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Smart Specialization and EU Eastern Innovation Cooperation: A Conceptual Approach

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Abstract: *The concept of smart specialization as a policy approach for regional development through increased regional productivity and competitiveness in the European context is actively discussed (European Union, 2009; OECD, 2014). Meanwhile, smart specialization has found its way into EU cohesion policy as well as into the European Commission's Innovation Union flagship programme.*

In Eastern Europe, economic growth came to a sudden halt during the financial crisis in 2008/2009, leading to mass unemployment, economic decline and shrinking public spending. The economic downturn in Russia after 2008 was triggered by the outflow of capital and avoided large-scale social consequences.

The paper highlights the main conceptual aspects of the smart specialization approach in the European Union and its implications on future EU Eastern Innovation cooperation with a special focus on EU's largest Eastern partner Russia.

Keywords: *EU Eastern cooperation, Innovation Policy, regional development, smart growth, smart specialization*

1. Introduction

For today's economic growth, investments in the creation of knowledge assets, acquisitions of new skill sets or market initiatives are of equal importance to different forms of factor stocks (OECD, 2010). Although there are several ways in which they translate into economic growth, they exert major influence on both levels of income and economic wellbeing, and are likely to persist. Cumulative processes might have historical reasons, or have happened by chance, and ever since have been the subject of historical and economic discussions. Such analyses of regional differences started with the emergence of a different industry structures (Iammarinao & McCann, 2006) or population specifics (Ciccone & Hall, 1996; Carlino *et al.*, 2007), but also differences in institutional settings and skill sets. Also, geographical approaches to innovation have long been discussed in management literature and go back to contributions such as Porter (1990), Jaffe *et al*. (1993) or Anselin *et al*. (1997). Of special interest are those regional differences for the so-called 'third way' of thinking. Especially the new economic geography (NEG) model (Krugman, 1991; Fujita & Krugman, 2004) discusses agglomeration processes and economies of scales generated through specialization. While most traditional approaches based on neoliberal arguments deny transaction costs and see a removal of all barriers from common exchange as purely beneficial to all participants, new economic geography discussed regional specificities as being more differentiated. Now, the region has moved into the focus of attention to systematically study innovation activities (Cooke & Morgan, 1998). The level has become more nuanced and now the level of knowledge flow between actors is discussed at great length. To a lesser extent, NEG is focused on policies and rather sees the succeeding of regions through more competition among actors, more innovation experts, more learning opportunities and the attraction of talent. Most contributions study very well-performing regions, neglect all other places and focus mainly on internal, endogenous factors within the region (Hadjimichalis & Hudson, 2007).

Among the most enthusiastic recipients of this new line of thinking were policy makers. Especially at the local and regional level, policy makers felt strongly encouraged to actively engage with innovation actors to enable local and regional growth. Now, the focus is shifted to knowledge-related institutions (Cooke & Morgan, 1998), entrepreneurship (Sternberg, 2011), or different levels of transaction costs of knowledge (McCann, 2008). Consequently, modern regional innovation policy addresses market failures and system failures caused by insufficient knowledge exchange and institutional weakness.

2. Smart specialization and regional innovation in the European Union

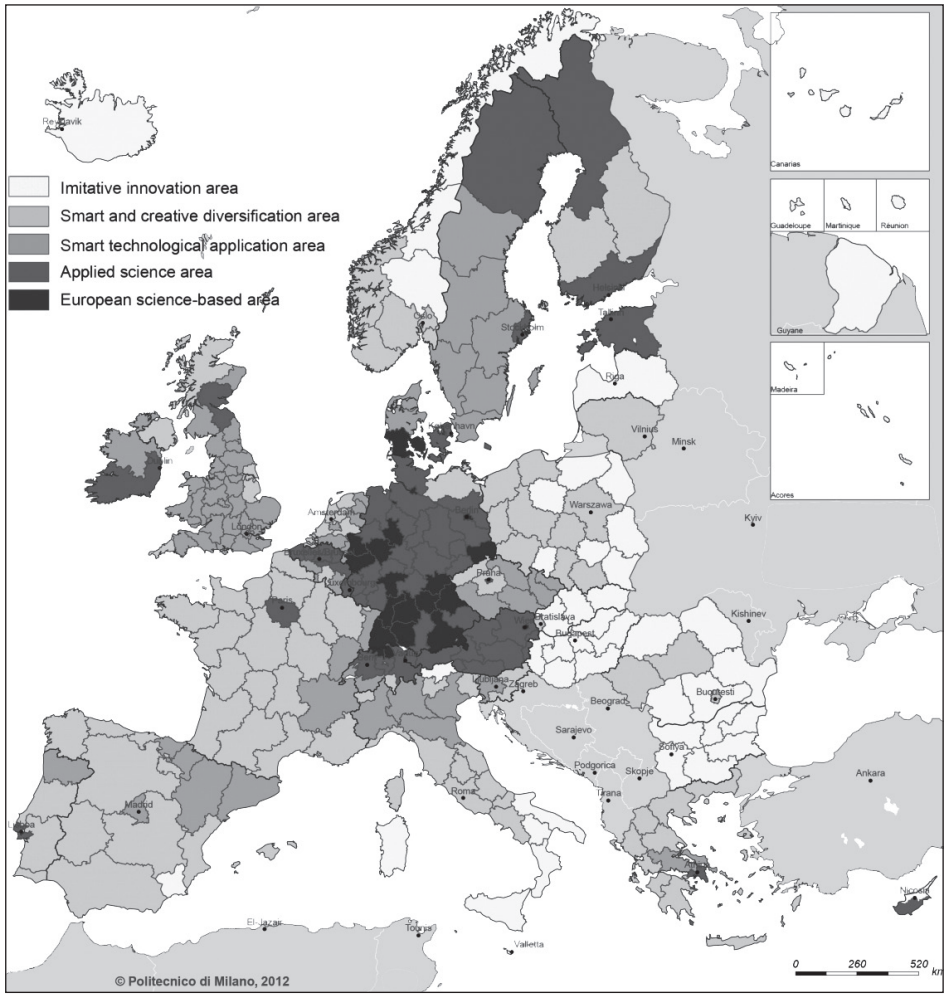
Since 1995, the widening productivity gap between the USA and Europe became a concern to policy makers, who, in turn, searched for new policy responses. When the European Commission turned to the expert group 'Knowledge for Growth', the team suggested the 'smart specialization' approach (McCann & Ortega-Argiles, 2013; 2014). In line with systematic perception of innovation, the concept focused increasingly on the regional context of innovation activities.

Consequently, the European Union followed these principles and stressed the importance of embeddedness and connectedness as criteria for fund allocation. Tripartite cooperation, that is university/research institution/company cooperation, peer assessment of R&D programs, spurring creativity and entrepreneurial spirit became the new paradigm (Camagni & Capello, 2013). Regional innovation strategies for smart specialization build on a region's capabilities, competences, competitive advantages and potential for excellence on a global perspective. They foster stakeholders' engagement and are evidence-based. Regional policy makers were advised to create the necessary conditions, such as human capital formation and development for new "knowledge needs" once the regions abandon their traditional industries and adopt new technologies (McCann & Ortega-Argiles, 2013).

Capello and Lenzi (2012) developed a database of the regional innovation taxonomy of European regions. The database differentiates between five regional patterns which are listed here in order of their declining innovation performance, where a region with the highest innovation performance is called European science-based area, followed by applied science area, smart technology application area, smart and creative diversification area, and, finally, a region with the lowest performance called imitative innovation area (Fig. 1).

The map shows a large variety of innovation patterns and the concentration of science-based areas in Central Europe and the increasingly important knowledge centers such as Paris, London or Helsinki. The areas with the lowest knowledge and innovation intensity are located in the new EU Member States in Central and Eastern Europe and Southern Italy. Differences in the European innovation map demonstrate the abundance of the one-size-fits-all innovation policies. So, smart specialization has to be integrated into regional policy, which promotes regional technological diversification amongst the regionally dominant industries.

Figure 1. Territorial patterns of innovation in Europe.



Source: Capella & Lenzi, 2012

Smart specialization is of special relevance for intermediate regions consisting of urban and rural areas as well as for smaller regions with urban centers (OECD, 2011). For these intermediate regions, a smart policy mix consisting of R&D, training and networking programs, together with a prioritization and concentration of resources around regional key topics, seems to be a promising approach. The related policy-development process involves the gathering of evidence and data, building of public-private partnerships and the monitoring of all political actions and interventions.

A vital step for policy makers to position themselves is to choose priorities. For the European Union, the focus rests on smart specialization to foster strategic technological diversification around a region's core activities, encouraging processes of entrepreneurial discovery.

One of the key concepts of the smart specialization approach is the self-discovery or entrepreneurial discovery process so that smart specialization has to be flanked by supporting entrepreneurial self-discovery, as well as by fostering innovation activities in the different regions (OECD, 2014). From different studies it is well known that entrepreneurship and innovation enjoy six important economic patterns, revealing that core regions offer a greater potential for smart growth.

The first observation is that the concentration of entrepreneurship and innovation tend to be higher in cities and more densely populated regions (Acs, 2002; Carlino *et al.*, 2007). Furthermore, van Oort (2004) found that the concentration of entrepreneurship and innovation tends to be higher in more sectorally diversified regions. Duranton and Puga (2001) pointed out that the concentration of entrepreneurship and innovation tends to be higher in regions that are less dominated by a small number of large firms, and McCann and Acs (2011) were able to show that the concentration of entrepreneurship and innovation tends to be higher in regions with a large number of multinational companies. Finally, McCann and Ortega-Argiles (2013) revealed that the concentration of entrepreneurship and innovation tends to be higher in regions with a large market potential and in many parts of the world, including the OECD countries where the use of ICT appears to have exacerbated differences between core and non-core regions.

Taking into account these facts about entrepreneurship, it is clear that a one-size-fits-all regional innovation development concept will not lead to a more balanced regional innovation performance in Europe. Furthermore, it can be stated that regional success heavily depends on entrepreneurial performance and the related capacity to build public-private partnerships and cooperation.

According to the Global Entrepreneurship Monitor (GEM, 2011; 2014), there are major differences between the European Union and Russia already in the field of entrepreneurship. In the GEM reports (2011, 2014), Russia belongs among the efficiency-driven economies and, compared to the EU Member States in Central Europe, shows significantly lower rates for all kinds of entrepreneurial activities. A special weakness in Russia's entrepreneurial activities appears in the high-tech sector where Russia's figures are significantly below even EU underperformer states like Romania (GEM, 2011). As possible reasons for

the Russian entrepreneurship development, experts mention the framework conditions which reveal weaknesses in bureaucracy, R&D transfer, financial support, and governmental programs and policies.

3. The role of universities in EU regional innovation policy

With the growing importance of knowledge economy since the early 1990s, the focus on the region became a key factor for prosperity in the 21st century as there are differences in the development of different regions (Porter, 2000). Other scholars emphasize, next to geographical settings and spatial aspects, also the external environment which influences heavily regional development and networks (Florida, 2002; Bluhm *et al.*, 2008). In the concepts of regional knowledge networks, universities occupy a special role due to their expertise in the areas of education, innovation, and technology transfer. This innovation aspect is also central in competence networks, involving universities as regional innovation engines for new business and regional network creation. This is because knowledge and skills have become the prerequisites of SMEs' and regions' competitiveness, in which universities are expected more than ever to actively engage in the development; this is especially the case in Central and Eastern European regions (Goddard, 2000; Meier zu Köcker, 2008).

A regionally engaged university can thus become a key asset for regional development, recognized as a "third role" for universities. It plays an important role also in the smart specialization concept as pointed out by David *et al*. (2009) since in many European regions there still exists a weak correlation between the regions R&D capabilities, its training specialization and its industrial structure. Research results show that the technology and innovation factor of a region, as well as the human capacities with highly educated work force, especially in correlation with entrepreneurial and technology transfer activities, have a high impact on the economic situation of regions (Kröhnert *et al*., 2007, p. 6; Etzkowitz, 2003; Clark, 2001).

In the context of the smart specialization approach, a smart policy mix consisting of R&D, training and networking programs, as Barca (2009) has pointed out, a successful regional innovation policy in the framework of a European reformed cohesion policy should include the upgrading of local supply chains, the redesign of regional learning and local labor-training systems, the promotion of university business linkages, and the reform of local institutions. This represents a special challenge in Eastern and Central Europe, where a number of regions

are suffering under their weakness in soft factors and innovations and which are linked to brain drain and dramatic demographic changes, and the success of the universities' third role is strongly linked to the development of regional soft factors (Prause & Hunke, 2012; Prause & Winkler, 2011; Hirsikoski *et al*., 2009).

Until now, the impact of universities as leading regional institutions for soft factor development and their role in regional network and cluster development has been neglected in research even though there is a larger set of study results especially from Eastern Germany and Central and Eastern EU Member States (Prause, 2014). Bluhm and others (2008) were able to prove that Eastern-German regions suffer from a lack of high-skilled business leaders due to low regional attractiveness. An analysis of business locations in various regions in Germany showed that factors such as life quality and location image are regional soft factors which are having an important impact on regional development even if their weight is different for different branches (Hansmann & Höck, 2001; Brandt, 2010).

Other results of the think-tank of the German Employment Agency from 2007 revealed that cultural diversity has a significant impact on the regional innovation power, expressed in patents per capita (Niebuhr, 2006). Bussmann and Werle (2004) from the University of Halle-Wittenberg in Eastern Germany investigated the negative economic influence of crime and xenophobia on Eastern Germany and estimated that the economic damage amounted to a couple of million euros. So tolerance, security and openness represent important factors for regional prosperity in knowledge economy.

Thus it can be concluded that the impact of universities on regional development, especially for innovation and in knowledge economy, goes far beyond the hard factors. Universities are the leading regional institutions for soft factor development, including innovation, diversity management, internationalization and intercultural skills, which are especially needed in the eastern and central part of Eastern Europe, where a lot of regions suffer under weak soft factors, brain drain and dramatic demographic change. These two key groups share common cultural attitudes and they are highly important for a sustainable business development and innovation of regions.

4. Russia's regional innovation policy

Innovation moved up the priority list of Russian top-level policy makers. Russia's Strategy 2020 attempts to enable the catch-up process with technologically leading nations. However, due to its immense size, the world's largest country struggles with enormous socio-economic differences on a regional level. Consequently, scientific and technological potential is unequally distributed. In addition, different regions are associated with diverse regional business environments, different competition levels, access to technology and innovation and different institutional quality. Nonetheless, also relatively newly developed regions in the East have successfully developed innovation systems in its regions (Tomsk).

Radosevic (2002) has studied regional innovation systems in Central and Eastern Europe and assessed the impact of post-socialist transformation on the regional innovative capacity. Of special interest was the move from former centralized governments with budget dominance to regionally enabled authorities. The necessary economic restructuring which came with memberships in the European Union, caused further disturbances in the local economy. Here, economic growth happened primarily in regions with access to capital and diversified economies.

An analysis of the Center for Strategic Research "North-West" distinguishes between metropolises (Moscow and St. Petersburg), innovation-ready regions, regions with unrealized intellectual potential and minimum-level innovation regions. Volkova and Romanyk (2011) distinguished between innovative regions of the European part of Russia, innovative regions in Siberia, mining regions, and regions lagging behind. Two further clusters include regions falling far behind. Despite recent contributions (Archibugi *et al*., 2013a, b), there is still strong demand for valuable insights into innovation and crisis response from both policy makers and academics alike.

There is not much information available on international R&D cooperation of Russian state-owned enterprises (SOEs). During the recent years, this data has slightly improved owing to the innovation development programs of Russian SOEs, which is one of the current policy tools of the Russian government aimed at stimulating the innovation activities of major corporations. The initiative was launched in August 2010. The Government Commission on High Technologies and Innovations compiled a list of 47 largest SOEs, whose overall share in the Russian industrial turnover, according to the Russian Ministry of Economic Development, was more than 20 per cent. These enterprises were obliged to develop and implement innovation strategies. In addition, the Working Group

of Public-Private Partnership Development in Innovation Sphere was formed, including representatives from the government, ministries, corporations, universities, and the Russian Academy of Sciences. This group was in charge of making tactical decisions regarding the innovation strategies of SOEs, technology platforms, development institutions, and public procurement for innovation. The SOEs from the approved list had to annually report to the group on the progress of implementation of their innovation strategies. The innovation strategies were developed in accordance with the official recommendations of the government. Most of them included the following strategic directions: new product development, modernization of equipment, commercialization of technologies, cooperation with universities, R&D institutions and SMEs, participation in Russian technology platforms, and international collaboration. To shed light on specific experience of international STI cooperation in the business sector, innovation strategies of the largest Russian SOEs were examined. It appeared that each company had included international science, technology and innovation (STI) activities in its mid-term implementation plan. Though the geographic scope of Russian SOEs' linkages is relatively wide, the most frequently mentioned countries are the USA, Germany, France, the CIS countries, China, and South Korea. Several innovation projects with Italy, Japan, Canada, the UK, and Northern and Eastern European countries have also been planned. However, apart from this scarce data there is not much examples of SOEs being largely involved in international collaborative R&D (except for Russian Railways, Aeroflot, or Gazprom).

Almost 4,000 research and development organizations are active in the Russian Federation. A large part of them, more than 40 per cent, are functionally connected with industries in the business enterprise sector. These organizations employ half of all the employees in the R&D sector and consume 64.2 per cent of the national expenditure on R&D.

In the 1990s, Russia changed the organization of its research. Although changes were made, many of them were rather superficial. Most industry-related research is still concentrated in a few large state-run research centers, which were founded in the hayday of the Soviet Union. Many of these organizations have found it increasingly difficult to interact with industry partners, which now face a market-oriented environment. One of the major points of critique on the reforms of the Russian innovation system was that the huge Academy of Sciences, incorporating some 400-plus research organizations, were left intact and still operate in isolation from other sectors, such as education. One of its branches, the Russian Academy of Agricultural Sciences, incorporates over 200 research organizations.

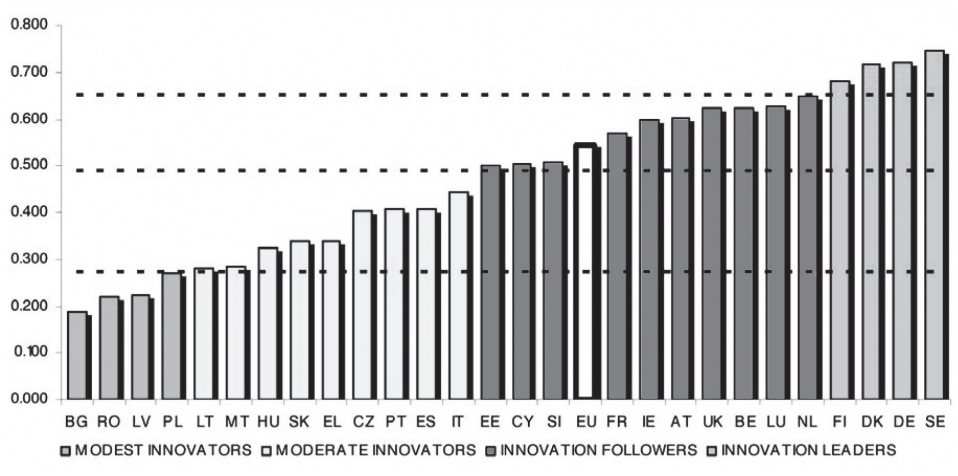
The research system in the Soviet Union saw industry-related R&D organizations attached to ministries. These ministries were also the final decision-making units who select the research projects to be carried out. These public outputs for industry-wide discoveries quickly lost their importance after the introduction of market-oriented reforms as many of them were simply produced by organizations which over time lost touch with their client base. The first reforms took place before the demise of the Soviet Union. In the late 1980s, technology parks were established in another attempt to close the widening technology gap with the West. From 1993 onwards, a few selected industrial research institutes were lifted to the status of public science centers, mostly around priority areas, to stop the increasing brain drain and to improve research capabilities in the country. This status ensured better funding and other privileges. A large portion of them is active in research for the Russian defense sector. The year 1996 saw the introduction of Innovation and Technology Centers. To improve the commercialization of technology, in 2003 technology transfer centers were established on the basis of license agreements. These centers provide flexible solutions for business-science cooperation, including foreign companies. They were supported by business incubators and technology parks as further intermediary organizations.

5. Smart specialization and EU Eastern Innovation policy

When the financial crisis hit in 2008/2009, dreams of endless economic growth in Eastern Europe came to a sudden end. Besides the sizable destruction of capital through bad investments and faulty credits, millions of families suffered greatly through mass unemployment, exploding import prices through currency devaluation and shrinking public spending. The new member states in Europe's East caught up in innovation activity before the crisis, but these activities were largely interrupted. Scholars voiced concerns that these countries might well fall behind their Western-European neighbors and that the already wide technology gap could increase even further (Filippetti & Archibugi, 2011).

A closer look at the current innovation development in the European Union shows that all the Eastern European countries, except Estonia and Slovenia who belong to the group of innovation followers, belong to the group of moderate or modest innovators, representing the two low groups of countries in terms of innovation (Innovation Union Scoreboard, 2013).

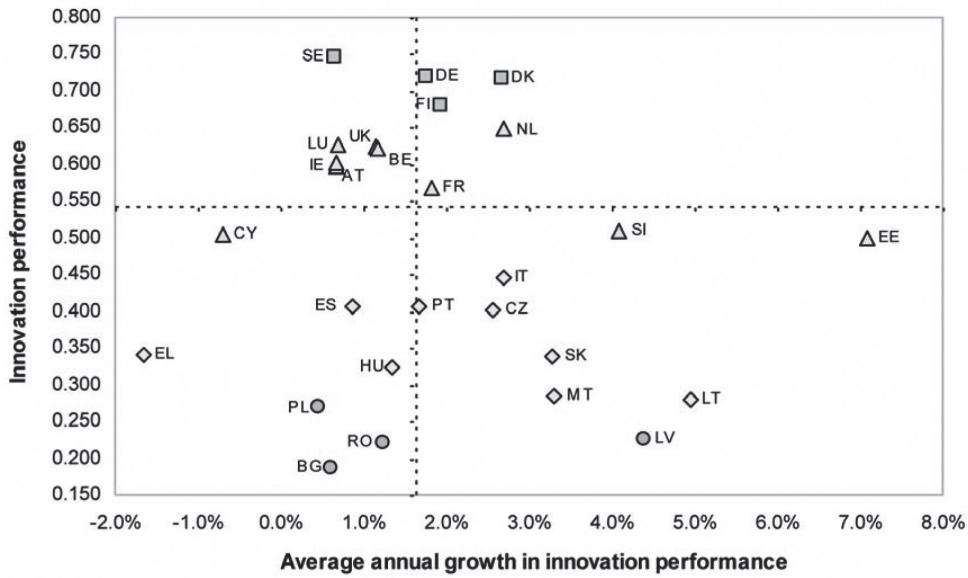
Figure 2. EU Member States' innovation performance.



Source: Innovation Union Scoreboard, 2013, p. 5

However, considering the growth rates of innovation performance in the period 2008–2012, the picture is more promising since for a larger number of the Eastern European members the average annual growth rates were above the EU average:

Figure 3. Growth in innovation performance 2008–2012.



Source: Innovation Union Scoreboard, 2013, p. 11

Even if the picture for the annual growth rates in innovation performance for the Eastern European countries between 2008 and 2012 did not look so bad, it has to be noted that for 2012, the process of convergence with the EU, which took place until 2011, has been reversed to one of divergence in 2012. The innovation gap between the EU and Russia, the most important non-EU Eastern European country, increased from -62 per cent in 2008 to -68 per cent in 2012, revealing that the Russian innovation performance is 68 per cent worse than the EU performance in 2012 (EU, 2013). This result is surprising since the Russian Federation did not show the same dramatic downturn after the financial crisis in 2008/2009, because Russia's public spending in 2009 was actually increased (Thurner, 2014).

The area under consideration here is Russia's North-Western Federal District which borders the European Union and includes St. Petersburg, the second largest city in Russia, representing, together with its surroundings, the industrial power hub of the district. Since the disintegration of the Soviet Union, it has become obvious to which extent has the innovativeness and competitiveness of Russian economy fallen behind the EU Member States, even those EU states with comparable GDP figures. Thurner (2014) has analyzed the innovation activities in Russia's North-Western Federal District and found, for the period between 2004 and 2011, that the resource-rich eastern regions have lost innovation activities whereas the western service-oriented regions of the North-Western Federal District have benefitted from innovation activities. The only exception is the Kaliningrad region which showed a decline in innovation activities. So, in fact all the EU bordering regions were able to increase their innovation activities. As Thurner (2014) points out, it is possible that these developments could have been sparked off by high-impact policy making.

6. Concluding remarks and future research

Smart specialization will be on the top of EU agenda between 2014 and 2020 and thus will impact significantly EU regional policy and especially EU innovation development. This influence will not only be EU internal, but will also set the frame for the future EU Eastern Innovation Partnership. The paper presents important issues of this upcoming cooperation with a special focus on EU's largest eastern partner—Russia.

Both the EU and Russia have their own Agendas 2020 and both lay special focus on entrepreneurship, public-private partnerships and building of regional

innovation and competence networks, even though there still exist significant differences between the current situations in the EU and Russia. An important difference between the European Union and Russia lies in the international orientation of innovation and R&D strategies. While the European approach has a high transnational aspect, the Russian innovation cooperation is still on a very low level. Here the European experience in transnational innovation projects could spur the reorientation and restructuring of the Russian innovation system.

By zooming into the conditions framing innovation in both parts of the world, there are common issues on either side of the EU borders and the main topics are related to finance, R&D transfer and entrepreneurship, so with an integrated EU Eastern Innovation approach, the cross-boundary cooperation could lead to a win-win situation for the EU and its Eastern partners. Russia is a highly interesting area especially for EU innovation activities and innovative companies, due to its well-educated R&D personnel, the still-existing high-tech expertise in different areas and its huge and dynamic market.

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He has studied mathematics, informatics and business administration, has held lectures and published more than 100 scientific publications about regional development, entrepreneurship and SME management, innovation and supply chain management in international refereed journals and at international conferences. Prof. Prause enjoys a long experience in national and European projects.

Prause has worked as vice dean for research and international relations at Wismar Business School and as vice rector for research at Wismar University. He has taught and lectured at seminars, workshops and management training programmes in numerous countries in Europe, Russia, Latin America and Asia.

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