TAX INCENTIVES FOR R&D AND INNOVATION

Rationale and objectives

Tax incentives for R&D are often considered to have certain advantages over direct support for R&D, such as procurement of R&D or grants. As a market-based tool aimed at reducing the marginal cost of R&D activities, they allow firms to decide which R&D projects to fund. They are expected to lead to an increase in private investment in R&D and in turn to a rise in innovation outcomes and ultimately to higher long-run growth. They can also boost R&D start-up decisions. Potential downsides include 1) higher wage levels for researchers because more R&D increases demand for their skills (hence part of the government foregone revenue dilutes in rising cost instead of a volume increase) and 2) (re)location of R&D activities (tax competition between countries or between regions).

Major aspects

Existing R&D tax incentive schemes differ significantly in terms of their generosity, their design and the categories of firms or R&D areas they target (Table 6.2).

They include expenditure-based tax incentives – most importantly R&D tax credits, R&D tax allowances and payroll withholding tax credit for R&D wages – and income-based tax incentives – most importantly preferential rates on royalty income and other income from knowledge capital.

Most OECD and emerging economies provide R&D tax credits on the volume of R&D expenditure undertaken (*e.g.* Brazil, Canada, the People's Republic of China, France, India, Japan, Norway and the United Kingdom). Some provide R&D tax credits for R&D expenditure in excess of some baseline amount.

Table 6.2. **Differences in R&D tax incentives schemes in selected OECD countries, 2009**

Design of the R&D tax incentive scheme	*Volume-based R&D tax credit*	Australia, Brazil, Canada, China, France, India, Norway
	Incremental R&D tax credit	United States
	Hybrid volume and incremental credit	Japan, Korea, Portugal, Spain
	R&D tax allowance	Austria, Czech Republic, Denmark, Hungary, Turkey, United Kingdom
Payroll withholding tax credit for R&D wages		Belgium, Hungary, Netherlands, Spain, Turkey
More generous R&D tax incentives for SMEs		Australia, Canada, France, Hungary, Japan, Korea, Norway, United Kingdom
Targeting	*Energy*	United States
	Collaboration	Hungary, Italy, Japan, Norway, Turkey
	New claimants	France
	Young firms and start-ups	France, Korea, Netherlands
Ceilings on amounts that can be claimed		Austria, Italy, Japan, Netherlands, Norway, United States
Income-based R&D tax incentives		Belgium, Netherlands, Spain
No R&D tax incentives		Estonia, Finland, Germany, Luxembourg, Mexico, New Zealand, Sweden, Switzerland

Note: R&D tax allowances are tax concessions up to a certain percentage of the R&D expenditure and can be used to offset taxable income; R&D tax credits reduce the actual amount of tax that must be paid.
Source: OECD (2011) OECD testimony to the US Congress on R&D tax incentives, September and country responses to the *OECD Science, Technology and Industry Outlook* 2012 policy questionnaire.

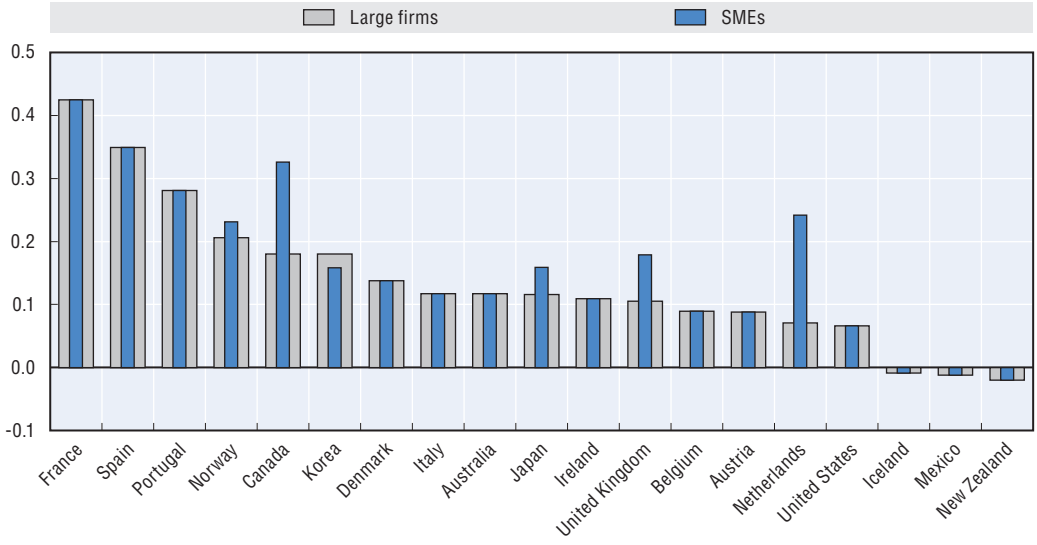
R&D tax allowances are available in Austria, the Czech Republic, Denmark, Hungary, and the United Kingdom. Payroll withholding tax credit for R&D wages (deductions from payroll taxes and social security contributions), are used in Belgium, Hungary, the Netherlands, Spain and Turkey.

In addition, R&D tax incentives may provide for special treatment of certain types of firms or of R&D. Certain countries allow carry-forward or carry-back for firms whose tax bill is lower than their allowable R&D credit. It can even be refunded in certain cases (*e.g.* for start-up firms, which often do not show a profit).

Recent policy trends

The general trend has been to increase the availability, simplicity of use and generosity of R&D tax incentives. France (in 2008) and Australia (in 2010) replaced relatively complex hybrid volume- and increment-based schemes with simpler and more generous volume-based schemes. Belgium, Ireland, Korea, Norway, Portugal and the United Kingdom have increased their tax credit rates or the ceilings for eligible R&D in recent years. China extended its R&D tax credit to all firms working in key areas of technology (biotechnology, information and communication technologies, and other high-technology fields) even if the firms are located outside the specially designated "new technology zones".

Figure 6.3. **Tax treatment of R&D: Tax subsidy rate for USD 1 of R&D, large firms and SMEs, 2008**



Note: The tax subsidy rate is calculated as 1 minus the B-index. The B-index measures the before-tax income needed to break even on one dollar of R&D outlays and is calculated for representative small and large corporations. The tax subsidy rate is reported for a profitable firm able to claim tax credits/allowances. The subsidy rate calculations only include expenditure-based tax incentives and do not account for income-based tax incentives.

Source: OECD (2009), *OECD Science, Technology and Industry Scoreboard 2009*, OECD, Paris; Warda, J. (2009), "An Update of R&D Tax Treatment in OECD Countries and Selected Emerging Economies, 2008-2009", *mimeo*.

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In contrast, Mexico and New Zealand have recently repealed their R&D tax incentives. Mexico converted its R&D tax credit to direct assistance in 2009. New Zealand introduced an R&D tax credit in 2008 but then repealed it, with effect from the 2009-10 fiscal year. Canada has also decided to streamline its R&D tax credit and to move its policy mix towards more direct support.

Recently, R&D tax incentives have also been used to help firms cope with the financial crisis, usually on a temporary basis. Japan and the Netherlands, for example, temporarily increased the ceiling for eligible R&D. Recognising that several firms would not be in position to claim all of their R&D tax credit because of a likely fall in profits following the economic downturn, Japan also allowed a longer carry-forward of unused R&D credits. In 2009, France offered to refund all pending claims from previous years. Before 2009, firms had to wait for up to three years for the refund of their unused credit. This measure is expected to have increased foregone tax revenue to USD 5.5 billion in 2009 (0.26% of GDP).

References and further reading

OECD testimony to the US Congress on R&D tax incentives – September 2011.