Introduction

Innovation is recognised as a driver of economic growth in OECD member countries

Catalonia, like many other places in the OECD, has embarked on a development path that emphasises innovation. Globalisation and rapid advances in new technologies, notably ICT, have spurred competition and opened new markets for the creation and delivery of innovative products and services. Globalisation has also increased the pressure on OECD member countries to move up the value chain and engage in a continuous process of adjustment. By strengthening innovation, countries, regions, cities and firms can become more competitive, and better prepared to face the challenges of globalisation. Innovation, a process that is generally managed by private firms, has become a concern for policy makers at all levels, from supranational to local actors.

The current economic recession has amplified the importance of innovation in economic growth. Policy responses by OECD member countries are seeking to achieve a so-called "double dividend", both restoring short-term growth and reforming economic structures. Strengthening the innovation capacity of firms is seen as one area where public investment can achieve this dual objective. Hence, increased investment in R&D and technology development is a component of economic recovery packages. Politicians around the world have emphasised that the way to recovery is via more innovation in both the private and public sectors.

The OECD is currently developing an Innovation Strategy that emphasises a broad, collaborative and inclusive approach to innovation. The Strategy underlines that with a mobilising vision – and the ambition to achieve it through effective policy co-ordination – governments can help consolidate or develop new comparative advantages in an environment conducive to innovation. This Strategy is equally relevant for regional and national policy communities. The Innovation Strategy seeks to promote an integrated approach that combines both framework conditions to support innovation and risk-taking with structural policies to strengthen education, training and entrepreneurship. Moreover, the Strategy emphasises that innovation should be a central component of policy, with strong leadership at the highest political levels. It also affirms that national policy should enable regional actors to foster innovation in their own context, building on local strengths and established frameworks, while ensuring co-ordination across regions and with national efforts.

Increased interest in the regional dimension of innovation is also spurred by recognition that some places appear to be more effective in the way they use innovation-related assets and investments than others. Many of the leading firms in "new economy" industries – those driven by rapid innovation in products, processes and commercialisation – have emerged in a limited number of regions. Such regions appear to provide more conducive environments for business innovation. Much of the effort of policy makers in other regions aims to replicate or nurture the positive environmental conditions that the best-performing regions offer.

What should regional innovation policy do?

What should regional innovation support be and what it should aim to achieve? First, it is not an end in itself. Its success should be judged on how well it performs in addressing the challenges faced by firms and by society in general. It should be more than just a buzzword and an aggregation of technical business support measures. Rather, it should be a broad vision that permeates a wide range of public and private sector activities. And it should lead to a clear investment strategy for the public sector that also encourages investment by the private sector. Finally, it should help to channel creativity towards objectives that increase wealth and well-being. These principles – broad though they are – nonetheless suggest a new type of public policy.

In the development of innovation policy, the targets and rationale for intervention should be clear. Traditionally, intervention has been justified to address market failures. However, with respect to regional innovation, there is increasing recognition that other types of "failures", beyond market failures, can impede the functioning of an innovation system and result in sub-optimal outcomes. The most commonly cited are network and systemic failures, in addition to several others (OECD, 2005b; OECD, 2006b; van Cruysen and Hollanders, 2008). Market failure arguments concern the risk and uncertainty that lead to sub-optimal investments, while systemic failure arguments focus on the issue of interactions across actors in that system. EU policies have explicitly acknowledged systemic failure in the context of their policies to support innovation through Structural Funds and other programmes, as have several OECD member countries. There is evidence in Catalonia that despite the successes in the knowledge generation sub-system, the systemic links with the knowledge exploitation sub-system are insufficient.

The ability of and incentives for firms to innovate are linked to a wide range of factors. Some of these factors are set by national policy, such as legislative and macroeconomic settings (intellectual property rights [IPR] and patent law, taxation, corporate governance, exchange rates, tariffs, competition, etc.). But innovation is also strongly influenced by region-specific factors. These endowments are both physical and human, individual and collective, and found in both public and private spheres. Innovation depends on the scientific capacity of actors and institutions (their acquired knowledge of existing knowledge and concepts, their openness to new knowledge and ability to assimilate, etc.). But the technological capacity of actors (their capacity to perceive usefulness and applicability of knowledge) is also important. And, finally, industrial capacity plays a role (the capacity of actors to transform concepts and ideas into useful, commercially viable products).

While all firms are concerned by innovation, in practice policies tend to be targeted at particular categories or types of firms. For example, among firms that are considered to be innovative, around half do not conduct any R&D. These firms tend to be far less likely to seek policy support. They are more likely to focus on process innovation and get their ideas from production managers and engineers within the firm. As such, they are less visible for policy than those that work on R&D projects with external partners (Arundel, *et al.*, 2008). A critical issue for regional innovation policy is therefore how to provide a flexible framework for policy delivery to the different types of actors.

The innovation system is increasingly useful as a policy concept as innovation has become a more open process. Firms select and acquire technology from a wide range of external sources, by outsourcing portions of R&D or engaging in partnerships to develop new technologies. The use of national and regional systems of innovation has emerged to help improve understanding of how public policy is organised to support innovation. The concept has been widely embraced across the OECD, and policy makers have seen the value of the systems of innovation literature and used it to explore regional systems of innovation (Cooke, 2004). One useful distinction, for example, has been made between a more institutionalised form of regional innovation system and an entrepreneurial system (see Table 0.1.). Catalonia is closer to the institutional model, but its aim is to develop the attributes of the entrepreneurial model as well.

Table 0.1. **Institutional versus entrepreneurial regional innovation systems**

Institutional	Entrepreneurial
R&D driven	Venture capital driven
User-producer relations	Serial start-ups
Technology focused	Market focused
Incremental innovation	Incremental and also disruptive
Bank borrowing	Initial public offerings/VC
External supply chain networks	Internal networks

Source: Cooke, P. (2004), "Introduction: Regional Innovation Systems – An Evolutionary Approach", in Cooke, P, M. Heidenreich and H. Braczyk (eds.), *Regional Innovation Systems*, Routledge, London.

New forms of innovation and innovation policy

The way firms organise their innovation is constantly evolving, which makes supporting innovation a moving target for public policy. New forms of innovation are appearing, or now being recognised, that are not always well defined or easily reached by traditional innovation support instruments. This is the case in Catalonia, which has a diverse economy that mixes both high-tech manufacturing with other non-R&D intensive sectors. The explicit aim of the Catalan Agreement on Research and Innovation (CARI) is to expand the scope of innovation policy thinking to include these harder-to-reach but nonetheless important innovators to better address social challenges.

The OECD, among others, acknowledges a need for considering innovation in a broader sense, beyond the linear, science-based approach. The OECD suggests three ways of thinking about this broader approach to innovation (OECD, 2009c):

- *The output-based approach.* This approach looks at the results of innovation. This includes the type of innovation (technological – process and product; and non technological – organisational and marketing, as defined by the Oslo Manual) and the relationship between them.

- *The behaviour-based approach (new collaborative arrangements for innovation).* This strand of thinking identifies new forms of innovation according to the new ways of organising the process of innovation. The focus is on the ways in which innovation agents interact and change behaviour to innovate.

- *The challenge-driven approach (innovation to address social challenges).* This approach considers innovation by its objectives, in particular to address specific challenges be they social, communitybased or global. It starts from the recognition that contemporary societies are undergoing a shift in production and consumption priorities pushed by issues such as climate change, the sustainability of production, persistent inequality and poverty, to name a few.

Broadening the scope of innovation policy is beyond the remit of one single ministry, at either national or regional government level. Governments are struggling to develop coherent national innovation strategies that capture the new broader definition of innovation. These policy shifts imply greater fluidity across what used to be more segmented sectoral ministry boundaries. Another key strand of government policy is the emphasis on the role of the public sector as a driver of innovation by firms (such as through "intelligent" innovation-informed procurement planning) and also as a source of innovation. Catalonia has sought to build an inter-ministerial approach to innovation support, efforts that continue so as to achieve truly effective collaboration. And Catalonia is actively supporting the idea of public sector innovation.

New governance arrangements to support regional innovation

New horizontal and vertical governance arrangements for innovation policy are required. The difficulties of co-ordinating innovation policy at the national level are exacerbated by the challenge of building functioning governance arrangements across levels of government. The policy constituencies that lead policy making in this field sometimes have little experience of collaborative policy making with other levels of government. The system by which innovation is managed across levels of government remains challenging across OECD member countries.

This distinction between national and regional roles should be based on which factors that support innovation are most susceptible to influence at the sub-national level. This is a kind of subsidiarity exercise applied to innovation policy. While this approach seems quite basic, policy experience so far is limited and is not grounded in a clear model of what regional innovation policy should look like (see Table 0.2.).

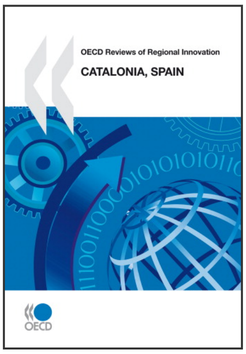
Table 0.2. **Factors that support innovation and their openness to regional influence**

Key factor	Spatial variation or strong regional characteristics?	Possibility for regional impact?
Level of development, economic performance	Strongly regional	Yes, by enhancing investment in productive factors
Regulatory framework	Usually no spatial dimension	Depends on country context
Competition regime	Usually no spatial dimension	No
Access to finance	Some regional variation (linked to market size and demand)	Yes, provision of grants and loans; problem is to stimulate local capital markets
Capacity to absorb and exploit knowledge and technology	Strong regional variation (linked to HR and sector)	Yes, needs-driven training, technology transfer and demonstration projects, etc.
Customers	Some regional variation (firms in non-core regions less exposed to demanding customers)	Limited
Sources of new technological knowledge	Some regional variation (linked to quality of HEI and bridging/ intermediation institutions)	Yes, knowledge transfer institutions, other bridging mechanisms
Networks, collaboration and social capital	Strongly regional or local	Yes, wide range of actions to support local associations and joint projects

Notes: 1) HR=human resources; 2) HEI=Higher education institution.

Source: OECD (2008), *OECD Reviews of Regional Innovation: North of England, UK*, OECD, Paris.

Is there an optimal distribution of responsibilities across levels of government with regard to innovation? There are currently different approaches to organising and managing innovation policy, largely dependent on more general institutional and constitutional frameworks. Across OECD member countries, there are examples of regions playing a passive role (as stages and implementers) or an active role (as partners and independent policy makers) (Perry and May, 2007). Catalonia is an active region, acting as an independent policy maker in this field, but increasingly recognising the need for working as a partner with central government.



OECD Reviews of Regional Innovation: Catalonia, Spain 2010

Access the complete publication at:
https://doi.org/10.1787/9789264082052-en

Please cite this chapter as:

OECD (2010), "Introduction", in *OECD Reviews of Regional Innovation: Catalonia, Spain 2010*, OECD Publishing, Paris.

DOI: https://doi.org/10.1787/9789264082052-3-en