

Policy rationales and objectives for innovation in firms

Innovation in firms can play a critical role in the economy and society by supporting economic growth, employment, and poverty reduction, and by contributing to solutions to social challenges. Policy may aim at correcting for market failures (e.g. failures arising from informational imperfections and positive externalities of knowledge creation) that negatively affect the performance of innovative businesses. Yet public intervention can be subject to policy failures. Therefore, the public policies' achievements need to be scrutinized ex ante and ex post. Specific rationales pertain to policy interventions that address various conditions for innovation in firms: i.e. access to labour, regulatory framework, access to knowledge, access to finance, and market development and access.

Importance of innovation in firms to economic growth and social welfare

Innovation in firms is a driver of economic growth and an important basis for developing solutions to economic and social challenges, such as climate change, ageing societies and poverty (OECD, 2010a). Innovative businesses can play a critical role by supporting economic growth and employment (see [Contributions to growth and jobs](#) [1]), and contributions to social challenges (see [Addressing environmental challenges](#) [2] and [Addressing social challenges](#) [3]). To name but a few examples, innovation in firms can contribute to addressing environmental challenges through the introduction of new technologies and non-technological innovations that limit global greenhouse gas emissions and help to limit climate change and maintain biodiversity. Innovation can also allow firms to increase their output and tap into new markets, factors which can be associated with job creation and with increased labour productivity, and economic growth.

Approaches to public policies

Market failures requiring policy intervention

Policy might be implemented to correct for a set of market failures that negatively affect the economy (Arrow, 1962). The main reasons why this might occur include: socially desirable level (Nelson,

- Imperfect appropriability of knowledge creation due to positive externalities. Due to the non-rival nature of knowledge, investment in the production of new knowledge would be below the socially optimal level.
- Informational imperfections. Information asymmetries occur when one party to a transaction has more information than the other. This can lead to market failures, such as the inability to consent to the transfer or sharing of knowledge (see [IP and markets for finance](#) [5]).
- Multiple other market failures can hinder the success of innovative firms. For instance, there is a lack of research institutions with the capacity to support firms in their innovation).

System failures requiring policy interventions

The challenges facing innovative firms can be identified from a systems failure perspective:

- Network failures. These deal with problems in the interaction among actors in the innovation ecosystem (e.g. firms, research institutions, and industry) or firms' inability to adapt to new technological developments).
- Institutional failures. These include the failure to configure public institutions in such a way that they can address the challenges identified by specific measures but also sound a note of caution for ambitious policy interventions.

- **Framework failures.** These refer to deficiencies in (regulatory frameworks, values, and norms) that have a negative effect on innovation and economic performance.

Limitations of policy interventions

Not all potential failures in innovation systems make government intervention required, or even potentially improve welfare; they do not always have the means to do so in practice (Pohit, 1998).

Besides, policy failure (i.e. the failure of a policy to achieve its goals) may arise from a wide range of factors, such as inadequate policy design, implementation, and governance failure. These policy failures may be due to contradictory goals, limited capabilities and information constraints that may limit governments' ability to intervene effectively. Indeed, government is subject to sometimes even more stringent informational constraints than are private actors. These policy failures imply that government interventions can be counterproductive. Therefore, the soundness of the foundations and the achievements of government intervention need to be scrutinized ex ante and ex post. The choice of policy instrument should also reflect potential constraints (e.g. research grants require a more knowledge-based approach by governments than IP support).

Specific rationales for public policies.

Access to finance

Beyond the market, failure to reflect R&D investment associated with R&D spillovers is the main reason why market failure may justify public policies. Available public policy instruments to measure (e.g. patents and copyright rights), intangible assets whose nature clearly be intangible and difficult to

One of the main reasons for capital market imperfections is the risk arising from information asymmetries between lenders/investors and firms, and higher transaction costs. Lenders are not easily able to separate potentially successful businesses from less successful ones, and therefore may provide less funding than the company needs and require a higher interest rate. This, in turn, can increase the risk of the borrowers and create a greater share of higher risk firms in the pool of borrowers (adverse selection). On the other hand, lenders can't be sure that once the funds are loaned, firm managers will not take excessive risks or misuse the funds (moral hazard). One way for lenders to overcome the problems associated with information asymmetries is by requiring collateral. However, providing collateral might not be possible for innovative firms, especially if their main assets are intangible. Therefore, these firms are likely to be credit constrained, despite their project quality and growth potential.

In this context of market imperfections, public policies can facilitate access to finance through a wide range of instruments, including the provision of public grants. Yet crowding out can occur, if diminishing marginal returns from R&D cause grant holders to reduce their own funding for R&D expenditures one-for-one with public funds. For some firms, government funding may just be a cheaper source of finance than funding raised from capital markets (Lach, 2002).

Access to knowledge

One of the key drivers of innovation in firms is knowledge exchange between and among explorers and exploiters, particularly for the exploitation of new, science-based knowledge. Yet several system failures may affect this knowledge exchange and the consequent interactive learning (Potter, 2005). These system failures include a lack of infrastructure for knowledge generation and transfer (e.g. universities and science parks), a lack of capability in firms to absorb external knowledge (e.g. workforce skills for identifying and collaborating with partners, and using external information about promising markets and technologies), a lack of complementarity between the knowledge exploration and exploitation sub-systems (e.g. lack of fit between university research and the specialties of firms), and a lack of intellectual property protection, leading to a high risk of involuntary knowledge leakage during technological collaboration between firms.

These system failures imply the need for policy attention to knowledge transfers and networking problems in innovation systems. Examples of policy approaches include facilitating knowledge

exploitation through licenses, patents and university spin-offs, encouraging mobility of staff between universities and industry, and supporting technological collaborations between firms.

Access to labour

A lack of skilled labour and a mismatch in supply and demand for skills can hinder innovation in firms.

Policy objectives can include enlarging the size of the highly skilled workforce, facilitating its mobility in order to optimize the use of human resources, facilitating the cross-fertilisation of ideas and learning, and addressing structural mismatches in supply and demand for skills.

Market development and access

The rationale for demand-side innovation policies based on public procurements, standards and regulatory requirements is that they can create a market for innovative products and services, while the gains may not be appropriable by the individual firm. Creating standards entails fixed costs, while the

Shortcomings of the regulatory framework

Framework failures including deficiencies in regulatory frameworks (e.g. intellectual property rights framework, intellectual property) system, creating standards, and simplifying administrative

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