined the ”smart growth” concept, based on knowledge and innovation, as one of the three key priorities for Europe in the next decade. Economic, social and territorial cohesion are laid at the

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heart of the Europe 2020 strategy and the proposed targets are relevant to all Member States (”old and newer alike”), to tackle disparities in the levels of development.

2) The Flaghsip Initiative ”Innovation Union” (EC COM 2010 546) highlighted the need for all regions in Europe and every Member State to reform the national R&D and innovation systems and redirect funding based on a smart specialization approach. In order to be used more effectively, the European Structural Funds should be directed towards the areas with relative strengths and provide incentives for cooperation between the leading and the lagging regions, so as to spread the innovation all across the Union.
3) The concept of smart specialisation has been also promoted by the Communication on ”Regional Policy contributing to smart growth in Europe 2020” (EC COM 2010 533 final) that encourages national and regional governments to develop smart specialization strategies (RIS3) so as to maximize the impact of Regional Policy and Structural Funds. The European regions are thus expected to close the ”innovation divide” and mobilise the full innovation potential of both advanced regions (”to remain ahead”) and the lagging ones (”to catch up”).
4) In 2011, the Smart Specialisation Platform (S3 Platform) was established at the European Commission’s Joint Research Centre (JRC) to provide information and support to policy makers engaged in smart specialization processes and to promote mutual learning. The JRC offers targeted support to the implementation of RIS3 is a number of selected low-growth and less developed regions in EU member states (”RIS3 in lagging regions”) and facilitates peer-reviews and cooperation on smart specialization between all the European regions.
5) In 2012, the European Commission released the ”Guide to Research and Innovation Strategies for Smart Specialisation” (RIS3) providing detailed orientations on how to develop research and innovation strategies for smart specialization (Foray et al., 2012). In 2013, the OECD’s Working Party on Innovation and Technology Policy published the report on ”Innovation Driven-Growth in Regions: The role of smart specialisation” (OECD, 2013) providing additional evidence on smart specialization and its underlying concepts and on findings of different case studies.
6) The EU Regulation No 1303/2013 of the European Parliament and of the Council of December 2013 laying down common provisions of the European Funds for the 2014 – 2020 financial framework defines the smart specialization strategies as ”the national or regional innovation strategies which set priorities in order to build competitive advantage by developing and matching research and innovation own strengths to business needs in order to address emerging opportunities and market developments in a coherent manner, while avoiding duplication and fragmentation of efforts” (Article 2(3)). The existence of a RIS became an ex-ante conditionality for the thematic objective 1 (Strengthening research, technological development) and for Cohesion policy research and innovation investments for the programming period 2014 – 2020. Article 90 defines the less developed regions as those regions as those regions whose GDP per capita is less than 75% of the average GDP of the EU countries.
7) In 2014, the ”Stairway to Excellence” (S2E) pilot project started, to help the less developed Member States and regions to address the innovation gaps and the so-called regional innovation paradoxes. The project supports the less-developed EU13 Member States (i.e. that joined the EU after 2004) to better understand the local innovation context and find synergies between Horizon 2020 and the European Structural and Investment Funds.
8) A new Communication was issued by the European Commission in 2017 - ”Strengthening Innovation in Europe’s Regions. Towards resilient, inclusive and

sustainable growth at territorial level" (EC SWD 2017 264 final), whose aim was to assess the state of play as regards the design and implementation of smart specialization strategies in the EU and to examine its contribution to the reform of the European research and innovation systems.

9) The Lagging regions report - "Competitiveness in low-income and low-growth regions" (EC SWD 2017 132) - published by the European Commission in 2017 was meant to analyze the investments needs in the European lagging regions and to suggest possible solutions to boost growth and increase income in these regions. In this context, the role of the smart specialization strategies in helping the lagging regions to overcome the main obstacles that limit growth was emphasized.
10) In 2018, the World Back issued the "Rethinking Lagging Regions" report to highlight the nature and implications of regional disparities in Europe and the horizontal policy priorities for Cohesion Policy (Farole et al., 2018)
11) "A renewed European Agenda for Research and Innovation" (EC COM 2018 306) was issued by the European Commission in 2018 emphasizing the need to accelerate innovation in less developed regions and to foster the strategic coordination across different EU funding schemes, i.e. Horizon Europe Programme, InvestEU Fund, the European Regional Development Fund, the European Social Fund, the Erasmus+ Programme, the Digital Europe Programme, the Common Agricultural Policy and other programmes.
12) Foray's et al. report published in 2018 re-evaluated the raison d'etre and the achievements to date of smart specialization and discussed the challenges of RIS3 design and implementation, while suggesting how regional and R&I policies might be better integrates.

In this context, the purpose of our paper is to review the before-mentioned studies and official documents and to shed light on the challenges of smart specialization in the less developed regions of the European Union.

2. Conceptual framework

In order to collect evidence on the proposed topic, we have created a conceptual framework that considers the key actors and the key features of smart specialisation, based on the guidelines provided by the European Commission and the OECD. As it results from the Table no. 1, smart specialisation involves the adoption of multiple and consistent actions to achieve the desired results. The strategies for smart specialisation (RIS3) should focus simultaneously on research and innovation activities, the key actors involved in "discovery" processes, i.e. the academia, the companies, the government, the civil society, the national/regional government policies, and, of course, the European Cohesion policy. In an ideal model, RIS3 strategies are expected to do five important things: focus policy support and investments on key (limited) priorities for knowledge-based development, build on each country's/region's strengths, support technological and practice-based innovation, get all the stakeholders fully involved and include sound monitoring and evaluation systems (Foray et al., 2012).

Table no.1

Key actors and features of smart specialisation

Actors & features	Description
R&D and innovation activities & smart specialisation	**R&D and innovation activities** stay at the heart of smart specialisation, which is a "knowledge-based" policy agenda. The activities that could benefit from certain R&D and innovation projects, not the sectors they belong to, are the natural candidates for

priorities	prioritisation. Developing and matching research and innovation strengths to business needs is crucial to smart specialisation.
Firms, entrepreneurs & (global) value chains	The initiative to identify the paths towards the smart specialisation belongs to the enterprises, not to the state. Businesses play a leading role in the **entrepreneurial discovery processes.** Private sector investments in research and development are stimulated. Internationalisation and integration into (global) R&D networks and value chains are highly valued.
Universities, research organisations, knowledge intermediaries	Along with the research institutes and knowledge transfer organisations, the universities create the knowledge generation and diffusion subsystem and have important roles in smart specialisation. All the three missions of universities are emphasized (i.e. teaching, research and community development), but the focus is on universities' regional engagement.
Government, formal and informal institutions, multi-level governance	Good formal and informal institutions are a prerequisite for effective design and implementation of smart specialisation strategies. Shared leadership, trust, professionalism, transparency, partnership, responsibility are key drivers of success. Quadruple Helix partnerships and multi-level governance are key issues in smart specialisation.
Regions, structural conditions and Cohesion policy	RIS3 is a **place-based** economic transformation agenda. Each region is invited to *differentiate* itself depending on its structural conditions and its specific capacities. Regional "embededness and relatedness" are crucial to smart specialisation. The RIS3 approach is also consistent with the aims of the EU cohesion policy.

Source: own adaptation based on the RIS3 Guide (Foray et al., 2012), OECD (2013) and the RIS3 Platform

Based on this conceptual framework and starting with the policy papers mentioned in the Introduction, we have conducted a literature review that considered the papers published after 2014 and having in their title or abstract the concepts of "smart specialisation" (RIS3) and "less developed regions" ("lagging regions", "peripheral regions", "cohesion regions" etc.). We used the cross-citation method that led us to the identification of the relevant studies for our purpose, based on which we collected evidence on challenges and policy recommendation for the less developed regions.

3. Challenges of smart specialisation in the less developed regions

3.1. R&D and innovation activities and smart specialisation priorities

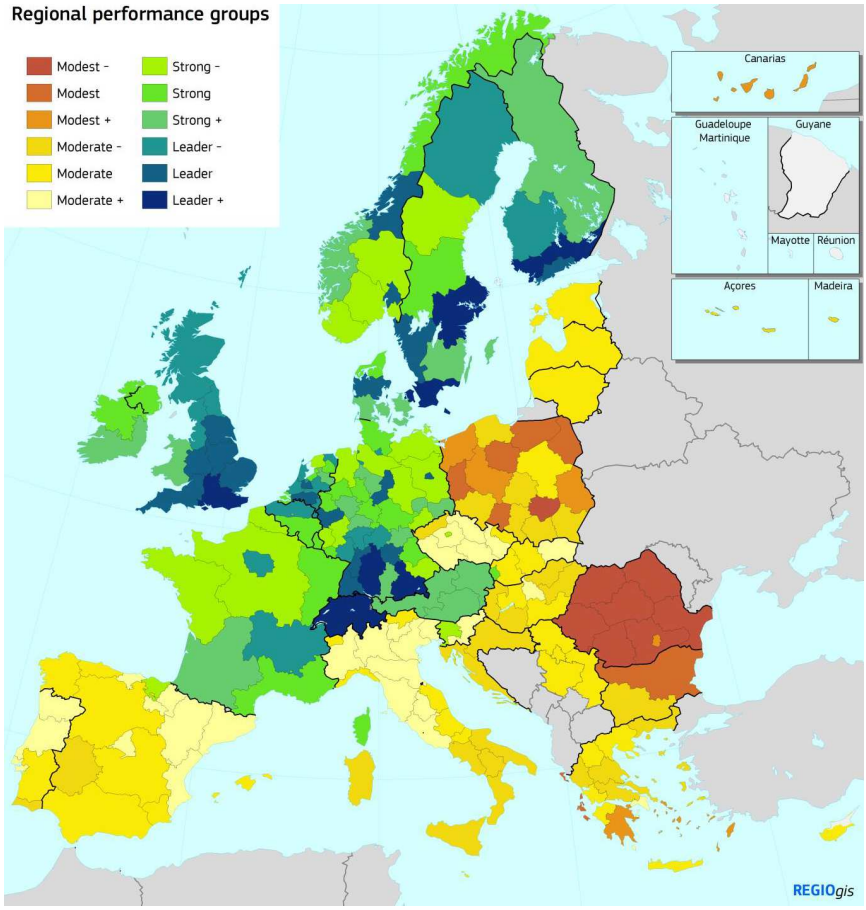
Research and innovation represent the key element in ensuring progress, with R&D providing the premises of innovation. Research is systematic investigation (observation, experiment, critical thinking), which aims to increase knowledge and reach new conclusions (Iatridis and Schroeder, 2016), while innovation, on the other hand, is a more specific concept and more closely related to business and industry. It can be described as a process of using information and existing phenomena to improve human lives by creating better products, services and technologies that are readily available to markets, governments and society (Stahl, 2013). R&D and innovation activities stay at the heart of smart specialisation and the RIS3 strategies are called to identify those activities – not sectors – that could benefit from research results and innovation projects. The natural candidates for prioritisation are the activities that "show potential", i.e. are new, aim at experimenting and discovering new market opportunities and could provide learning spillovers to others in the economy (Foray

and Goenaga, 2013). In his respect, the existing R&D potential at the level of the EU regions is crucial as, undoubtedly, the regions concentrating strong research units, technological clusters and innovative start-ups are in a more advantaged position.

In practice, the geography of innovation is very diverse and there are large discrepancies in terms of research, development and innovation potential at the regional level in the European Union. The European Regional Innovation Scoreboard (Hollanders and Es-Sadki, 2017) shows that innovation excellence at the EU level is concentrated in relatively few European areas, while the most innovative regions being located in the most innovative countries. As such, as long as there is a close correlation between R&D performance and economic performance, the economically disadvantaged regions are also lagging behind in terms of research, development and innovation (Figure no 1.).

Fig. No.1

Regional Innovation Performance Groups at the EU level



Source: Hollanders and Es-Sadki (2017)

Modest and moderate innovators have a low exploitation capacity due to a weak absorptive capacity, the dominance of medium-low and low-tech industries (that is industries with at maximum 2% of the turnover invested in R&D) and the low educational level of employees (Asheim, 2018). In many lagging regions, R&D is mainly public, accounts for a lower share of GDP than in the EU as a whole (EC SWD (2017) 132) and suffers from large fragmentation and lack of relevant research and innovation infrastructures (EC SWD 2017 264 final). Lagging regions have very low levels of participation in the European Framework Programmes, which is to a large extent explained by the bottlenecks related to the quality of

governance, capacity building and poor innovation and commercialization capabilities (Ozbolat and Harrap, 2018).

Apart from being lagging behind in terms of research, development and innovation, the less developed regions are also faced with the so-called *regional innovation paradox* that refers to ”the apparent contradiction between comparatively greater need to spend on innovation in lagging regions and their relatively lower capacity to absorb public funds for the promotion of innovation” (Oughton et al., 2002). The policies supporting R&D in the less developed regions have created the so-called ”pockets of excellence”, which are defined as ”local or regional research or innovation eco-systems, in countries with an overall weaker RDI system, which prove capable of driving regional growth and of linking up to top-European research networks” (Reid et al., 2016); yet, in many cases, the ”pockets of excellence” are disconnected from local economies (Tsipouri, 2017) or are only ”enclaves” linked externally to other ”pockets of excellence”, with limited or non-existent local knowledge spillovers (Reid et al., 2016).

The policy recommendations for addressing R&D and innovation deficits in the less developed regions can be summarized as follow:

- focus on ”co-invention” of applications – not only on the invention of the general purpose technologies – to address quality and productivity issues in a number of few important sectors in the regional economies (Foray and Goenaga, 2013);
- identify the ”pockets of excellence” in the lagging regions, connect them to local economies and concentrate the resources in promising activities; in those regions where there are no ”pockets of excellence”, it is better to focus on horizontal innovation support, improvement of local human capital and support to transborder technology transfer and non-technological innovation (Tsipouri, 2017);
- innovation should not be confined to high-tech and cutting-edge research and R&D-intensive sectors; incremental innovation (engineering process & product), production capability (quality), management practices and informal innovation should be also considered; the low-tech and tranditional sectors – i.e. agri-food, tourism, textiles etc. should be also targeted, especially through incremental innovation (Foray et al., 2018);
- adopt the broad-based innovation and the ”learning region” strategies to promote smart specialisation in the less developed regions, where all the drivers of innovation – i.e. users, markets, demand, social innovation, employee-driven innovation are integrated into an overall apprach (Asheim, 2018);
- create synergies between the European Structural and Investment Funds and Horizon 2020 in support of innovation, open up and internationalize the RDI systems and mobilize the EU instruments in conjunction with the national & regional policy interventions (Pontikakis et al., 2018).

3.2. Firms, entrepreneurs and global value chains

In the process of research, but especially in innovation, the firms have a key role to play, as they are the ones that turn R&D into innovation and then into economic performances. For these reasons, the ”entrepreneurial discovery process” (EDP) is one of the hallmarks of smart specialisation and the entrepreneurs play leading roles in discovering promising areas of future specialisation (Foray et al., 2009). According to Foray et al. (2011, p. 7), ”entrepreneurial knowledge involves much more than knowledge about the science and techniques”, it rather combines and related to knowledge about market growth potential”. Therefore, both the development process and the content of smart specialisation strategies are determined by the business and entrepreneurial composition in the Member States and their regions (EC (SWD) 2017 132).

In the most advanced regions, the firms are supposed to hold the entrepreneurial knowledge in the regional economies; yet, in the case of less developed regions, where the industry structures and entrepreneurial capabilities are weak, the necessary knowledge could be activated from universities or public research institutes; as such, the entrepreneurial actors category can be understood in a broad sense and include ”whoever is best placed to discover the domains where ” (Foray et al., 2012, p. 12).

According to Blazek et al. (2014), three key weaknesses characterize the economies of regions with less developed research and innovation systems, i.e. 1) the widely prevalent branch-plant syndrome of the economic base, which translates into low R&D activities and limited autonomy when dealing with actors outside the firm; 2) the weak endogenous SMEs sector and the low level of entrepreneurial culture; and 3) the locking-in of many companies in these regions as lower-tier suppliers in global value chains and global production networks. As pointed out by McCann and Ortega Argiles (2015), lagging regions often exhibit weaknesses in entrepreneurship and innovation due to a combination of reasons, i.e. sectoral, structural, transactional, technological, behavioural, related to financial flows, externalities, issues of market failures, issues of commercial and cultural perceptions etc. In addition, firms in lagging regions are much likely to be engaged in ”non-tradables” and are usually less productive (Farole et al., 2018). Another important structural issues is the fact that the innovation systems are based on predominantly production oriented foreign direct investment (Radosevic and Stancova, 2015).

The most recurrent policy recommendations for improving the absorptive capacity of local firms and clusters and for enhancing the entrepreneurial discovery processes in the less developed regions can be summarized as follow:

- support functional upgrading of firms in peripheral regions, providing incentives for investments in machinery and other advanced production equipments, facilitating knowledge exchange along the whole value chain, not only between firms and academia (Blazek et al., 2014);
- establish a business environrment that is conducive to investment and employemt and facilitate external trade in lagging regions; shift from micro-enterprises focused on non-tradables to larger firms with a stronger orientation towards external markets and a stronger position in international value chains (Farole et al., 2018);
- give stronger support to ”internationalized” smart specialisation, i.e. foster demand – driven and ”quality” foreign direct investments in innovation oriented activities, integrate foreign direct investment policies and innovation policies, develop strategic approaches to the internationalization of research and development and imporve horizontal links in the innovation ecosystems (Radosevic and Stancova, 2015);
- emphasize the Doing-Using-Interacting mode of innovation (not only the Science, Technology and Innovation mode) as a ”bridging mechanism” that can be broadly associated with the symbolic and synthetic knowledge bases and relies more on informal learning, social capital, competence-builidng and experience-based know how (Asheim, 2018).

3.3. Universities, research organisations and knowledge intermediaries

Universities, together with other specialized institutes and laboratories, are the elite research units, regardless of the type and there is a very large body of literature emphasizing their roles in regional development. As such, universities make important contributions to human capital and skills development (the teaching function), business innovation (the research and innovation function), social and cultural development (public service function) and regional capacity building, through the engagement of its members in local civil society (EC, 2011).

The role of universities in smart specialisation is highlighted by Kempton et al (2013), i.e. the universities can contribute to assessing the regional assets, raising awareness and partnerships, providing specialist research expertise, enhancing skills of competencies, building capacity on the demand side, strengthening social relations which underpin the regional innovation system or contributing to local knowledge creation. In their turn, the research organisations occupy nodal positions in innovation eco-systems and have important contributions to bringing world class specialists and infrastructures into the region, offering access to external knowledge networks or sustaining regional and national development in certain sectors (Fitrakis et al., 2014). In practice, the engagement of universities in their regional economies is highly variable and different barriers – be it internal or external – exist in this respect, especially when the universities lack interest and/or mechanisms ”to reach out” to the wider region or when the region and its constituents lack absorptive capacity and bridging mechanisms to connect academia, the private sector and the wider community (EC, 2011). Universities' engagement with the smart specialisation agendas is also strongly dependent on the university type (i.e. traditional universities, entrepreneurial universities, civic universities), but also on the spatial distribution of different types of higher education institutions, given the fact that there are a significant number of regions across Europe without a higher education institution or with just one or two (Edwards and Marinelli, 2018).

Universities' regional engagement is of particular importance for the less developed regions, where the private sector may be weak, may lack research and innovation capacity and/or absorptive capacity. In such a case, the universities are expected to become ”anchor institutions” and have a central role in driving the smart specialisation strategy (EC, 2011). Yet, according to Bonaccorsi (2017), in European cohesion (less developed) regions, few universities produce really excellent research or, if they are excellent in a few fields, these do not match, in general, with the regional industrial structure. Or, as pointed by different authors, when the absorptive capacity is weak, there is a danger for excellent universities to become ”cathedrals in the dessert” and/or support businesses from more favoured regions (EC, 2011). According to Vallance et al. (2017), the educational – rather than the research – function of universities should be considered of greatest significance in the less developed regions, together with their ”developmental” role that is reflected in the direct participation to the design and implementation of the smart specialization strategies.

Policy recommendations for improving universities' contribution to smart specialisation in the less developed regions can be summarized as follow:

- in those regions with a low number (or without) universities, establishing multi-site universities and collaboration between VET and higher education institutions can provide successful alternative opportunities (Edwards and Marinelli, 2018); the collaboration between different actors in the higher education sector (universities, polytechnics, research and special purpose institutions, community colleges) should be encouraged, to establish an appropriate division of work (EC, 2011); the regional universities and non-university higher education institutions should be motivated to engage into the training and applied research needs of their regions and to look for complementarity between research, innovation, human capital and training (Bonaccorsi, 2017);
- in those regions with some excellent research universities, if a ”co-specialization” between academic research and local industry exists, some dedicated, mission-oriented programmes should be developed; if such ”co-specialisation” does not exist, then the policy ”imperative” is to decouple the two areas (Bonaccorsi, 2017); instead, policy makers are asked to mobilize the strengths of these institutions in support of the region, while ”building sufficient flexibilities to regional programmes and accepting a

certain amount of ”leakage” in activities beyond the geographical boundaries” (Kempton, 2015, p. 495).

3.4. Government, formal and informal institutions, multi-level governance

Institutions are key elements in the realization and implementation of smart specialization. Conceptually, institutions are seen the formal and informal ”rules of the game” that shape human interaction and organise social, political and economic relations (North, 1990). Grillitsch (2015) emphasizes ”the structuring character of institutions” for social interactions; as such, institutional variety and connectedness are seen as important explanatory factors for the potential of path-breaking, entrepreneurial discoveries and creation of new development paths. At the same time, ”institutions substantially contribute to or restrain problems like picking winners, rent-seeking behaviour, corruption and lock-ins” (Grillitsch, 2015).

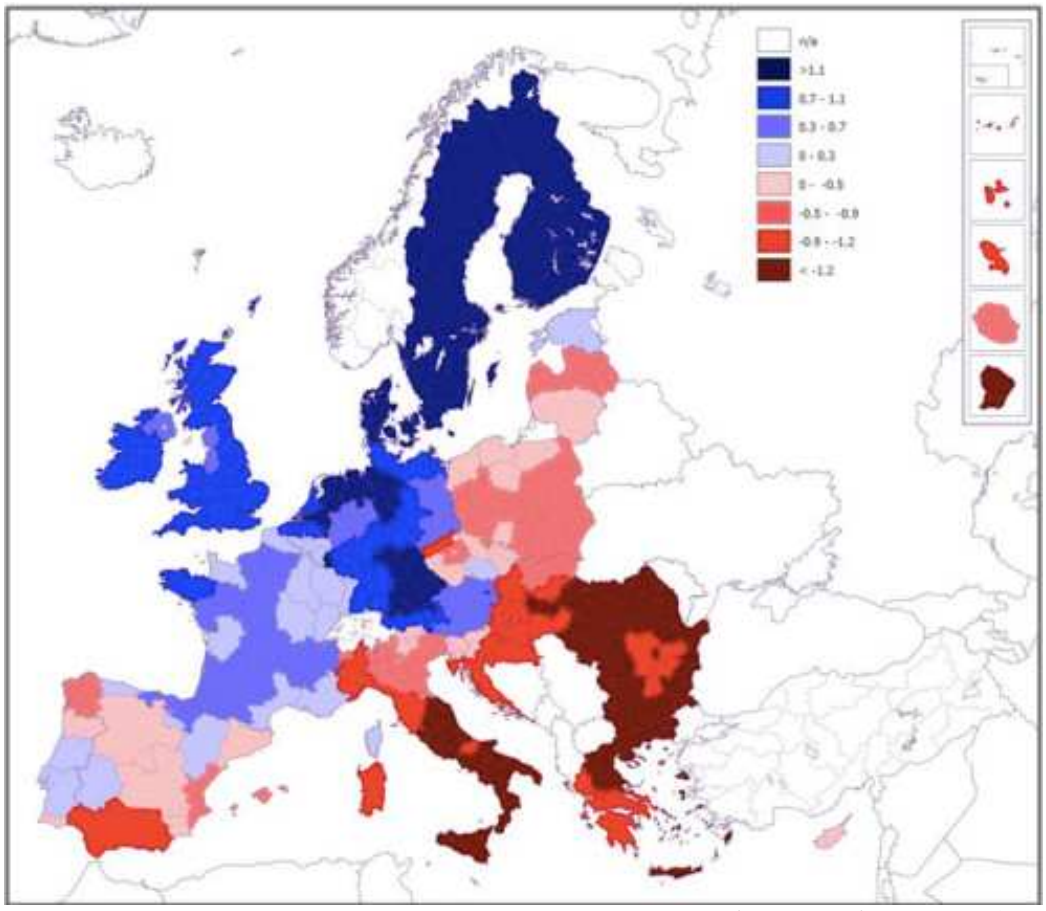
Government institutions and governance structures are pivotal to effective design, implementation and monitoring smart specialisation. According to Foray et al (2009), there are three main roles of the government in smart specialisation: 1) to supply incentives to encourage entrepreneurs and other organizations to become involved in the discovery of regions' specializations; 2) to evaluate the proposed R&D specializations and assess their effectiveness; and 3) to identify complementary investments associated with emerging specializations (e.g. educational programmes, promoting General Purpose Technologies etc.). What is very important for the government institutions involved in smart specialisation is to try to avoid that inertia and path dependence lead to selecting already established sectors or areas that are too broad to become actionable (Forte et al., 2016). Moreover, the pro-active role of government is to bringing people together from within and outside the region/country, acting especially on behalf of smaller firms who lack the capacity to network nationally or internationally (Edwards et al., 2016).

In practice, the European Quality of Governance Index (QOG) reveals significant variations in QOG across the EU regions and a clear East – West pattern, where the regions and countries of the former communist bloc have scores much below the EU average (Figure no. 2).

Different empirical studies reveal that the institutional context and institutional capacities are major barriers to effective implementation of smart specialisation in the less developed regions. According to Foray et al. (2018), the underdeveloped institutional frameworks in the less developed regions can be described as being ”over-bureaucratic, over-politicised, non-responsive, non-transparent, lacking strategic vision, with widespread rent-seeking behavior and low trust among key actors”. Morgan et al. (2016) point to the fact that public administration in the less developed regions tend to have a ”play it safe” mentality and that the interests of public sector bodies, private firms and the academy seem mutually divergent. Trippl et al. (2018) shed light on the severe prioritisation challenges for smart specialisation in the the less developed regions that appear to be related to ”policy capture by vested interest groups” and the lack of experience in dealing with inclusive forms of governance. An econometric study conducted by Rodriguez-Pose et al. (2014) reveals the strong links that exist between the quality of government institutions (both formal and informal) and innovation performance and concludes that the greatest gains in innovative from institutional reforms could be obtained in the less developed regions, where the initial quality of government is low and there are challenges related to inertia, lock-in, clientelism and corruption. These findings have important policy implications for smart specialisation, which is highly dependent on the quality of the local institutional framework.

Fig. No. 2

European Quality of Government Index 2017



Charron and Lapuente (2018)

Policy recommendations for improving the quality of institutions in the less developed regions can be summarized as follow:

- fix the major institutional weaknesses before selecting the smart specialisation priorities (Blazek et al., 2014), as those regions plagued by institutional failures risk setting ”unreasonable expectations” (Farole et al., 2018); build mutual trust between the participants to entrepreneurial discovery processes first – especially between entrepreneurs and academia – and then ask them to work together to find new business opportunities (Morgan et al., 2016);
- building a ”competence centre” to manage the processes of learning and strategy making – which is freed as much as possible from political considerations, involve professionals from diaspora networks and stimulate inter-ministerial working groups and high-level RDI Councils – can be a good solution to design and follow the smart specialization strategy (Kleibrink et al, 2017);
- develop strategies aimed at combating corruption, promoting transparency and accountability, reducing the distance between policy-makers and the civil society etc.; develop the necessary collaborative leadership skills of public sector bodies, i.e. through formal action learning programmes, participation in trans-national co-operation networks, use of peer-review techniques (Rodriguez-Pose et al., 2014).

3.5. Regions, structural conditions and Cohesion policy

Smart Specialisation relies on the idea that good policy design and development depend on the characteristics of the regional context (Guzzo et al., 2018), so that the RIS3

should take into account the geographically specific characteristics and be embedded in the local context. As recommended by the RIS3 Guide, the smart specialisation strategies should be set on the basis of strategic intelligence about a region's assets (i.e. industrial structures, clusters, human capital, linkages and connections with other regions etc.), regional challenges (including ageing population, labour market mismatches etc.) and the competitive advantages and potential for excellence (Foray et al., 2012). In fact, these are the areas targeted by the European Cohesion Policy, whose aims are to support job creation, business competitiveness, economic growth, sustainable development and improving the quality of life.

The European lagging regions – be them the low-income or the low-growth ones –are facing numerous economic challenges, as evidenced by "The Lagging Regions Report"(EC (SWD) 2017 132), i.e. they have lower productivity, educational attainment and employment rates, they face significant population losses and out-migration of the younger and more educated population. As noticed by Kroll (2017), the EU regions with weaker innovation capacities have embraced with more enthusiasm the RIS3 agenda, which is explained, to a large extent, by the fact that they receive a susbtantial share of European Funds for research and innovation. Even so, the the challenges of RIS3 in the less developed regions – as evidenced by the survey of the EC four years after the implementation of the Smart Specialisation policy concept – are multi-faced: lack of funding for staff recruitment and training appears as a very challenging obstable for 74% of the respondents from the less developed regions, as compared to 40% in more developed regions; similarly, near 61% of respondents from the less developed regions identified "insufficient political committment" towards the RIS3 agenda , "insufficient coordination with government departments" and "internal burocratic obstacles" as major challenges for smart specialisation (Guzzo et al., 2018)

The policy recommendations to address structural deficiencies in the less developed regions can be summarized as follows:

- the lagging regions should strive to overcome the main obstacles that limit growth, i.e. reduce gaps in infrastructure and invest in education and high quality human resources - by virtue of smart specialisation strategies (EC (SWD) 2017 132); an adequate mix of actions are needed in this respect, among which the upgrading of institutional environment comes first (Rodriguez-Pose and Ketterer, 2018);
- the logic of smart specialization should not be reduced to R&D and innovation; addressing the general education and training and the key economic institutions related to labour, capital and product markets are essential (Foray et al., 2018); smart specialization in "early-stage" regional innovation systems in the less advanced regions should either facilitate the emergence of some elements that are missing or accelerate the development of others, i.e. the regional knowledge base and dynamic learning processes (Ranga, 2018);
- to maximize the impact of Cohesion Policy on lagging regions, policy makers at all levels should reconsider the priorities and targets for the next program cycle beginning in 2012; at least five horizontal priorities should be considered in this respect, namely to address the macro-structural weaknesses that limit growth potential (i.e. national fiscal policies), to improve the regional business environment, to leverage the productivity potential of cities, to invest in skills and to strengthen the institutional endowments (Farole et al., 2018).

3. Conclusions

Our paper has highlighted the challenges faced by the less developed regions in designing and implementing the smart specialization agenda and has revealed the most recurrent policy recommendation to tackle these challenges. Some concluding remarks are

worth to be mentioned in this respect. One should acknowledge the fact that not all the lagging regions are the same and that it is totally wrong to assume that innovation is not at all a feature of the less developed territories. Instead, each region has its specificities which should be distinctively assessed and then turned into smart competitive advantages. At the same time, as pointed out by Foray and Goenaga (2013), "smart specialization does not have magical properties; however, at minimum, a smart specialisation strategy transforms less advanced regions into good followers". It is thus evident that not all the regions can reach the same level of income, but, as pointed out by Farole et al. (2018), "it is also true that many regions have substantial underexploited potential". In this context, the smart specialisation agenda can help the lagging regions to (re-)discover themselves and cultivate their "underexploited potential" to create a new model of economic growth, regional development and quality of life.

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