

## Fiscal measures

With lacklustre growth across much of the globe, finding new sources of growth has become a global policy priority. Innovation – which fosters competitiveness, productivity, and job creation – is an important mechanism for encouraging sustainable growth. And young firms, many of which are intensive in the use of knowledge-based capital (KBC), play a crucial role in employment creation and economic growth.

OECD work shows that innovative activity includes not only technological innovation, but also non-technological innovations like new business models or organisational change. It is the bundle of assets that spur innovation – research & development (R&D), intellectual property, software, data, organisational capital, skills – and their interaction. But the knowledge generated by firm's investment in R&D can be hard to appropriate and can spill over to other firms, individuals and across borders. This leads firms to perform less R&D than what would be socially optimal.

Governments have sought to correct this by directly engaging in research that firms themselves are unlikely to undertake and with policies that encourage firms to invest in R&D, largely through tax incentives. While an important tool in the mix of policies to support innovation, the proliferation and growing generosity of R&D tax incentives has led to some unintended consequences for both innovation and government balance sheets.

This note highlights new OECD analysis on the economic consequences of R&D tax incentives to help governments design more effective and efficient policy packages to foster innovation and exploit new sources of growth.<sup>1</sup>

### **R&D tax incentives have proliferated and become more generous**

The number of countries providing indirect support for business spending on R&D through tax incentives is rising. As of 2011, 27 of the OECD's 34 members provided tax incentives to support business R&D – more than double the number in 1995 – and others are currently considering their introduction. Many non-OECD countries, such as Brazil, China, India, Singapore and South Africa, also offer a generous tax environment for investment in R&D. By 2011, over a third of all public support for business R&D in OECD countries came through tax incentives, a share that jumps to more than half when the United States – with its large direct procurement of defense R&D – is excluded.

R&D tax incentives have proven popular largely because exemptions from international agreements (e.g. in the WTO, EU) make R&D subsidies one of the few ways that governments can help domestic firms improve competitiveness without direct state aid. Governments also support R&D to achieve specific R&D/GDP intensity targets, to stimulate productivity growth and offset the decline in R&D associated with the economic crisis, as well as to encourage firms that perform R&D to locate domestically with a view to encouraging knowledge spillovers.

These potential benefits have led many governments to increase the generosity of R&D tax incentives in recent years. Over the period 2006-2011, about half of the 23 countries for which complete data are available increased their generosity, with R&D tax support rising by almost 25% in some countries. This may underestimate the increasing generosity of R&D tax incentives. Without any changes in policy, the value of R&D tax incentives would have been expected to decline during the crisis, in part because fewer firms were profitable (and thus unable to benefit from non-refundable tax credits), and in part because R&D itself declines during economic downturns.

But the full cost is not always transparent because R&D tax incentives are accounted for as a tax rather than a direct expenditure in the budget. When assessing the design of such measures, it is important that an objective assessment of all costs and benefits be taken into account.

### **Figure 1. Business enterprise expenditure on R&D, financed by government (direct)**

**However, R&D may create an unlevel playing field that leaves new sources of growth unexploited**

Tax incentives subsidising R&D are considered attractive because they are market-based, and they are thus seen as more “neutral” than direct support policies. But business R&D is heavily concentrated in large multinational enterprises (MNEs), with the top 1 500 businesses investing in R&D accounting for almost 90% of total business expenditure on R&D worldwide. While MNEs are an important source of knowledge spillovers and productivity improvements, it is important that the tax system does not create a competitive disadvantage for domestic ‘stand-alone’ firms that do not have cross-border tax planning opportunities.

More generally, MNEs consider the bundle of measures at the corporate tax level; this includes expenditure-based measures, like R&D tax incentives, as well as income-based policies, such as “patent boxes.” Intellectual assets generated by R&D, such as patents, may be developed in one country, held in another and used for production in a third. When these assets are shifted among affiliates of a MNE that reside in different locations, it is hard to value them because of the lack of a market to gauge an arm’s-length price. All of this has made it easier for MNEs to shift profits among tax jurisdictions and harder for tax authorities to establish where profits have been earned and to tax them accordingly. Fundamental changes to the international tax system are needed to address the gaps and loopholes that enable MNEs to achieve double non-taxation. Ensuring that taxable income can no longer be artificially segregated from the activities that generate it is a key objective of the OECD’s Action Plan on Base Erosion and Profit Shifting.

Domestic firms that perform R&D may find themselves at a competitive disadvantage vis-à-vis MNEs unless other measures, such as ceilings and differentiated rates, are put in place to ensure a level playing field. It may also leave new sources of growth unexploited. Evidence from 15 OECD countries over 2001-11 suggests that young businesses, many of which are KBC-intensive, play a crucial role in employment creation, regardless of their size. Over this period, young firms (five years of age or less) accounted for about 20% of total (non-financial) business sector employment but generated almost 50% of all new jobs created.

Moreover, during the economic crisis the majority of jobs destroyed generally reflected the downsizing of large mature businesses, while most job creation was due to young enterprises (Figure 4).

**Figure 4. Net job growth, younger versus older firms, 2001-11**

Average over 15 countries

Note: Net job growth is defined as the ratio of the difference in employment for each group of firms (young, old and total) in two subsequent years to the average employment in the two years considered. Data from Austria, Belgium, Brazil, Finland, France, Hungary, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Spain, Sweden and the United States. Owing to methodological differences, figures may differ from those officially published by national statistical offices. Data refer to the manufacturing, construction and market services (except financial services) sectors.

Source: OECD calculations based on the OECD DYNEMP data collection.

In the recovery, young firms have also been crucial for job creation in many countries. As a result, policymakers should ensure that any policy package aimed at fostering innovation includes measures targeted at young firms as well as policies aimed at larger firms, including MNEs. In the R&D tax incentives case, provisions for cash refunds and carry forwards, for instance, can help diminish the inherent bias against new firms.

### **Designing policies to effectively and efficiently boost innovation**

The production, use, economic ownership and taxation of knowledge-based assets have become increasingly decoupled in the latest wave of globalisation. As a result, designing cost-effective tax policies to promote innovation in a globalised economy in which MNEs and knowledge-based assets play major roles has become more challenging. While each country is unique, several policy implications can be derived from new OECD work on tax policy and knowledge-based capital.

- **R&D tax incentives should be designed to meet the needs of young, innovative ‘stand-alone’ firms without cross-border tax planning opportunities.**

Domestic ‘stand-alone’ firms that perform R&D may be put at a competitive disadvantage vis-à-vis MNEs unless other measures, such as ceilings and differentiated rates, are put in place to ensure a level playing field. Young firms may also benefit less if they have not yet generated taxable income

to make immediate use of (non-refundable) R&D tax incentives. This may inhibit innovation and growth as such firms have particular strengths as R&D performers (e.g. in creating radical innovations) and job creators unless measures such as cash refunds, carry forwards, or the use of payroll withholding tax credits for R&D-related wages are used. But care must be taken that tax relief is not so high that it hampers the process of creative destruction that is essential to a dynamic innovative ecosystem.

- **Policymakers should consider balancing indirect support for business R&D (tax incentives) with the use of direct support measures to foster innovation.**

OECD analysis suggests that direct support measures – contracts, grants and awards for mission-oriented R&D – may be more effective in stimulating R&D than previously thought, particularly for young firms that lack the upfront funds to start an innovative project. It is important, however, that any allocation of direct support should be non-automatic and based on competitive, objective and transparent criteria (e.g. by involving independent international experts in the selection process). More broadly, a well-designed and transparent system of direct support measures can be complementary to the use of R&D tax incentives as it may help direct public funding to projects with high social returns.

- **Governments should ensure that R&D tax incentive policies provide value for money.**

In many countries, overall tax relief for business R&D may be greater than governments intended when they designed support of R&D business expenditure. This may be compounded by the rising generosity of tax relief for R&D observed in recent years, the full cost of which is not always transparent because R&D tax incentives are “off budget” as a tax expenditure. As a result, governments should undertake systematic evaluation of tax relief measures to assess the continuing validity of their rationale and objectives and whether their targeting and design remain appropriate. Important aspects of R&D tax schemes that require review include the scope of eligible R&D, the firms that qualify, the treatment of large R&D performers, as well as carry-back and carry-forward provisions. Governments should also focus on the policy package – including the interactions and complementarities – as well as related fiscal measures concerning R&D workers to ensure that R&D tax incentives provide value for money.

- **The effectiveness of R&D tax incentives depends upon the broader regulatory environment and its stability over time.**

OECD evidence shows that well-functioning product, labour and risk capital markets and bankruptcy laws that do not overly penalise business failure can raise the returns to investing in knowledge-based assets. OECD analysis also suggests that in countries that have experienced a large number of R&D tax policy reversals, the impact of R&D tax credits on private R&D expenditure is greatly diminished. It is therefore important that governments do not repeatedly tinker with such policies to minimise policy uncertainty for firms.

**For further information, please see:**



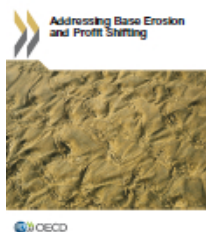
[1]

OECD (2013), Supporting Investment Knowledge Capital, Growth and Innovation, OECD Publishing.  
<http://oe.cd/kbc> [1]



[2]

OECD (2013), OECD Science, Technology and Industry Scoreboard 2013, OECD Publishing.  
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[3]

OECD (2013), Addressing Base Erosion and Profit Shifting, OECD Publishing.  
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[4]

"OECD (2013), Action Plan on Base Erosion and Profit Shifting, OECD Publishing.  
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## References

- Westmore, B. (2013), "R&D, Patenting and Growth: The Role of Public Policy", OECD Economics Department Working Papers, No. 1047, OECD Publishing
- R&D Tax Incentives: [www.oecd.org/sti/rd-tax-stats.htm](http://www.oecd.org/sti/rd-tax-stats.htm) [5]
- New Sources of Growth: Knowledge-based Capital: <http://oe.cd/kbc> [1]
- OECD Science, Technology and Industry Scoreboard: [www.oecd.org/sti/scoreboard.htm](http://www.oecd.org/sti/scoreboard.htm) [2]

1 This note draws on findings from the upcoming releases of two publications: OECD Science, Technology and Industry Scoreboard 2013 and Supporting Investment in Knowledge Capital, Growth and Investment.

**Files:**  [R &D tax incentives.docx](#) [6]

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