Regional innovation governance and place-based policies: design, implementation and implications

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ABSTRACT
Regions need to tailor their own place-based policies because there is no ‘one-size-fits-all’ regional innovation policy framework. Each region is characterized by different institutional capacities related to political, economic and social contexts enabling or constraining the design and implementation of place-based policies. This paper uses an instrumental-use multiple case study approach to explore the design and implementation of place-based policies within the institutional arrangements of four regional innovation agencies (RIAs) established in three different regional contexts inside and outside the European Union: one in the Brainport region (the Netherlands), two in the Basque Country (Spain) and one in Medellín (Colombia). In analyzing the RIAs’ similarities and differences, this paper explores the complexity of designing and implementing place-based innovation policies in different regional innovation systems (RISs) while noting important policy implications for regional innovation governance and institutional arrangements to upgrade RIS in a more systematic manner.

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INTRODUCTION
Policy-makers and regional governments are increasingly putting innovation policies at the top of their policy agendas (OECD, 2011a), as innovation is seen as the pathway to a higher standard of living. In the European Union (EU), the future programming period of EU Cohesion Policy 2021–27 (European Commission, 2018) dedicates the bulk of its budget to promoting a Smarter Europe through the confirmation of the Smart Specialisation Strategy (S3) after a first experiment during the 2014–20 programming period (European Commission, 2012). S3 is a policy concept to support regional prioritization in innovative sectors, fields or technologies through the entrepreneurial discovery process, a bottom-up approach to reveal what a region does best in terms of its endowments in science and technology (Foray, David, & Hall, 2009).
In the concept of a regional innovation system (RIS), which is used as a systematic analytical approach to investigate the innovation process within regions, there is no ‘one-size-fits-all’ regional innovation policy, as RISs differ widely regarding prior innovation capabilities, industrial base, and institutional contexts (Tödtling & Trippl, 2005). As a result, the main policy recommendation is to design place-based and place-sensitive policies to respond to regional innovation specificities (Barca, McCann, & Rodríguez-Pose, 2012). A place-based policy is defined as ‘a long-term strategy aimed at tackling persistent underutilization of potential and reducing persistent social exclusion in specific places through external interventions and multilevel governance’ (Barca, 2009, p. vii).

Regions are, however, highly unequal when designing and implementing place-based policies due to differences in the quality of their governments (Charron, Dijkstra, & Lapuente, 2014), their capacities to absorb funds (Oughton, Landabaso, & Morgan, 2002), and their institutional capabilities (Farole, Rodríguez-Pose, & Storper, 2011). The S3 concept, which is the most ambitious place-based policy approach within EU Cohesion Policy, has led to design and implementation challenges in many regions (Foray, 2018; Marques & Morgan, 2018). As any place-based policy strategy, S3 requires supportive institutions and strong policy capabilities at the regional level (Coffano & Foray, 2014). Place-based policy strategy explicitly advocates employing appropriately designed local knowledge and learning-enhancement tools in regional policies, and the smart specialization argument is one such tool (McCann & Ortega-Argilés, 2015).

This paper aims to address the gap in understanding some of the institutional mechanisms underpinning the design and implementation of place-based policies in various institutional contexts by looking at the experience of four regional innovation agencies (RIAs). Influenced by the new public management (NPM), regional governments are creating RIAs as regional innovation governance structures to deliver place-based policies to strengthen regional innovation capabilities (OECD, 2011a). RIAs differ across regions and countries depending on the institutional context, the degree of decentralization, the regional competitive advantages, sectoral specialization, and presence of leading actors (e.g., firms, clusters, universities).

The authors use an instrumental-use multiple case study approach to explore the institutional arrangements underpinning the design and implementation of place-based policies in four RIAs established in three different RISs inside and outside the EU. The RIAs selected are Brainport Development, located in the Brainport region of the Netherlands, Innobasque and the Society of Industrial Promotion and Restructuring (SPRI), located in the Basque Country in Spain, and Ruta N, located in Medellín in Colombia. The RISs selected are an innovation leader (the Brainport region), an innovation follower (the Basque Country) and a metropolitan region on the knowledge periphery (Medellín). The paper uncovers some of the features within the RIAs’ institutional arrangements enabling or constraining the efficient design and delivery of place-based policies. RIAs have the role to monitor their RIS continuously, to find weaknesses in their RIS and to find the solutions to upgrade their RIS. The authors argue that, under certain conditions, regional innovation governance structures, such as RIAs, operating within specific institutional arrangements could be adopted in regions that face difficulties designing and implementing place-based policies.

THEORETICAL FRAMEWORK

The concept of an RIS is an analytical approach that emphasizes the importance of the geographical scale in understanding knowledge production and differences in regional innovation outcomes. RISs differ significantly among countries and within countries, making the region the most interesting innovation system unit to investigate (Braczyk, Cooke, & Heidenreich, 1998). Doloreux and Parto (2005, p. 134) defines an RIS as ‘a set of interacting private and public interests, formal institutions and other organizations that function according to organizational and institutional
arrangements and relationships conducive to the generation, use and dissemination of knowledge. Innovation systems are based on evolutionary, non-equilibrium theories in which innovation is a result of interactive processes both internal and external to the firms (Lundvall, 1992; Nelson, 1993). In the RIS literature, the technological innovation process is non-linear and involves complex 'feedback mechanisms and interactive relations involving science, technology, learning, production, policy, and demand' (Edquist, 1997, p. 1). The innovation process occurs over time and involves the interactions of a wide range of ‘organizations that gain, develop, and exchange various kinds of knowledge, information, and other resources’ (Edquist, 1997, p. 2). Interactions are thus the most important determinant of technological innovation since it facilitates learning and the accumulation of knowledge (Asheim & Isaksen, 2002; Lundvall, 1992).

The RIS literature increasingly aims to provide targeted regional innovation policy recommendations, which is coinciding with the greater role given to regional governments in shaping innovation policies (OECD, 2011a). The rationale for government intervention is that regions may be prone to suboptimal interactions leading to lower innovation outcomes, as actors that cooperate, collaborate and learn from each other, are central to the innovation process (Laranja, Uyarra, & Flanagan, 2008). Innovation by firms cannot be understood in terms of independent decision-making at the firm level, but rather as a system of complex interactions prone to ‘system failures’ or suboptimal interactions in the system (Smith, 2000). Additionally, specific evolutionary mechanisms, such as path dependency, cumulative causations, inertia and routines, can lock regional paths in inferior or superior technological trajectories (Dosi, 1988). Access to and exploitation of extra-regional knowledge can, as a result, favour new knowledge recombination and new regional paths (Trippl, Grillitsch, & Isaksen, 2018). Innovation policies must take into account specific system failures that can exist in certain regions. Tödtling and Trippl (2005) point out that peripheral regions may be at risk of organizational thinness, old industrial areas may be at risk of lock-in, and some metropolitan regions may be at risk of fragmentation.

Institutions and, more specifically, institutional arrangements such as the triple-helix model of innovation that aims to promote interactions between universities, the private sector and public institutions, matter for regional development (Etzkowitz & Leydesdorff, 2000; Rodríguez-Pose, 2013). At the regional level, the civil society is increasingly involved in triple-helix arrangements, thus forming the quadruple-helix model of innovation, to favour citizen participation and open innovation (Carayannis & Campbell, 2009). Institutional entrepreneurs, actors who have a particular interest in shaping institutional arrangements, can play an important role in creating or reforming institutions (Battilana, Leca, & Boxenbaum, 2009). To be effective, regional innovation policies must be tailored to specific regional institutional arrangements (Rodríguez-Pose, 2013). EU Cohesion Policy and its innovation policy strategy, the S3, are rooted in previous place-based rationales, based on the explicit prioritization of activities related on existing regional capabilities (Foray et al., 2009). Regions are, however, highly unequal when designing and implementing place-based policies due to their differences in the quality of their governments (Charron et al., 2014), their capacities to absorb funds (Oughton et al., 2002), and their institutional capabilities (Farole et al., 2011).

The different rationales for policy interventions and the 'policy-mix' recommendations to reduce market failures, system failures and/or evolutionary failures through place-based innovation policies under a multilevel governance setting imply that regional policy-makers are dealing with extreme levels of policy complexity (Flanagan, Uyarra, & Laranja, 2011). Academics often have too much faith in the capacities of policy-makers to design, coordinate and implement innovation policy recommendations, and in the capacities of the RISs to break evolutionary mechanisms, such as path dependency (Flanagan & Uyarra, 2016). Influenced by the NPM, metropolitan and regional governments are establishing RIAs as organizations within a wider institutional framework to strengthen regional innovation capacities. NPM is associated with doctrines of public accountability and organizational best practices with high levels of managerial
autonomy, particularly regarding personnel and financial management (Verhoest, Van Thiel, Bouckaert, & Laegreid, 2012). Although managerial autonomy and reduced political influence might increase efficiency, effectiveness and accountability, it adds a layer of policy complexity for regional governments in an already complex policy realm (Pollitt, Talbot, Caulfield, & Smullen, 2004). An RIA is an innovation intermediary that can be defined as ‘an organization or body that acts as an agent or broker in any aspect of the innovation process between two or more parties’ (Howells, 2006, p. 720). There is a great diversity among them in terms of size, mission, activities, and ownership and funding structure (OECD, 2011a). Potential government failures, however, do not always make government intervention required or desirable. Indeed, a policy failure, which is the failure of a policy to achieve its objectives, may arise due to the inadequate policy design, implementation, and governance (Dal Bó, 2006).

In light of the above discussions, this paper’s theoretical framework may be summed up as follows. First, regions should design and implement place-based policies, as there is no ‘one-size-fits-all’ regional innovation policy. Second, place-based policy rationales and recommendations imply high-level policy complexity. Third, regional governments are heterogeneous in terms of their capacities to deal with that level of policy complexity. Lastly, RIAs could provide some institutional arrangement features to deal with place-based policy design and implementation. The case studies presented below will serve to provide some support to the above arguments. Indeed, the purpose of this paper is to explore the institutional arrangements underpinning the design and implementation of place-based policies in four RIAs established in three different RISs inside and outside the EU.

METHODOLOGY

This paper explores some of the institutional mechanisms underpinning the design and implementation of place-based policies in different institutional contexts by looking at the experience of four RIAs. The research methodology is based on an instrumental-use multiple case study approach, using primary and secondary data to generate insights and new hypotheses that can be used to inform changes in practices, programmes and policies through homogenous sampling. The authors use case studies ‘out of the desire to understand complex social phenomena’ in which researchers have no control (Yin, 2013, p. 4). The four RIAs selected are Brainport Development located in the Brainport region of the Netherlands, Innobasque and SPRI located in the Basque Country of Spain, and Ruta N located in Medellín, Colombia. Although SPRI is not an RIA under the NPM definition, the authors included SPRI, as the public organization could not be separated from Innobasque to explore the design and implementation of place-based innovation policies in the Basque’s innovation system. Ruta N, which is an RIA outside the EU, was selected because it is a unique case in Latin America that has received significant public funding and knowledge from international experts to structure its role in its RIS (OECD, 2015). The RIAs have been purposefully sampled for being located in three widely different RIS with three different governance structures and levels of competences, for being considered distinctive institutional arrangements in their own countries, and for being frequently cited as best-practices innovation governance structures by international organizations, such as the EU or the Organisation for Economic Co-operation and Development (OECD), and/or the RIS literature.

Qualitative research implies an extensive collection of data from multiple sources of information. The data were collected with the aim to uncover the RIAs’ role in their RIS through the investigation of their governance structures, implemented programmes and overall missions. The research conducted for this paper is based on three sources of data: semi-structured interviews, documents and non-participant observations. Seven face-to-face interviews in February and March 2018 at Brainport Development, 10 face-to-face interviews in April and May 2018 at Innobasque and SPRI, and 14 face-to-face interviews in July 2017 at Ruta N Medellín.
were conducted. The interviews were conducted with key stakeholders or ‘super-informants’ who have direct experience with the studied RIAs to gather extensive data on key aspects of the research question (Denzin, 1989). The documents collected for this research come mainly from three sources: academic articles; articles in magazines, newspapers and RIAs’ websites; and RIAs’ management reports. The researcher travelled to each RIS and visited each RIA to get a sense of the regional context through informal non-participant observations by paying attention to each RIA’s work environment.

The data analysis consisted of examining, categorizing and recombining evidence to ‘produce empirically-based findings’ to explore some of the institutional mechanisms underpinning place-based policies’ design and implementation (Yin, 2013, p. 132). The data were analyzed to explore the institutional mechanisms within each regional perspective rather than through a multilevel governance perspective at the country level. The analysis relied on the researchers’ ability to analyze a large amount of data through pattern recognition, that is, ‘to see patterns in seemingly random information’ (Boyatzis, 1998, p. 7). In particular, the analysis explores the weaknesses and strengths of each RIA to generate new insights for policy-makers. Validation is achieved through prolonged engagement, persistent observation and triangulation to ensure that ‘the right information and interpretations have been obtained’ (Stake, 2013, p. 36). Construct validity is achieved through the use of multiple sources of evidence in a manner encouraging convergent lines of enquiry (Eisenhardt, 1989). The description and analysis of each RIA and RIS allow readers to make decisions regarding the transferability of the regional innovation governance structure and described institutional arrangement. Each case study comprises three parts to balance the amount of description and the amount of analysis and interpretations. The first part describes the regional and historical context; the second part describes the RIA and its range of action; and the last part analyzes and interprets the role of the RIA in its RIS.

CASE STUDIES

**Brainport development, Brainport region, the Netherlands**

The Brainport region, which comprises 21 municipalities, is located around the city of Eindhoven in North Brabant in the Netherlands. In 2016, the population of the Brainport region was 756,615 inhabitants and it had a gross domestic product (GDP) per capita of €49,297 compared with 16,979,120 inhabitants and a GDP per capita of €41,258 for the Netherlands (CBS, 2018).

The Brainport region is the most important technology hub in the Netherlands and one of the most important in the world. With 7222 patents filed for the period 2011–15, the Eindhoven region was ranked 18th in the world after Chicago, but ahead of Shanghai (Bergquist, Fink, & Raffo, 2017). Philips Electronics represents, however, 84.9% of the patents filed in the Brainport region (Bergquist et al., 2017). In 2016, the national government granted the region the status of ‘mainport’, which facilitates access to national funding for spatial interventions and infrastructure development, along with the Port of Rotterdam (seaport) and Schiphol (airport) (van Duinen, 2013). The economic development of Eindhoven has largely been influenced by Philips, which not only was the largest employer in the region but has also spun-offs large companies, such as ASML (Stam, Romme, Roso, van den Toren, & van der Starre, 2016). In the 1990s, the Eindhoven region entered a crisis due to the reorganization of Philips and the bankruptcy of the truck manufacturer DAF (Horlings, 2014; Horsten, 2016). During this regional crisis, the City of Eindhoven, under Mayor Rein Welschen, the Eindhoven University of Technology, industrial companies and the chamber of commerce began to collaborate closely to promote regional economic development and to strengthen the region’s industrial and innovation base (Horlings, 2014; Horsten, 2016). This triple-helix arrangement led to the development of technological infrastructure and new institutional arrangements, namely, the High-Tech Campus.
Eindhoven, a technology park, the Strijp S, an innovation district, and Brainport Development, a regional innovation and investment promotion agency.

In 2005, Brainport Development, the executive organization of the Brainport Foundation, was created from a triple-helix initiative involving the local government, private companies, including Philips Electronics and ASML, and educational institutions, including Eindhoven University of Technology (Horlings, 2014; Stam et al., 2016). Brainport Development, which combines innovation and investment promotion activities, aims to foster more aggressive approaches towards technological innovation so that the Brainport region can remain one of the top technology hubs in the world. In 2018, Brainport Development had a budget of €8,117,000, half of which was funded by the region’s 21 municipalities, and half by the national and provincial government, private companies, the EU and its revenues (Brainport, 2018). Brainport Development designs and implements place-based policies within multiple triple-helix arrangements. It operates five working areas: people, business, international, technology and basics. ‘People’ aims to support human capital investment to respond to new demands in skills from employers in the region. Brainport Development addresses some labour mismatches that result from accelerating technological innovations, reduces skill shortages in high-demand jobs and promotes lifelong learning and Science, Technology, Engineering, and Mathematics (STEM) skills for schoolchildren. ‘Business’ aims to support start-ups and small and medium-sized enterprises (SMEs) in the Brainport region to grow faster than international and national references by providing funding, methodologies and relevant connections. ‘International’ aims to attract international companies and workers to the Brainport region. ‘Technology’ aims to encourage research and development (R&D) activities and to monitor emerging technologies and opportunities for companies in the Brainport region. ‘Basics’ lobbies the national government and the EU to fund regional amenities and infrastructures. Additionally, Brainport Development is involved in responding to major societal challenges that Brainport’s stakeholders are facing in specific sectors, which require collaboration among a wide range of actors, namely, in the health, energy, mobility, agrifood and safety sectors (Brainport, 2018; Stam et al., 2016).

Brainport Development is the regional innovation governance structure that supports new regional innovation dynamics. Although one might question the existence of such an agency in one of the most innovative regions of the world, the regional economic structure is dominated by few large companies, in particular Philips and its spin-offs, which pose some risks for the region’s economic stability. Indeed, the fate of the Brainport region is still largely intertwined with the ups and downs of Philips Electronics. The executive agency was created from the institutional leadership and proximity between the mayor, the head of the chamber of commerce, and the dean of Eindhoven University of Technology to generate new innovation dynamics and a more aggressive approach towards innovation in the Brainport region after a period of regional structural crisis characterized by the bankruptcy of DAF Trucks and the reorganization of Philips Electronics. The Brainport region through Brainport Development aims to promote the diversification of its technology base by attracting international companies and workers and by supporting the creation of start-ups. Brainport Development has devised place-based programmes to address some strategic priorities in the RIS and to take advantage of new technology trends. ‘Brainport has a working area called “Technology” in which we monitor technology trends and opportunities for the Brainport region’ (Brainport Development, personal communication, 28 March 2018).

Brainport Development has been particularly active in supporting start-ups, entrepreneurs, attracting human capital and foreign direct investment (FDI), and upgrading human capital. The place-based programmes are designed and implemented following multiple triple-helix arrangements. The board of directors, involving the deans of universities, mayors and chief executive officers (CEOs) of private companies, decide on which strategic priorities to pursue. Triple-helix arrangements that involve upper management, professors, Brainport Development’s
employees and public sector officials formulate the programmes. Lastly, triple-helix arrangements evaluate the programmes. The implementation of the place-based programmes is coordinated with local actors in the RIS. ‘Everything that we do at Brainport is done within a triple-helix strategy, from the definition of the priorities, to the implementation of the projects, to their evaluations’ (Brainport Development, personal communication, 12 March 2018).

Brainport Development has three weaknesses that could lead to government failures. First, the Brabant Development Agency already has the mandate to work as a regional investment promotion agency for the Brabant region. Brainport Development is focusing on specific technologies and countries, but this raises questions about the scope and role of the ‘international’ department, given the existence of similar activities in the region. Second, Brainport Development is conducting evaluations at the macro-trends level through the Brainport Monitor (Brainport, 2015). More systematic evaluations and set indicators must be monitored at the programme and agency levels. Third, programmes to develop institutional capacities within the municipalities and other public organizations are missing. Brainport Development should think about becoming more proactive in involving the civil society and moving towards quadruple-helix institutional arrangements to design and implement the place-based policies.

Innobasque and SPRI, Basque Country, Spain

The Basque Country is a Spanish region located in the north-east part of Spain. The region, which covers an area of 7234 km², has three administrative provinces: Araba, Bizkaia and Gipuzkoa. In 2016, the population of the Basque Country was 2,175,819 and its most populated metropolitan area was, and still is, Bilbao, with a population of 857,016 (Eustat, 2018). The Basque Country has historically been one of the most important industrial centres in Spain with a high degree of specialization in the iron and steel industry, shipbuilding, and machinery manufacturing (Aranguren, Magro, Navarro, & Valdaliso, 2012). The death of General Franco in 1975 led to structural economic and institutional transformations. The institutional transformations were driven by the adoption of the 1978 Spanish Constitution, which led to the 1979 Devolution Act, granting autonomy to the Basque Country (Moso & Olazaran, 2002). In 1980, the first regional Basque government was elected and formed ex-nihilo from a pragmatic government mainly coming from the private sector (Aranguren et al., 2012). Simultaneously, the end of protectionist policies and the opening up of the Spanish economy provoked a deep industrial crisis in the Basque economy leading to massive unemployment and social unrest, which was accentuated by Euskadi Ta Askatasuna (ETA) terrorist actions (Gómez Uranga & Etxebarria, 2000). The first Basque government was able to implement tailored industrial policies to support the Basque industrial restructuration dubbed the ‘First Great Transformation’. Since 2006, the Basque government has promoted the ‘Second Great Transformation’ of the Basque economy to enhance the innovation capabilities and competitiveness of Basque firms. In 2016, the Basque Country was, after Madrid, the second richest region in Spain with a GDP per capita of €32,621, compared with €23,970 for Spain (Eustat, 2018; INE, 2017). The Basque Country ranks as the first region in Spain and in Southern Europe in the European Regional Innovation Scoreboard, which is for the Basque government the most important indicator to measure the success of its innovation policies (European Commission, 2017). The Basque Country is hailed as a best-practice example because of its industrial upgrading and urban transformation stemming from the Guggenheim Museum (OECD, 2011b; Plaza & Haarich, 2015). Since 2012, however, the region has experienced, in both innovation inputs and outputs, a sharp decline in various innovation indicators, such as R&D spending as a percentage of the GDP, and patent applications (Eustat, 2018; OEPM, 2018).

At the centre of each so-called ‘Great Transformation’ is the creation of new organizations and institutional arrangements. In 1981, SPRI was created by the Department of Industry of the Basque Government to support the ‘First Great Transformation’ (Gómez Uranga &
Etxebarria, 2000). Since 1981, SPRI’s mandate has considerably evolved from strictly focusing on industrial restructuring towards the provision of innovation-related policies to promote industrial competitiveness. SPRI is entirely funded by the Basque government, with a budget of €30,582,440 for 2016 and 66 full-time employees (Deloitte, 2017). SPRI operates three main working areas: technology and innovation, business promotion, and internationalization. ‘Technology and innovation’, through financial instruments and public calls, supports industrial and industrially related companies and research centres to improve their innovative capabilities, to generate process innovations and to adopt organizational innovations. ‘International’ has for its mission to support the internationalization of Basque companies. ‘Business Promotion’ operates five different working areas: entrepreneurship, investment promotion, industrial planning, regional strategic initiatives and clusters. In 2006, the President of the Basque Government, the Lehendakari, launched the ‘Second Great Transformation’ to foster new innovation dynamics to respond to new challenges, such as globalization and digital transformation. In 2006, Orkestra, the Basque Institute for Competitiveness, was created to investigate regional development and competitiveness. In 2007, Ikerbasque, the Basque Foundation for Science, was created to promote scientific research and attract international researchers. In 2007, the Basque Innovation Agency, Innobasque, was created as a public–private partnership to transform the Basque Country into ‘The Reference’ in innovation in the EU by 2030 (Innobasque, personal communication, 23 April 2018). In 2016, Innobasque had 40 employees and a budget of approximately €4 million funded by the Basque government (70%), projects from the EU (15%) and by its members (15%). Innobasque was first conceived as a catalyst to mobilize the entire Basque society. The organization identified and coordinated 1000 partners coming from the private sector (73%), universities and research centres (15%), and the public sector and the civil society (12%) to form working groups to identify weaknesses in the Basque innovation system regarding technological innovation, social innovation, internationalization, organizational innovation and entrepreneurship (Innobasque, personal communication, 17 April 2018). In 2018, Innobasque reorganized its strategy to focus on SMEs, with a mission for the region to remain an innovation follower in the European Regional Innovation Scoreboard. As of 2018, Innobasque operates four working areas: prospective, innovation policies, public innovation, and alliances and networks. These aim to support public organizations, companies, universities and the civil societies to adopt and implement innovation best-practices.

SPRI and Innobasque are the regional innovation governance structures that emerged to transform the Basque’s economy structurally. SPRI was created out of the pragmatic vision of the first autonomous Basque government which mainly came from the private sector and wanted to save the region’s industrial heritage. Innobasque was an initiative coming from the private and public sectors aiming to boost the region’s innovation capabilities during a period of rapid globalization and digital transformation. ‘The first thing to clarify is that Innobasque is not an initiative that comes from the public sector but the private sector. It is a private association with support from the public sector’ (Innobasque, personal communication, 23 March 2018).

In the Basque Country, place-based innovation policies are designed by involving multiple stakeholders at multiple levels of governance, the most important ones being Orkestra, Innobasque, SPRI, the Department of Economic Development and Competitiveness, and the provincial governments. At its creation, Innobasque had to find its role in an already complex and organizationally thick RIS. Innobasque’s role has been to create multiple quadruple helices to identify and address weaknesses facing the Basque’s innovation system. The RIA was not only involved in identifying and addressing weaknesses in the technological innovation process but also in the regional informal and formal institutions and firms’ organizational structures. Innobasque participates in the design of the place-based policies to address the weaknesses with the actors in the system but did not involve extra-regional actors in the process. The 2008 economic crisis and the election of the Socialist Party, in the wake government continuity coming from the
Basque Nationalist Party, reoriented Innobasque’s strategy towards the implementation of programmes. In addition to providing financial support through loans and public calls, SPRI coordinates a wide range of actors in the implementation of the place-based policies.

In each working group, we were doing a diagnostic. We looked at what we had and what we should have in a participative manner, many people participated. After the diagnostic in which we recommended specific measures, Innobasque delegated the operation to some other organization.

(Innobasque, personal communication, 4 May 2018)

The social innovation working area has to do with, on the one hand: public innovation, better and more transparent governance, and on the other hand: citizen participation that goes beyond governance but generates public value.

(Innobasque, personal communication, 8 May 2018)

The Basque Country is frequently hailed as a best-practice example, as the region ranks first in Spain and in Southern Europe in the European Regional Innovation Scoreboard. Since 2012, however, the Basque Country has experienced a decline in various innovation indicators, which raises questions about the Basque’s model. The region is one of the most organizationally thick regions in the EU (Morgan, 2016). The organizations have been layered one upon the other without any significant organizational restructuration due to path dependency and vested political interests, leading the system to suboptimal innovation outcomes due to coordination failures. While the number of different institutional arrangements demonstrates the regional elite’s commitment to promoting innovation, it has generated confusion and unnecessary institutional complexity regarding the roles and boundaries of each organization in the RIS. One possible way to move forward is to merge Innobasque, Ikerbasque and some responsibilities of SPRI and the provincial governments to devolve them into three RIAs in each of the three Basque provinces.

Ruta N, Medellín, Colombia

The city of Medellín, the second largest Colombian city, is located in the Aburrá Valley in the department of Antioquia. The Aburrá Valley, which covers an area of 7,234 km², has 11 municipalities. In 2015, Medellín had 2,464,322 inhabitants and the Aburrá Valley had 3,777,009 inhabitants (City of Medellín, 2018). In 2015, Medellín’s GDP per capita was COP $24,156,607 or US$7,569 compared with COP$13,408,509 for Colombia (City of Medellín, 2018; DANE, 2018). In the early 1970s, Medellín was Colombia’s industrial powerhouse and one of the largest industrial centres in Latin America (Caballero Argáez, 2016). In the late 1970s, Medellín undertook structural reforms in social urbanism, infrastructure development and programmes to promote entrepreneurship, innovation and education, leading to a significant decline in the homicide rate, income inequality, and poverty rates (Maclean, 2014). Medellín is transitioning from an industrial city towards more service-based and knowledge-oriented activities. From 2001 to 2017, employment in manufacturing has relatively declined by 29.42%, while employment in the real estate, construction and commercial activities has greatly increased (DANE GEIH, 2018). During the period 2001–16, Medellín outperformed the two other largest cities in Colombia, Bogotá and Cali, in innovation indicators such as R&D spending as a percentage of GDP, science, technology, and innovation (STI) spending as a percentage of GDP, the number
of local patents registered, and the number of trademarks registered (OCyT, 2018; SIC, 2018). In 2016, there were 124 patents registered in Antioquia compared with six in 2001 (SIC, 2018).

In 2009, Ruta N was created as a public–private initiative to support Medellin’s transition from an industrial to a knowledge city through the implementation of the STI plan 2011–21. In 2015, Ruta N received around COP$31 billion from the city of Medellin and the municipally owned public utility EPM-UNE and COP$6.5 billion from Ruta N’s building rents, international agreements, tuition fees and consulting services (Ruta, 2016). In 2015, the RIA had a total of 70 full-time employees (Ruta, 2016). As of 2018, Ruta N operates six working areas: knowledge business, the Medellinovation District, organizational innovation, research and development, special projects, and forecasting and prospective. ‘Knowledge Business’ supports innovative start-ups and SMEs to provide access to international markets, to capital and to build the capacity to acquire external knowledge. The ‘Medellinovation District’ supports the creation of an innovation district around the Ruta N innovation centre. ‘Organizational Innovation’ aims to generate innovation capacities through organizational and process innovations in private companies, educational institutions and the government. ‘Research and Development’ aims to articulate the city’s science, technology and innovation system through the promotion of R&D activities in companies, universities and research centres. ‘Special Projects’ aims to diffuse Ruta N’s programmes to the widest audience possible. ‘Forecasting and Planning’ incubates disruptive business models and supports the design of new Ruta N programmes.

Ruta N is the regional innovation governance structure that was created to support the Medellin’s transition from industrial to more knowledge- and service-based activities. It emerged from the institutional proximity between the private sector, represented namely by Proantioquia and the GEA, and the municipality of Medellin. The RIA was made financially viable thanks to the support of the municipally owned multi-utility companies EPM-UNE.

For Ruta N, which was an initiative brought by the Municipality, we [Proantioquia] wanted to incubate the initiative to support it, to support in defining the governance model, to support in defining the strategic lines and to support in structuring the project as an organization.

(Proantioquia, personal communication, 8 August 2017)

Medellín is located in a region on the knowledge periphery that has been isolated from global knowledge flows due to its geographical location and violent past. The RIA has performed the activity of ‘cerrar brechas’ or addressing weaknesses in the RIS. Indeed, the RIA has performed the activities of observing successful RISs around the world, identifying weaknesses in the RIS, locating the actors with the capacities to address those weaknesses and transferring those capacities into the RIS. The RIA has relied heavily on brokering extra-regional knowledge to upgrade its RIS, which was aligned with the regional business elite’s internationalization business strategies. The RIA was first conceived to create programmes to strengthen existing actors in the RIS to implement programmes. Ruta N has devised place-based programmes not only to affect regional innovation capabilities but also to upgrade informal and formal institutions and to promote organizational innovations.

In the beginning, Ruta N was conceived as an intermediary institution working with actors of the system, the City of Medellin, CTA, Chamber of Commerce, CREAME, Parque E to strengthen them in order for them to operate the programs.

(Ruta N, personal communication, 17 July 2017)

When I arrived at Ruta N, it was not clear if ‘Innovation Culture’ should work on culture at the level of citizens or companies. Because of my social work background, I focused on citizens since I wanted to bring innovations from the triple-helix to the quadruple helix.

(Ruta N, personal communication, 24 August 2017)
Although Ruta N’s board of directors includes triple-helix actors, the RIA has mostly relied on internal capacities to identify weaknesses leading to misjudging existing innovative capacities in the RIS and firms’ absorptive capacities, reducing thus the policy effectiveness of brokering extra-regional knowledge. Ruta N has pursued a strategy of trial and errors in designing the place-based programmes due to a lack of internal capabilities, inefficient interactions with other actors in the RIS and lack of connections with more research-oriented organizations. The RIA has also perceived itself as a start-up leading to expensive and risky programmes rather than pursuing its role of identifying weaknesses, finding solutions and transferring capacities. Ruta N must promote greater transparent decision-making and should move towards collaborating more with actors in the RIS and civil society.

DISCUSSION

The RIAs have been created as regional innovation governance structures in widely different RISs that have diverse prior innovation capabilities, industrial bases and institutional contexts. However, the RIAs have emerged either to overcome a structural regional economic crisis, such as SPRI and Brainport Development, or to support the leapfrogging of regional technological innovation capabilities, such as Innobasque and Ruta N. The Brainport region is one of the most innovative regions in the world located in the knowledge core. In 2017, the Basque Country ranked first in Spain and Southern Europe in the European Regional Innovation Scoreboard. Medellín is a city located in an upper middle-income country on the knowledge periphery. The three regions, however, have specific common features. Indeed, they are relatively specialized with an important industrial sector, institutionally thick with a high level of social capital and relatively organizationally thick with numerous innovative actors and support organizations.

The institutional proximity between the public and the private sectors facilitated the creation of the regional innovation governance structures. The private sectors, through various actors or groups of actors, have played the role of institutional entrepreneurs supporting the design and defining the mission of the RIAs. Although SPRI was created by the first Basque government, the government members primarily came from the private sector. Brainport Development, Innobasque and Ruta N were heavily influenced in their creation by the private sector and are still being influenced by the same private companies in the RIAs’ boards of directors. Influenced by the NPM, Brainport Development, Innobasque and Ruta N have legal statutes that define them as not-for-profit organizations in order to increase in autonomy and to limit political influences. The institutional arrangement has provided some flexibility in defining their roles to design and implement place-based innovation policies.

The RIAs have designed and implemented place-based policies to address specific weaknesses in their RIS following similar institutional arrangements. The RIAs have played the role of monitoring their RIS and successful RISs around the world, identifying weaknesses in their RIS, locating the actors with the capacities to address the weaknesses and of creating the place-based programmes to generate the capacities in their RIS. The weaknesses in the RIS are identified through institutional arrangements within or coordinated by the RIAs that involve the private sector, the public sector, higher education institutions and/or civil society (triple or quadruple helix). The RIAs have a wide mandate to affect their RIS. Indeed, the RIAs are not only designing place-based policies to upgrade regional scientific, technological and innovative capabilities at the firm level, but also promote informal and formal institutional innovations and organizational innovations. Indeed, the RIAs have devised place-based programmes, for instance, to promote STEM for students, to support citizens’ participation and co-creation with municipal governments, or to transfer methodologies to promote greater entrepreneurial outlook and R&D-intensive projects in private companies.
Although the RIAs have put into place similar institutional arrangements to design and implement place-based programmes, the programmes differ depending on the three RISs showing that there is no ‘one-size-fits-all’ innovation policy (see Table 1). Brainport Development is focusing its effort on generating diversification and upgrading human capital. SPRI is promoting the industrial sector to become more competitive. Innobasque is aiming to generate best practices at the level of firms and public organization levels. Ruta N is connecting local actors with innovation hubs to respond to weaknesses in the RIS. The RIA has supported actors in the RIS to acquire, absorb and exploit extra-regional knowledge.

CONCLUSIONS

RIAs are executive agencies that design and implement place-based policies. The four case studies examined here have five important implications for policy-makers. First, the private and the public sectors must have a shared vision for the RIA. Second, the right level of governance for the RIA is the metropolitan region, as the RIA’s coordination of multilevel governance will lead to institutional complexity and coordination failures. Third, the RIA must mobilize the most important actors in the RIS coming from the private sector, the public sector, academia and civil society. RIAs are seen as more legitimate in mobilizing a diverse range of actors than are regional governments, which might be politically motivated. Fourth, the role of the RIA is to monitor its RIS and successful RISs around the world, to identify weaknesses in its RIS, to locate the actors with the capacities to address those weaknesses, and to design and support the implementation of the place-based programmes to generate these capacities in their RIS. Fifth, the RIA must coordinate multiple quadruple helices at numerous decision levels from the definition of the strategic priorities and the identification of weaknesses, to the design, implementation and evaluation of the place-based policies. The five implications are specific

### Table 1. Overview of the regional innovation agencies (RIAs).

| RIA | Brainport Development | SPRI | Innobasque | Ruta N |
|-----|-----------------------|------|------------|-------|
| Region | South-east Brabant | Basque Country | Medellín/Aburrá Valley |
| Country | The Netherlands | Spain | Colombia |
| Regional innovation performance | Innovation leader | Innovation follower | Knowledge periphery |
| Regional innovation system (RIS) | Organizationally thick and specialized RIS | Organizationally thick and specialized RIS | Organizationally thick and specialized RIS |
| RIS main weakness | Low diversification | Institutional complexity due to organizational thickness | Remoteness from the knowledge core |
| RIA’s stakeholders | Triple helix | Government | Public–private partnership |
| RIA’s institutional arrangement | Multiple triple helix | Multi-actor and multilevels | Quadruple helix | Triple helix |
| RIA’s main objective | Promote new innovation dynamics | Promote industrial competitiveness | Identify weaknesses |
| RIA’s place-based programmes to promote | Economic diversification | Existing industrial sector | Institutional bodies | Regional absorptive capacity |

Source: Authors’ design.
to RIAs and are conditional upon good governance and key principles being prescribed in NPM, such as autonomy and public accountability.

The RIAs and the RISs selected for this paper are hailed as best practices. The paper finds, however, that even best practices have some weaknesses. Following the implications discussed above, the four RIAs studied should adopt some recommendations to better deliver place-based policies. Brainport Development should include civil society in its multiple triple helices and support innovations at the level of local public organizations. The RIA should focus more on supporting endogenous disruptive projects and start-ups. The investment promotion activities being conducted at Brainport Development and at the Brabant Development Agency should be merged into one organization. The Basque Country is organizationally thick and prone to coordination failure due to the high level of institutional complexity. SPRI should focus its activities on investment promotion, internationalization and the working area ‘Technology and Innovation’. Other activities at SPRI and Innobasque should be merged and devolved into three RIAs in each administrative province. Ruta N has designed and implemented place-based programmes following a process of trials and errors as a result of its lack of collaboration with actors in the RIS. Ruta N should create multiple quadruple-helix committees within each of its working areas.

Typically, academics recommend place-based and place-sensitive policies without providing many insights into how these policies should be designed or implemented. Many regions, however, do not have the institutional capacities to design and/or implement place-based policies, which contribute to the process of divergence between the core and peripheral regions in the EU. The RIAs studied here have emerged in RISs that are relatively specialized, organizationally and institutionally thick from the institutional proximity between the private and the public sectors to address weaknesses in their RIS after a period of regional crisis or to face new challenges, such as globalization and the knowledge economy. RIAs are governance structures operating under specific regional institutional arrangements that design and support the implementation of place-based policies.

Following the specific implications of this paper, RIAs can be seen as ‘one-size-fits-many’ institutional arrangements to upgrade their RIS systematically by designing and supporting the implementation of no ‘one-size-fits-all’ policy that fits their RISs’ unique contexts. Dixit (2009) demonstrates that best practices must be recombined with contextual elements to produce the best possible outcomes. Policy-makers must decide whether the suggestions presented here can be merged in their regional contexts to produce better policy outcomes. The RIAs institutional arrangements can be adapted to different regional contexts. Although the RIAs studied in this paper have emerged in specific institutional contexts, the regional innovation governance structure and subsequent institutional arrangements can offer some guidance to many different regions. Diversified, organizationally and institutionally thick regions located in the knowledge core, however, would probably not benefit from such regional governance structure and a subsequent institutional arrangement due to the path dependency and cumulative nature of knowledge-driven structures, and such scientific and technological knowledge, institutional and organizational structures, that lock in regions in superior technological trajectories.

The new programming period of EU Cohesion Policy 2021–27 offers the possibility to support the creation of RIAs to promote a smarter Europe through governance and institutional capacity-building. Many regions have difficulties in designing and implementing place-based policies due to the quality of their governments (Charron et al., 2014), their capacities to absorb funds (Oughton et al., 2002) and their institutional capabilities (Farole et al., 2011). S3, which is a place-based process to develop new transformative activities, has faced many challenges in many EU peripheral regions (Foray, 2018). This paper argues in favour of selecting a peripheral region in the EU that has a poor quality of government, a relatively large urban centre and an existing public organization dedicated to promoting technological innovations. The regional innovation governance structure and institutional arrangements could be based on ex-ante conditionalities, such as ‘a series of guidelines aimed at facilitating local capacity-building, increasing participation in the
development process, increasing transparency and accountability, and minimizing corruption’, in order to obtain support from the European Regional Development Fund (ERDF) (Rodríguez-Pose, 2013, p. 1044). After five years, the impact of the RIA on its RIS should be carefully evaluated to decide whether to replicate the strategy in other peripheral regions in the EU.

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