FINANCING BUSINESS R&D AND INNOVATION

Rationale and objectives

Financing is extremely important for innovation and growth, in particular at the seed and early stages of business development. Access to finance is a central issue for both innovative entrepreneurs and policy makers. Entrepreneurial start-ups and small and medium-sized enterprises (SMEs) face financial constraints largely because of their inherent riskiness and weaknesses. Evidence shows that innovative SMEs in the euro area considered access to finance one of their most pressing problems following the sovereign debt crisis in 2011 (EC, 2011a).

In spite of the growing importance of entrepreneurial activities in creating new ventures and implementing frontier research, innovative SMEs face several barriers for accessing finance, such as asymmetric information and financing gaps between investors and entrepreneurs. They also suffer from resource constraints, insufficient collateral, and lack of a track record. The quality of a business plan, in terms of due diligence, can be a very influential factor in funding decisions.

These potential market imperfections justify public intervention in entrepreneurial financing. In addition to establishing framework conditions that foster investment in R&D and innovation, governments use a variety of instruments such as subsidised loans, tax incentives and public support to venture capital (Table 6.1). Grants and subsidies are considered especially effective for mitigating financing constraints in young and small R&D-intensive, technology-based SMEs in the early stages of development. Seed funding can help entrepreneurs not only to gain access to finance but also to overcome the “valley of death”, as they have great difficulty obtaining project or debt financing or venture capital for projects that imply higher risks.

Major aspects

R&D investment in OECD economies has risen steadily over the decades despite fluctuations in the business cycle (OECD, 2011a). This strongly suggests that public R&D, which tends to be counter-cyclical, serves as a buffer by complementing funding gaps due to a decline in private R&D investment during economic downturns. Global R&D spending surged from USD 1 252 billion in 2010 to USD 1 333 billion in 2011, and is expected to reach USD 1 403 billion in 2012, with continued strong growth in emerging economies and stable growth in established economies (Batelle, 2011). Global business R&D increased by 4% in 2010, a robust upturn after a 1.9% drop in 2009 in the wake of the financial crisis (EC, 2011b).

Venture capital investment, which has become an important source of financing for technology-based ventures, has tended to increase, except for the moderate drop in the United States and the EU in 2009 in the aftermath of the 2008 financial crisis (OECD, 2011b). Investments by US business angel groups fell significantly in 2009, again owing to the 2008 crisis, but in Europe these investments rose steadily. As experienced, wealthy and informal investors, business angels tend to invest in the early and riskier stages and play a crucial role in filling the financing gap between the early- and the later-growth stage.
Recent policy trends

Promoting investment in innovation through greater access to finance remains an issue across the OECD. The problem is how to increase and broaden the sources of public and private financing for innovation, given the increasingly short-term focus of investors in OECD countries following the recent financial and sovereign debt crisis. Reforms to the banking and financing system following the financial crisis, such as banks’ increased capital requirements, may reduce the appetite for risk among traditional investors. Governments are therefore promoting new ways to stimulate access to finance for R&D and innovation, including public-private partnerships.

The rise of new institutional investors and sovereign wealth funds may provide sources of innovation financing. The Internet is also providing new channels for financing small ventures. In the United States new legislation on crowd funding has gained attention there and in other economies. Corporate venturing in which large firms invest in smaller and innovative firms, is another potential source of R&D financing. On the institutional level, new legislation was passed in the United Kingdom for angel investment, and there is a new tax benefit law in Portugal, a new angel law in Israel, tax relief on the wealth tax (ISF) in France, etc.

Tax incentives for R&D have also been introduced in 26 out of 34 OECD countries and in a number of non-OECD economies (OECD, 2011a). This form of indirect financing is increasingly used to complement direct government funding through R&D contracts, subsidies or grants. In Canada, Denmark, Korea and Portugal, it is the main channel of government financial support to business R&D. Most recent estimates, although still experimental, suggest that the intensity of combined direct and indirect public support to business R&D has increased significantly in most countries since 2005 (Figure 6.2). While France and Portugal have extended their R&D tax system, either permanently or as a temporary response to the crisis, the Russian Federation and the United States have

Table 6.1. Major financing instruments for promoting innovation

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<thead>
<tr>
<th>Financing instrument</th>
<th>Key features in financing</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>Bank loan</td>
<td>Used as one of the most common tools for access to finance, it needs collateral or guarantees in exchange for loans.</td>
<td>Obligation to repay as debt</td>
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<tr>
<td>Grant, subsidy</td>
<td>Used as seed funding for innovative start-ups and SMEs at the seed and early stage: small business innovation research in the United States, the United Kingdom and the Netherlands; feed-in-tariffs in Denmark and Germany; OSEO funding in France; Innovation Investment Fund in the United Kingdom.</td>
<td>Complements market failures, financing at seed and initial stage</td>
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<td>Business angel</td>
<td>Financing source at early riskier stage and provides financing, advice and mentoring on business management. Tends to invest in the form of groups and networks, e.g. Tech Coast Angels and Common ANGELS in the United States, Seraphim Fund in the United Kingdom.</td>
<td>Financing at start-up and early stage</td>
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<tr>
<td>Venture capital</td>
<td>Tends increasingly to invest at later, less risky growth stage. Referred to as patient capital owing to the lengthy time span (10-12 years) for investing, maturing and finally exiting. e.g. Pre-seed Fund and Innovation Investment Fund in Australia, Yozma Fund in Israel, Seed Fund Vera in Finland, Scottish Co-investment Fund in the United Kingdom.</td>
<td>Financing at later expansion stage</td>
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<tr>
<td>Corporate venturing</td>
<td>Used by large firms to invest in innovative start-ups with a view to improving corporate competitiveness with either strategic or financial objectives.</td>
<td>Strategic motive</td>
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<td>Crowd funding</td>
<td>A collective funding tool via the Internet which makes it easier for small businesses to raise capital at the seed and early stages.</td>
<td>Potential for fraud</td>
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<td>Tax incentive</td>
<td>A broad range of tax incentives for R&amp;D and entrepreneurial investments in most countries, e.g. Enterprise Investment Scheme in the United Kingdom, tax relief on the wealth tax (ISF) in France, Business Expansion Scheme in Ireland.</td>
<td>Indirect, non-discriminatory</td>
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substantially increased direct funding. Slovenia and Austria, which have recorded the largest increases in government support, have done both. These reforms have led to significant shifts in national R&D policy mixes in some countries.

Figure 6.2. **Direct government funding of business R&D and tax incentives for R&D, 2010**

As a percentage of GDP

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**Note:**

The estimates of R&D tax incentives do not cover sub-national R&D tax incentives. Estonia, Finland, Germany, Luxembourg, Sweden and Switzerland do not provide R&D tax incentives. China, Greece, Israel, Italy, the Slovak Republic and the Russian Federation provide R&D tax incentives but cost estimates are not available.

Iceland introduced a tax reduction scheme for R&D in 2009 with effect from 2011. Mexico and New Zealand repealed tax schemes in 2009. No cost estimates are available for Mexico before this date. In 2008, the cost for newly-introduced R&D tax incentives for New Zealand was NZD 103 million (0.056% of GDP).

Data refer to 2004 instead of 2005 for Austria and Switzerland, 2006 for Poland, Portugal and South Africa, 2007 for Slovenia, 2008 for Belgium, Korea and New Zealand.

Estimates for Australia, Hungary and Korea are based on their responses to the 2010 OECD R&D tax incentives questionnaire. The estimate for Austria covers the refundable research premium but excludes other R&D allowances. The value of research premium has been taken out of direct government funding of business R&D to avoid double counting.

France implemented in 2008 a major upgrade of its R&D tax scheme which is now volume based and has very high credit rates (up to 30%). In addition, as from 2009 immediate repayment of unused credits are permanent for SMEs (before 2009, unused credits could not be refunded before three years). Foregone revenues for 2010 is estimated based on national sources.

Cost estimate of R&D tax incentives for Belgium are drawn from its responses to the OECD Science, Technology and Industry Outlook 2012 policy questionnaire.

The United States estimate covers the research tax credit but excludes the expensing of R&D.

Israel: “The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.”


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References and further reading


