

Regional Innovation Governance: Introducing the Concept of the Entrepreneurial Region



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Introduction

In 2013, Mariana Mazzucato published her seminal book *The Entrepreneurial State* in which she shows the importance of state intervention in the economy to foster radical technological innovations (Mazzucato, 2013). The state, she says, has been behind every major technological innovations of the past century. Think of the Internet, biotechnology, robotics, or even every major component of the iPhone. Governments through various initiatives promote technological

innovations either directly, the most famous example being the program Defense Advanced Research Projects Agency (DARPA) in the United States, or indirectly through massive tax-breaks and public procurements, of which Tesla and SpaceX are prime examples.

The idea that the state should intervene in the economy within a complex systemic approach to promote industrial development is not new. It can be traced back to Friedrich List, the German catch-up theorist, who pointed out that “in order to allow freedom of trade to operate naturally, the less advanced nation (Germany) must first be raised by artificial measures to that stage of cultivation to which the English nation has been artificially elevated” (List, 1856, p. 207). This does not mean that the state should constantly intervene to promote industrial development and become the main actor in the innovation process. The role of the state must be that of a partner investing in fundamental research, mission-oriented innovations, and grand societal challenges that will take 20 to 30 years to become successful commercial products.

The entrepreneurial state informs us that the state can be an essential actor in supporting the creation of disruptive and radical innovations. The entrepreneurial state has, however, two main shortcomings. First, it raises the question of the relevance of the concept for countries in the Global South. Do they really have the capabilities (either institutional, financial, or technological) to invest to support the next wave of disruptive technological innovations? Second, what about regions? Do they have any role to play in the innovation process? The entrepreneurial region provides some answers to both of these questions. The concept of the entrepreneurial region is especially adapted to regions located on the knowledge periphery.

The Concept of the Entrepreneurial Region

The entrepreneurial region emphasizes the importance of the regional government partnering with the private sector to support regional structural change. It is ultimately at the regional scale, more specifically at the scale of the metropolitan-region, that the innovation process takes place. Patenting and research and development (R&D) activities concentrate in a few innovative regions around the world. In France and the United Kingdom for instance, Paris and London account for more than 40% of the country's total patent applications (OECD, 2006).

Regions have a fundamental role to play in promoting regional structural change. Their role is, however, both less ambitious and more complex at the same time compared to nation states. It is less ambitious, as it does not try to respond to grand societal challenges or to promote the next wave of disruptive technological innovations. It is more complex, as it involves many different dimensions. Indeed, innovation is non-linear and involves not only scientific and technological interactions but also local interactions among knowledge-driven structures, such as institutions and organizations or the socio-institutional structure.

As a result, regions not only have to support the development of scientific and technological knowledge but also to promote institutional and organizational changes. Regions must support firms in acquiring scientific and technological capabilities, especially in the regions located in the Global South where firms have some difficulties in acquiring, absorbing, and exploiting scientific and technological knowledge. Additionally, regions must also affect the evolution of the socio-institutional structure with the novel techno-economic paradigm to ensure inclusive and shared economic growth.

Regions are, however, facing major difficulties in supporting this process of technological catch-up. Although they are the key to promoting economic convergence, they are also prone to a lack of institutional capabilities and rampant corruption. In the European Union, the European Commission dedicated €351.8 billion for the programming period 2014-20 under the EU Cohesion Policy to promote convergence among regions in the European Union with little success (European Commission, 2018). The expertise brought by the European Commission and their massive resources did little to counter the low quality of government, the low institutional capabilities, and the lack of capacity to absorb funds of some regions in the European Union (see Farole, Rodriguez-Pose & Storper, 2011).

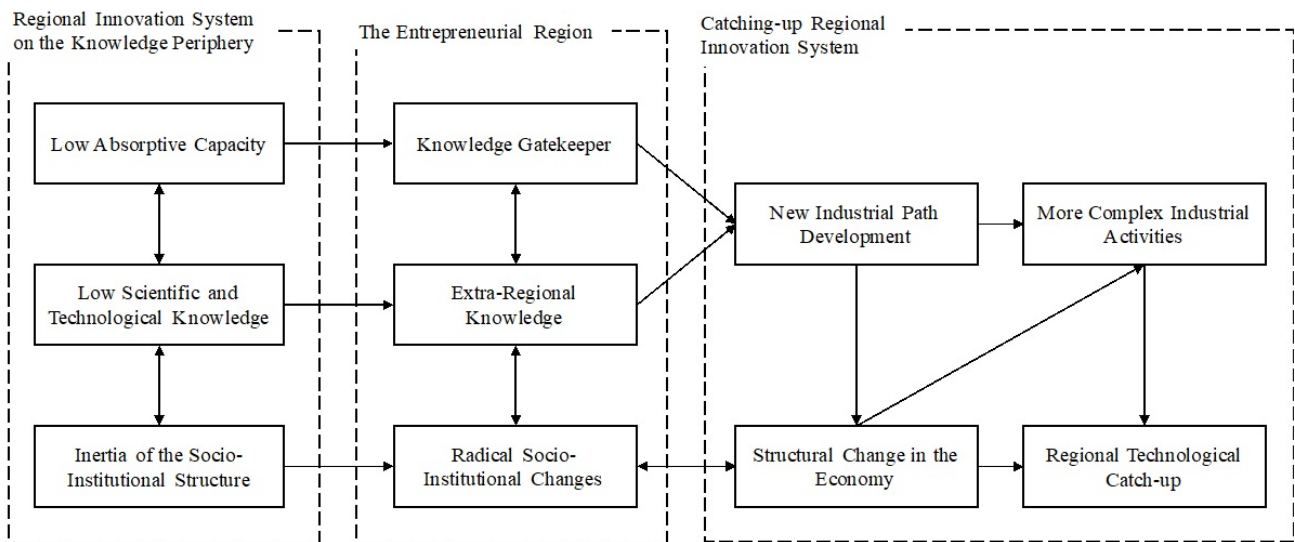


Figure 1. *Conceptual Framework for the Entrepreneurial Region to Support Regional Technological Catch-up in Regions Located on the Knowledge Periphery.*
 Source: own design.

One of the instruments of the entrepreneurial region is the Regional Innovation Agency (RIA). A RIA is an organization that is characterized by its autonomy from political influence, its wide mandate, and its managerial autonomy, particularly regarding personnel and financial. The entrepreneurial region aims to reduce these structural weaknesses by acting as knowledge gatekeepers to improve regional absorptive capacity, by increasing the amount of extra-regional scientific and technological knowledge to complement local knowledge capabilities, and by promoting radical socio-institutional changes to further increase regional absorptive capacity and extra-regional knowledge flows that will allow the region to catch-up.

Medellín as a Case of the Entrepreneurial Region

The proposition to promote an “entrepreneurial state” has resonated well in Colombia, and particularly in Medellín, which has followed a post-Washington consensus approach to local economic development (Bateman, Duran Ortíz, & Maclean, 2010). The city of Medellín provides a case of an entrepreneurial region. Since 2004, the city of Medellín has conducted reforms in social inclusion, social urbanism, education, transportation, and innovation to transform itself into a knowledge city.



Figure 2. Medellín's City Center from Nutibara Hill. Source: author.

At the center of Medellín's transformation is the *Grupo Empresarial Antioqueño*, which acted as institutional entrepreneurs to influence policy interventions. The GEA, a keiretsu-like conglomerate where companies have cross-ownership, was formed in the late 1970s to protect regional companies from hostile takeovers by industrialists from outside Medellín. The GEA's most ambitious strategy to promote innovation activities in the city was in participating in the creation of Ruta N in 2009, an innovation agency to implement the science, technology and innovation plan for 2011-2021. The innovation agency, which is receiving funding from the City of Medellín through the municipally-owned, multi-utility company EPM-UNE, was incubated at Proantioquia, the GEA's philanthropic organisation.

The GEA was motivated to act as institutional entrepreneurs to reinforce their leaderships in the region's political economy, to capture policies to support its restructure towards more knowledge-based activities, to limit instabilities from regional structural change—learning from past regional structural changes in the 1980s that led to the worst economic and social period in Medellín's history, to

limit the influence of competing elite groups such as “narco-elites”, and to promote regional economic development from their paternalistic regional vision.

From the 1970s to 2000s, Medellín was isolated from global knowledge flows due to a period of extreme violence, as well as due to idiosyncratic cultural, social, and geographical factors. This isolation contributed to the cognitive and political lock-ins of the industrial sector, which hindered the city’s transformation into a more knowledge-based economy. The limited diffusion of extra-regional knowledge contributed to system failures, which required some policy interventions. Ruta N’s role is to support Medellín’s transformation from an industrial city into a knowledge city with the objective to support new regional industrial path development and to promote structural change in the economy. The creation of a public institution dedicated to Science, Technology, and Innovation implies that the benefits should be greater than the costs it generates. The rationale for government intervention was motivated by Medellín’s relative isolation from global knowledge flows.

Ruta N is a building complex that offers work spaces for international companies and research centers. It is an innovation infrastructure, thus the hardware (infrastructures and urban amenities) and an innovation agency developing the software (skills and knowledge) and orgware (learning and capacity-building). Since the Fajardo’s administration, social and/or economic transformation has to be embedded in urban transformations. Indeed, the Fajardo administration’s prioritization of education led to the creation of hard infrastructures, such as libraries and schools. Medellín’s knowledge turn, as a result, had to start with the creation of a building dedicated to Science, Technology, and Innovation.



Figure 3. *The Ruta N's building complex. Source: the author.*

Ruta N has two primary roles to perform in its Regional Innovation System (RIS). First, Ruta N is brokering and gatekeeping extra-regional knowledge to support new industrial path development. As noted by Elkin Echeverr , Director of the Forecasting and Planning working area, "what Ruta N tries to do is: to observe the world, to determine what the RIS is missing, to find the organizations with the solution, to bring them into the system, and to inject that capacity. The organisations do not come to Medell n to give a conference, but have contracts to stay 6 months, 8 months, or a year" (Ruta N, 2015). Ruta N's second role is to accelerate the co-evolution of the socio-institutional structure with the new techno-economic paradigm. Ruta N has the role to monitor extra-regional best-practices and contextualize those practices to Medell n's and Colombia's context. Regions on the knowledge periphery are less exposed to knowledge from regions at the technological frontier, and, as a result, need interventions. The creation of Ruta N in Medell n is the type of intervention that aims to increase extra-regional knowledge flows and to improve the RIS's absorption capacity. In contrast with other knowledge gatekeepers, such as leader firms or universities, in which a lag

persists in leaking knowledge, the public knowledge gatekeepers directly transfer the extra-regional knowledge to the actors in the RIS.

Ruta N's knowledge gatekeeper role is conducted by supporting the "tropicalization" of the extra-regional knowledge, that is, through the hybridization of tacit extra-regional knowledge with the local knowledge (Morisson, 2019). The public knowledge gatekeeper, Ruta N, has three roles: the acquisition of extra-regional knowledge, the "tropicalization" of that knowledge, and the diffusion of that knowledge into the RIS. The extra-regional knowledge brought into the RIS aims to respond to identified regional weaknesses. Ruta N has devised and implemented numerous programs to address weaknesses in the RIS's Technology Readiness Levels (TRLs) either at the level of the RIS, at the level of a sector, or at the level of a subsector with the end goal of supporting the technological innovation process. In the language of Ruta N, this activity refers to "*cerrar brechas*", or literally to close gaps.

Medellín is slowly transitioning from being an industrial city towards becoming a service-based and knowledge-based city. In 2004, Medellín started a process of technological catch-up with regions in the knowledge core. This technological catch-up process accelerated since 2013 showing that public policies have to be consistent for many years in order to deliver concrete results. Although Medellín is still far from having caught up with regions in the knowledge core, this technological catch-up process has accelerated in the past years. R&D and STI spending in the City of Medellín have reached 2.14% of the GDP in 2017, thus becoming Colombian city investing the most in innovation (Ruta N, 2018). The technological catch-up process is felt not only at the scientific and technological level, but also at the level of the socio-institutional structure.

This does not mean that we can infer from the indicators that Ruta N has had a causal effect on Antioquia's innovative capacity. They do, however, show that since the creation of Ruta N, the Antioquia Region has greatly diverged from its initial trajectory by becoming more innovative in terms of measured inputs and outputs. They show that Ruta N is part of a long-term process that has accelerated Medellín's regional transformation.

Conclusion

As any other conceptual tool, *The Entrepreneurial Region* is not the panacea for

regional economic development, but it provides some interesting policy concepts for policymakers to experiment with. Ultimately, the success of its implementation depends on regional actors' capabilities, willingness, and legitimacy to carry out regional economic development and structural change. In many countries, it will require national governments to devolve additional powers to regional governments to design and implement their Science, Technology, and Innovation Plans and support them to act more entrepreneurial.

The Entrepreneurial Region provides some answers to two of the shortcomings of *The Entrepreneurial State*. First, *The Entrepreneurial Region* points out that regions in the Global South lacking institutional, financial, and/or technological capabilities still have a role to play in the innovation process. Second, *The Entrepreneurial Region* argues that regions must promote knowledge diffusion and absorptive capacity to accelerate the technological catch-up process.

Regions in the Global South often lack the institutional, financial, and/or technological capabilities to foster new regional technological trajectories, and thus promote the technological catching-up process. Due to their entrepreneurial nature, regional innovation agencies (RIAs) have the flexibility, the independence from political influences, the managerial autonomy—particularly regarding personnel and financial management—and the institutional capabilities that can surrogate a weak regional innovation system in order to strengthen it.

Due to their flexibility and legitimacy to design and implement place-based policies, regional innovation agencies have more leeway to break evolutionary mechanisms and promote regional economic development than traditional intermediary organizations. Indeed, due to their institutional arrangements involving multiple stakeholders coming from the public sector, the private sector, academia, and the civil society, regional innovation agencies can rally a wide range of regional stakeholders with different interests around a common regional vision. Moreover, regional innovation agencies provide some stability to promote long-term innovation policy strategies and the design and implementation of place-based policies more freely from political influences and electoral results.

Regional policymakers often overestimate their regional innovation systems' capacity to develop new ideas and to produce technological innovations. Regional innovation policies would often be more efficient in promoting the local's absorptive capacity and in adapting to their context's existing innovations. One of

the main activities regional innovation agencies perform is to monitor, acquire, assimilate, and diffuse extra-regional knowledge. The regional technological catch-up process is achieved by responding to regional weaknesses. Regional innovation agencies must actively engage quadruple helix stakeholders at each step of the policy design, implementation, and evaluation if they are to correctly identify the weaknesses in the RIS and the extra-regional actors best placed to address those weaknesses. In contrast to smart specialization strategy (S3), which argues that regions must discover what they do best in terms of their scientific and technological endowments, this article argues that regional weaknesses must be the starting point of policy action. Another main activity of regional innovation agencies is to manage and oversee multiple quadruple helix advisory boards, involving the most important regional actors in science and technology, and in the social, organizational, and institutional structure.

The Entrepreneurial Region recommends creating regional innovation agencies (RIAs) in metropolitan-regions to design and support the implementation of place-based policies. The regional innovation agency's vocation is not to implement programs, but rather to support other actors in the RIS to identify, to design, to implement, and to monitor programs that address relevant weaknesses in the RIS. This policy recommendation fits particularly well metropolitan-regions on the knowledge periphery and with relatively large innovative infrastructures (universities, large companies, research centers, public institutions, and support and intermediary organizations). The policy recommendation to create regional innovation agencies in regions on the knowledge periphery is not a silver bullet. Safeguards should be put in place to avoid rent-seeking and policy-capturing from powerful vested economic interests that could ultimately lead to a situation of political lock-in. The safeguards could be, for instance, to have an oversight from the civil society, through co-creation web-platforms and national or supranational authorities.

As an analogy for *The Entrepreneurial Region*, imagine you were preparing for an expedition to the South Pole. Would you rather prepare like Roald Amundsen or Robert Scott? The two explorers were in a race to set the first foot on the South Pole in 1911. Amundsen combined some knowledge from the Netsilik Eskimos—learning to dog-sled, using leather and fur clothing, and bringing with him Greenland huskies—with Western technologies, while contextualizing that knowledge living in his base camp in Antarctica. Scott relied on the latest

Western technologies, most notably British, since they were the best (undoubtedly). The end game was quite different. Amundsen won the race and Scott and his entire team perished without ever reaching the South Pole.

The Entrepreneurial Region should be like Amundsen in that it should be critical enough to know its weaknesses, independent enough to find the best solutions, smart enough to contextualize those solutions to address its weaknesses, and flexible enough to rally the most important regional stakeholders around a common inclusive and sustainable vision.

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