



## **R&D Tax Credits – Economic Rationale and Impact**

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**The use of R&D tax credits is a growing area of interest for governments and policymakers around the world seeking to stimulate economic activity and innovation. What is the economic rationale behind the R&D tax credit? What do current tax credits look like within the OECD and G20? And do these tax credits stimulate and attract more R&D investment?**

Earlier this month the United States Department of Commerce released *The Competitiveness and Innovative Capacity of the United States* a report on the state of the American economy. The report details how the US economy has depended on innovation for growth and how it has been at its most successful when its innovative capacity has been high. Among a number of policies, the report highlights the importance of the federal private sector R&D tax credits and the need to extend the current tax credit to continue to stimulate private sector R&D investment.

In light of this report, this briefing will discuss the economic rationale of R&D tax credits; their use in some of the world's major economies; and provide an assessment of their value and economic impact.

### **R&D tax credits – basic economic rationale**

Governmental support for R&D activities has become a key expectation of both market and industry participants as well as policymakers in most major OECD and G20 economies. Public support for R&D can take various forms. The most common is direct financing of research through public grants. These are generally targeted at universities, foundations and other private and public sector R&D institutions including NGOs.

An example would be the \$31billion in research funding provided by the American National Institute of Health (NIH) which funds over 325,000 researchers at 3,000 universities, medical schools and research institutes. Similar direct funding structures exist in most countries. In Switzerland, the Swiss National Science Foundation provided CHF726million in funding for basic research in 2011. Likewise under Japan's a five year national program "Science and Technology Basic Plan", in 2009 it invested ¥17trillion in R&D activities.

In addition to direct support many OECD and emerging economies also have systems of R&D tax credits.



The economic rationale behind the tax credit – and the key difference between direct support in the form of research grants or loans – is that a tax credit is a market based mechanism. Unlike a government loan or grant there is no or little judgment made on part of a government official or policymaker as to if a credit should be given. Instead, R&D tax incentives reduce the marginal cost of R&D activities leaving the decision on what type of R&D activity to support largely in the hands of the credit's beneficiary. There is thus no government 'picking winners'.

### **Different types of tax credits and their spread**

R&D tax credits can target either R&D inputs or outputs. For example, credits that incentivise either the total volume (usually up to a ceiling) or incremental R&D expenditure are incentivising an input. Conversely, incentives that target the outcome of R&D investment in the form of royalties and income from capital invested are output based.

Internationally, the most common forms of R&D tax credits are:

- tax allowances;
- volume based expenditure;
- incremental expenditure;
- or a hybrid of the latter two.

For example Australia, Canada, France, China and Brazil all offer a volume expenditure tax credit. The UK, Austria and Hungary offer an R&D tax allowance. The United States is one of the few major economies that uses an incremental expenditure R&D tax credit.<sup>1</sup>

In addition to these models, countries often target certain type of R&D or offer especially generous credits for specific sectors of qualifying expenditure. For example, the US recently introduced a more generous credit for R&D related to energy. Similarly, Italy offers a more generous credit for expenditure related to contract research with not-for-profits.

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<sup>1</sup> See PwC, Global R&D Incentives Group, "Global R&D Incentives", August 2011.



## **Economic impact**

Do R&D tax credits work? The short answer is: it depends on the desired outcome.

A good deal of economic and econometric evidence exists showing that a decrease in the cost of R&D (through a tax credit) will lead to a slight short term increase in R&D investment and a much more pronounced increase in the long term.<sup>2</sup>

This would seem to indicate that, firstly, R&D tax credits are effective in stimulating R&D investment and, secondly, that historically well-established tax credits will have the strongest effect on R&D investment. American policymakers should take heed from this latter point as having a permanent R&D tax credit in place is much more stimulating than a temporary one.

Determining whether or not R&D tax credits have an equally positive effect on the wider economy and, in particular, on rates of innovation is more challenging. Much of this has to do with the difficulty in measuring rates of innovation and providing a solid link between an R&D output and variable (such as rates of patenting) with a specific R&D tax incentivisation scheme. This is an area where both more evidence and research is needed.

## **Conclusion**

R&D tax credits are an effective way for governments and policymakers to use market-based mechanisms to stimulate greater efforts and investments in R&D. While measuring the broader impact of these tax credits on economic performance is much more challenging, it is nevertheless instructive that some of the most innovative countries and regions in the world have the most generous and well-established R&D tax credits.

If you wish to learn more about the work we do on these and related issues, please contact David Torstensson on [davidt@pugatch-consilium.com](mailto:davidt@pugatch-consilium.com)

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<sup>2</sup> See Nick Bloom et al “Do R&D tax credits work? Evidence from a panel of countries 1979-1997”, *Journal of Public Economics*, 85 (2002), 1-31, and OECD Testimony before US Senate Committee on Finance, September 20 2011, “The International Experience with R&D Tax Incentives”.