GOVERNMENT SUPPORT FOR INNOVATION IN A WORLD IN COVID-19

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Abstract

How many factors and trends have resulted in the patterns of government support for innovation that exist today in the OECD economies? How has this influenced the current state of innovation? How is this pertinent to resolving the current crisis's causes and effects? This chapter examines how governments allocate public resources to research and innovation, drawing on recent OECD project evidence. These debates intersect with other significant public policy debates about the nature of government intervention and the scope of innovation activities, as well as with international debates about which subsidies are permissible in today's highly interconnected economies. The chapter considers how the COVID-19 crisis might affect the volume, nature, and direction of public support for innovation. It concludes with a discussion of possible scenarios and their implications for how governments will continue to support future innovation activity in their societies.

Keywords: Innovation, government support, pandemic, financing, COVID-19

Introduction

In modern market economies, public support has always played a critical role in determining the scope, nature, and direction of innovation. This chapter examines the factors and trends that have contributed to the current patterns of government support for innovation, which have shaped current innovation systems. It examines the major debates that have prompted a rethink of how governments allocate public resources to research and innovation, interacting with other significant public policy debates about the nature of government intervention, the breadth and specificities of innovation activity, and the international governance dimension, most notably which subsidies are considered permissible across highly interconnected economies. The chapter examines the possibility that the COVID-19 crisis will result in changes in the volume, nature, and direction of public support for innovation. It concludes by outlining potential future scenarios and their implications for how governments implement their innovation policies.

Literature review

Businesses are critical actors in decentralized market economies' research and innovation systems, selecting, developing, and implementing novel ideas in pursuit of economic opportunities. This is also true for the majority of other economies in which the government owns and controls a sizable portion of business. Along with establishing a benign socioeconomic framework within which firms can perform their socioeconomic functions, government policies actively promote investment behaviors that are deemed beneficial to society but are resisted by firms. Investments in knowledge and its application are uncertain and difficult to coordinate; additionally, their benefits may quickly

fade as others benefit (OECD, 2010[1]). When markets are left to their own devices, they may struggle to allocate resources to such endeavors, even when they are clearly beneficial to society as a whole.

Governments can finance innovation in a variety of ways (OECD/Eurostat, 2018[2]). For example, public support can be directed at the innovation activity's inputs (e.g., firms' research and development [R&D] efforts) or outputs (e.g. by reducing the taxes owed on the economic returns to R&D). The assistance may take the form of a subsidy, which is a net transfer of resources that is more or less explicitly linked to specific innovation activities. Numerous instruments can be used to assist firms in channeling resources toward innovation efforts in order to incentivize or reward them. Governments can purchase (or promise to purchase) goods and services that are either necessary for or result of business innovation. They can provide financing in the form of grants or loans, or they can encourage others to do so by guaranteeing repayment in the event that firms are unable to repay. They can postpone or avoid tax liabilities, or they can invest in firms in exchange for equity. Governments can pay third parties to provide services that businesses require to innovate, or they can provide such services directly through institutions they control, such as government laboratories. Transfers of technology sponsored or held by governments, as well as preferential access to data such as health or mobility records, are all examples of in-kind support, as is the awarding of exclusive rights to inventions via intellectual property rights. Public investment and support for innovation are not always restricted to a country's borders. For instance, sovereign wealth funds and related investment vehicles acquire stock in companies worldwide in order to gain exposure to their emerging technologies. Governments also implicitly support business innovation through the operations of state-owned enterprises, which are classified as businesses.

Public support for innovation has been a significant factor in the design of industrial and economic development strategies throughout the world, albeit with somewhat inconsistent approaches and outcomes. While public support continues to be a contentious issue (Warwick and Nolan, 2014[3]) and growth-promoting industrial policies are insufficient without complementary reforms, the most successful economies have benefited from them at some point in their history (Rodrik, 2010[4]).

Analysis and results

As illustrated in the top portion of Figure 1, innovation support policies have a variety of objectives. Innovation policymakers are concerned with developing the most appropriate portfolio of support instruments to encourage and guide business R&D and innovation; to generate solutions that transform or even create new markets; to advance economic growth; and to address long-standing societal challenges such as health, energy, and the environment, as well as to address short-term crises. This diversity of objectives frequently necessitates the use of a portfolio of support instruments rather than a limited set of policy tools.

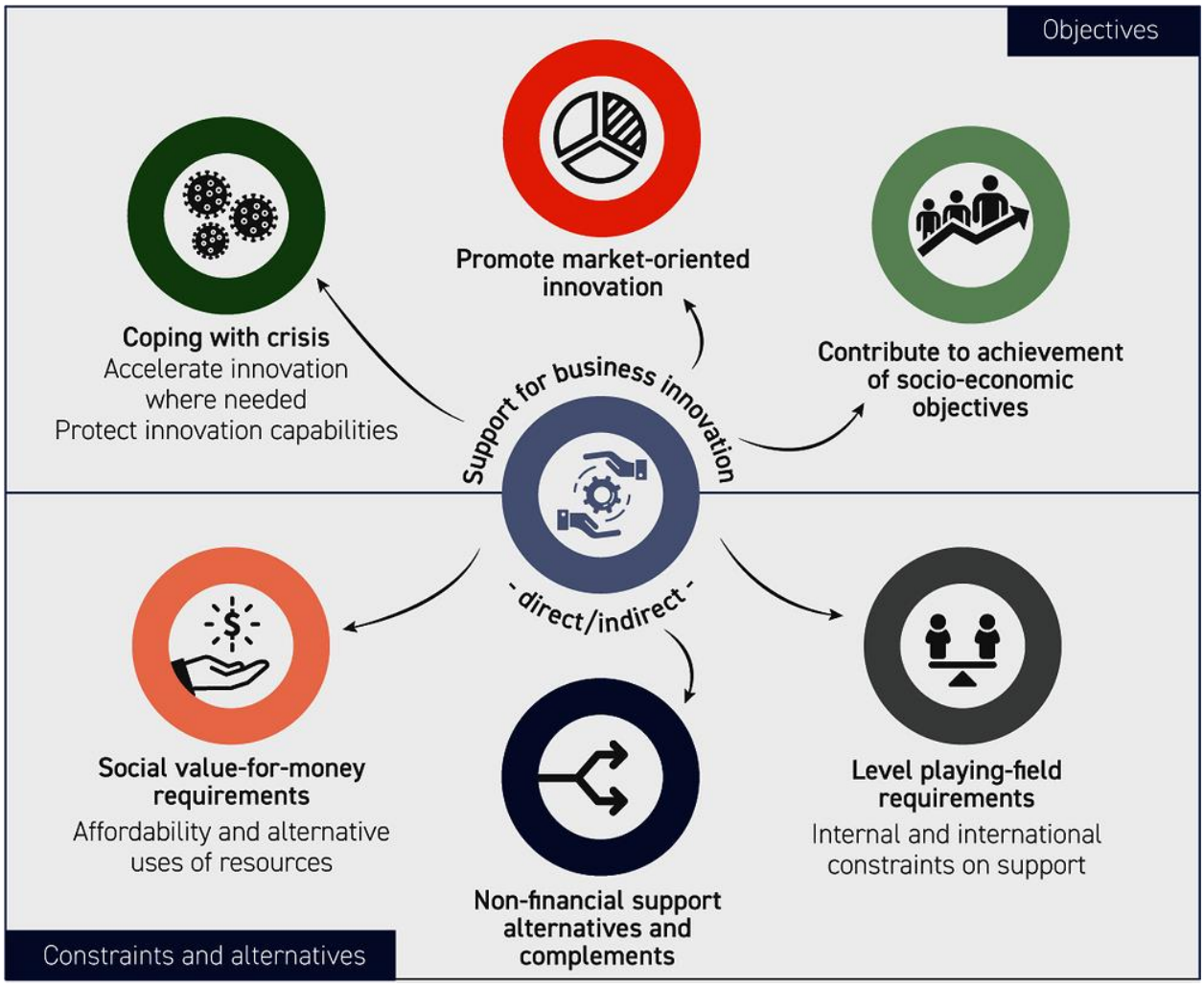


Figure 1 Confluence of objectives and constraints to government support for business innovation

Source: OECD

Additionally, innovation policymakers must consider a variety of constraints, including the implications for a much broader range of policy areas, as this chapter will discuss later. Finance ministries, in particular, and society at large demand evidence that investments in business innovation generate a social return comparable to that of investments in public infrastructure or other discretionary spending. Controls must be implemented to prevent regulatory capture from transforming business innovation support into a form of "corporate welfare." Alternatives to assistance must always be considered.

Government support for innovation before the COVID-19 crisis

Public policies foster innovation by assisting various types of businesses and activities. Around the world, firms that conduct R&D are significantly more likely to receive government support for innovation (median 36 percent chance) than firms that only conduct non-R&D-based innovation (median 13 percent chance) (Figure 2). As a result, the majority of firms receiving innovation support are engaged in R&D, despite the fact that they constitute a minority of firms engaged in innovation.

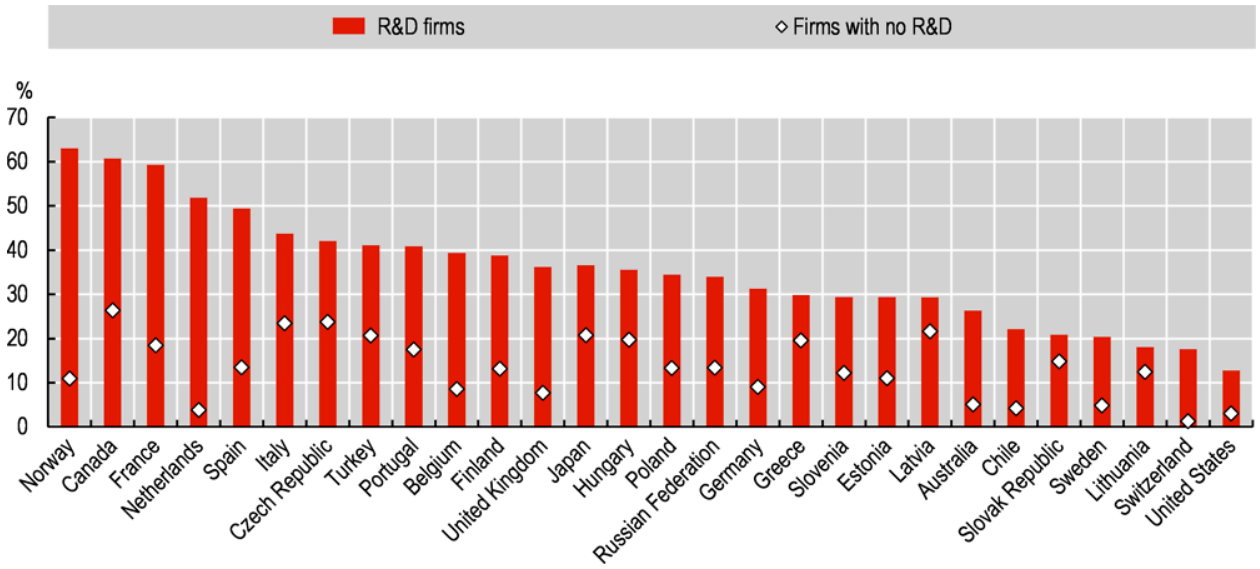


Figure 2 R&D active firms are more likely to receive public support for innovation
Source: OECD

According to the OECD's Science, Technology, and Innovation Policy (STIP Compass) portal, which serves as a repository for innovation support schemes (EC-OECD, 2020[5]), direct funding schemes are the most frequently reported instruments of financial support for R&D and innovation in terms of initiative counts. 40% of instruments reported in this area are grants for business R&D and innovation. When compared to corporate tax incentive schemes, an examination of the underlying data on these instruments reveals that they are highly fragmented and customized to specific target groups (11 percent of reported support schemes). R&D tax incentive schemes are typically country-specific, mirroring the tax on which the concessions are applied, though these also vary significantly (Appelt, Galindo-Rueda, and González Cabral, 2019[6]). Few countries report on the existence of R&D and innovation procurement programs, as well as the use of prizes and awards.

Tax support accounted for approximately 56% of total government support for business R&D in 2018, up from 36% in 2006. . In the European Union (EU27), the shift in policy mix has been even more pronounced, with tax support doubling in ten years, from 26% of total government support in 2006 to 57% in 2018. The evolution has not been consistent across countries, as it has been influenced by a variety of factors, including countries' perceptions of themselves in comparison to their peers. For example, shortly after these international comparisons became available and revealed Canada's high reliance on tax support, the country decided to rebalance its federal support portfolio.

Additional recent trends affecting today's innovation support systems

Globalisation of economic activity, manifested by the ease with which goods, services, capital, people, technology, and knowledge can be transferred across national borders over the last decades, has resulted in a significant fragmentation of economic activity, with goods and services produced and heavily traded in international production networks dubbed global value chains (GVCs). Support for innovation began to be designed with an eye toward how countries wished to be positioned within the resulting,

complex global production and innovation networks (OECD, 2017[14]). Within this highly interconnected system, government-supported business innovation activity can have significant ramifications not only within countries, but also globally. To some extent, the emergence of China and other Asian economies that have shaped today's GVC system is a result of past public support decisions. In China, public support (e.g., the Torch program) was critical in establishing innovation clusters and subsequent development of venture capital (VC) firms that are now investing internationally. Made in China 2025, released in 2015, became the country's road map for pursuing technological autonomy while securing access to international markets in priority sectors. Since then, even prior to the onset of the COVID-19 crisis, such strategic considerations have become an increasingly common occurrence in policy debates. As discussed later in this chapter's forward-looking section, technological mistrust and trade tensions may become a permanent feature of future economic relationships, both driving and influencing public support for innovation.

Businesses that push the boundaries of knowledge in order to create viable solutions will eventually have to operate globally in order to reap the benefits of their innovations, unless they sell their rights to third parties. This positions multinational enterprises (MNEs) as critical players in the globalisation of innovation, as they account for the lion's share of R&D activity in OECD member countries. In Sweden, for example, only 10% of R&D is conducted by companies with no international presence; the remainder is split roughly evenly between Swedish affiliates of foreign-owned companies and Swedish majority-owned companies with international subsidiaries (Swedish Agency for Growth Policy Analysis, 2019[8]).

As a result, MNEs are significant direct recipients of government assistance. They can consider national incentives as one of several factors in deciding where to locate (and retain) innovative activities in a particular territory. Independent firms, particularly SMEs and start-ups, may benefit from innovation support systems that are tailored to their specific needs. While encouraging new companies to enter R&D, concentration of R&D and R&D assets appears to have increased recently. In the United States, firms with more than 1,000 employees have increased their share of total business R&D performance from 76 percent in 2008 to 82 percent in 2017.

Government intervention aimed at addressing failures in the market for finance for business innovation has also been the subject of increasing attention. Innovators often count intangibles as their main assets. These are difficult to deploy independently from their own ventures and personal engagement, resulting in a lack of collateral for investment and business growth in areas where the markets do not perceive a high likelihood of success. For instance, repayable government loans have played a key role in shaping technology development in the civil aerospace sector in recent decades, and VC interventions such as those implemented in Israel have attracted considerable interest worldwide. State-owned or guaranteed development banks play an important role in facilitating the flow of finance to innovative firms in many countries, including those where available statistics indicate they provide limited support. However, they expose governments to considerable liabilities, as loans may not be repaid, investments may fail,

or guarantees may be called by private lenders. (Lach, Neeman and Schankerman, forthcoming[9]) describe how the design of innovation loans should correspond to project features and policy objectives, avoiding both projects with a high probability of success that will be funded by the private market regardless and those that do not justify public financing because their expected net impacts are negative. The authors also draw attention to the evidence that the role of VC firms is to provide not only finance, but also “advice” and a network of connections that enhance the probability of success of the supported start-up projects.

Large R&D corporations report as R&D expenses the majority of the costs of R&D acquired through acquisitions of typically smaller R&D performers. The merger control authorities are increasingly concerned with the impact of mergers on overall innovation, as platform-based incumbents can leverage their information assets to identify and acquire potential competitors early in their lifecycle, before they become a competitive threat.

MNEs have considerable flexibility in structuring their tax liabilities across territories, relocating intellectual property and associated profits. This increases the pressure on governments to provide incentives for firms to locate their innovative activities and tax bases within the national territory, within the confines of existing rules. Domestic base erosion and profit shifting (BEPS) caused by the exploitation of inconsistencies and mismatches in the tax systems of different countries affects all countries. BEPS requires increased international coordination to prevent, among other things, harmful practices such as incentivizing business reallocation of intellectual property to more convenient jurisdictions that do not require substantive activity.

Conclusions

Mobilizing business innovation resources and capabilities is critical for resolving the current economic and societal crisis and addressing long-standing economic and societal challenges. As recent experience demonstrates, how governments incentivize and influence research and innovation in businesses has significant consequences for our future. The response of R&D and innovation businesses to COVID-19 has been extremely varied. While some see the crisis as an opportunity to expand such efforts, many industries are experiencing significant strain on their innovation capabilities. The issue of public support for innovation is not unique to innovation policymakers. Its design and implementation must consider a variety of implications and constraints that span multiple policy areas, necessitating horizontal coordination and implementation approaches.

Public innovation policies must be capable of directing private innovation efforts to areas where they are most needed, particularly where market signals are insufficient and coordination is most difficult. Recent OECD data and analysis indicate that governments' policy mix falls short of that ambition. R&D tax incentives, the undirected innovation support policy instrument on which the majority of OECD governments have come to rely in recent decades, are effective at achieving their generic R&D-raising objectives when designed and implemented consistently. They are insufficient, however, as a means of aligning innovation with broader societal needs and as instruments for encouraging investment in knowledge at the interface between basic research and actual product or

process development. Governments must develop balanced portfolios of innovation support mechanisms, instruments, and capabilities that enable them to direct business innovation efforts, particularly in areas where government is a primary user or customer of innovations.

Numerous underlying assumptions underlying the global policy consensus on the proper role of government in funding and promoting innovation are likely to be challenged further. International policy collaboration is critical for business innovation support. Today, business support is possible only within a delicate balance of international agreements that constrain what national governments can do to assist their businesses in innovating without inciting retaliatory responses from other countries that restrict market access. Governments must develop a clear understanding of the trade-offs they face as they redesign their innovation support portfolios in tandem with their international partners and competitors. National self-interest, including support for business innovation, is frequently best served through international collaboration.

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