



Euro-CASE Policy Paper on “Financing Innovation”

About Euro-CASE

The European Council of Academies of Applied Sciences, Technologies and Engineering is an independent non-profit organisation of national academies of engineering, applied sciences and technologies from 21 European countries. Euro-CASE acts as a permanent forum for exchange and consultation between European Institutions, industry and research. Through its member academies, Euro-CASE has access to top expertise (around 6,000 experts) and provides impartial, independent and balanced policy advice on technological and innovation issues with a clear European dimension to European Institutions and national governments. In 2012 Euro-CASE has launched an Innovation Platform which consists of members of Euro-CASE academies from science, engineering and business. The platform develops policy recommendations relevant for Member States and EU Innovation Policy.

Executive summary

A key approach available to governments when promoting innovation is providing or facilitating finance for innovative enterprises. Despite recent progress in facilitating a genuinely European private financing industry, there are still parts of Europe where enterprises have difficulty accessing appropriate innovation financing. This paper argues that more can be done at member state level to attract and nurture private financing for innovation.

This paper makes recommendations to European states and to the EU that are of relevance both to and beyond the implementation of Horizon 2020, which intends to improve access to finance for innovative companies by using financial instruments to leverage private finance.

For European States:

On taxation:

- R&D tax credits should be used by national governments to encourage innovation.
- Lower levels of capital gains tax should be put in place for innovative companies.
- Income tax breaks should be made available for angel investors as a reward for investing in early stage companies.

On universities:

- Governments should promote a cultural norm within university technology transfer offices for a 2% ‘golden share’, whereby universities defer immediate payment for the intellectual property invested in spin-out companies, in favour of 2% of proceeds when the company owner exits.

- Governments should encourage the adoption of 'Easy IP' schemes, where in most cases the university can grant to spin-offs the free use of a new technology developed within the university.

On direct funding:

- Governments should commit money to provide seed funding where the market fails to do so, in particular to technological platforms and ecosystems capable of generating further innovations. In some cases funding may need to go to strategic individual companies or technologies, but the main emphasis should be on de-risking private investment and playing a convening role in increasing seed and pre-competitive funding.
- There is a need for arms-length public bodies that provide innovation financing in European states.
- Governments should provide support mechanisms that help companies and entrepreneurs find *existing* sources of government money intended to help innovators.

For the EU:

- The EU should increase spending on innovation in order to be competitive with performance leaders globally.
- The EU should provide early stage seed capital to fund very early stage, risky innovations that the private sector is not prepared to fund. This innovation funding should be driven by specific missions, with an emphasis on strengthening innovation ecosystems and advancing technology platforms.
- The EU should develop a European Innovation Council to promote the transfer of outstanding scientific results into commercial applications that address specific missions.

In order to facilitate public innovation support at national level by European states, the EU needs to:

- Develop programmes that provide particular support to those states with the lowest innovation performance.
- Develop a European loan guarantee system for high growth companies.
- Relax EU state aid rules that restrict state input into venture capital funds.
- Support the evolution of a strong decentralised savings banking system that focusses on investing in the regional economy and building strong ties with regional companies.

Introduction: Financing Innovation

A key approach available to governments that aim to promote innovation is providing or enabling finance for innovative enterprises. The most significant sources of innovation finance for European businesses are, in ascending order, business angels, venture capital, growth capital, and flotation on public markets. These funding sources facilitate innovation at different stages of technology preparedness and company development, and the availability of funding sources is a key determinant of whether enterprises engage in innovative activities in the first place.

In recent decades, regulatory reforms at EU and Member State level have done much to facilitate a genuinely European private financing industry, with several strong hubs and clusters of activity linked to innovation hotspots across the continent. However, there are still parts of Europe where enterprises have difficulty accessing appropriate innovation financing. According to the 2011 and 2013 Innovation Union Scoreboard¹, those European states in which figures for available innovation financing are lowest are generally those with the lowest levels of performance on other innovation indicators.

More can be done at Member State level to attract and nurture private financing for innovation. This policy paper introduces examples of programmes or policies used in various European states that have been found to be effective and might provide useful models.

There are also further measures which could be taken at EU level to remove barriers to movement of capital across borders. Horizon 2020², as directed by the Innovation Union strategy³, intends to improve access to finance for innovative companies by using a suite of financial instruments to leverage increased private finance. It also aims to make it easier for venture capital funds established in any one Member State to invest in others. This paper highlights the importance of protecting the innovation focus of Horizon 2020, and calls for further EU action to promote innovation funding, including the relaxation of rules for government funding of venture capital, and the creation of an EU Innovation Council.

The global financial crisis has precipitated changes in the venture capital market that have had an impact on the availability of innovation financing for enterprises. There is a significant gap in the market between the demand and the supply of loans and guarantees, and equity finance for both early and growth-stage investments. Levels of venture capital funding in Europe and internationally have declined⁴, and what funding there is has become increasingly focussed on later stage enterprise and less capital-intensive industries (principally ICT), leaving limited options for early stage enterprises and high potential growth enterprises from capital-intensive sectors such as biomedicine and energy. In sum, the provision of risk capital has become less popular among investors, including funds of funds, and venture capital funds are thus not able to raise or provide funding as easily as they once could.

The EU needs to acknowledge this new landscape of declining availability of venture capital funding. It must also understand that the financial crisis has aggravated the significant underinvestment in the provision of risk capital as compared, for example, to the US, and that specific actions are needed to resolve this. This might include increased public sector participation in the sector, or mechanisms to encourage new sources of

¹ http://ec.europa.eu/enterprise/policies/innovation/facts-figures-analysis/innovation-scoreboard/index_en.htm

² COM(2011) 811 final: Proposal for a Council Decision establishing the Specific Programme Implementing Horizon 2020 - The Framework Programme for Research and Innovation (2014-2020)

³ COM(2010) 546 final: Communication from the Commission - Europe 2020 Flagship Initiative Innovation Union

⁴ EU (DG Enterprise and Industry) 2012: Innovation Union Scoreboard 2011, Brussels.

funding to participate. In particular, the EU needs to develop policies that are geared at supporting early stage companies and high potential companies in capital-intensive industries.

Finally, this paper calls attention to potential reforms to other parts of the innovation ecosystem which could favourably impact on the availability of private financing for innovation. In particular it puts forward proposals to address the difficulties sometimes experienced by private financiers in negotiating intellectual property arrangements for research-based start-ups with university technology transfer offices.

Innovation Financing in the European States

As outlined above, EU member states should do more to attract and nurture private financing for innovation. However, not all states share the same capacities to support financing across all stages of the innovation process. Therefore, instruments that are broad in scope and flexible in terms of financing, such as tax incentives are appropriate for all Member States across the EU. However, across the EU, tax incentives and measures directly supporting venture capital are still not very common. According to the European Inventory of Research and Innovation Support Measures, tax incentives account for a mere 8.3% of all EU measures and measures directly supporting venture capital represent only 1.9% of total EU measures. While the use of tax incentives as a research and innovation policy tool is growing, only a few countries across the EU, mainly Sweden and the UK, can be considered experienced in implementing indirect support measures. Other countries, most notably Finland, Denmark, Germany and the Netherlands, are moving towards extending tax credits and guarantees, but with less significance and in much lower volumes.⁵

Another major concern is the financing of technology transfer from public research organisations, principally universities. While technology transfer occurs in several ways, one of the most sustainable and promising forms is the founding of spin-outs. However, under the current regulatory regime it is difficult for universities and enterprises to find adequate and flexible solutions for the IPR issues posed by this process. This prevents cooperative innovation projects from achieving the financing they require and reaching their full potential as contributors to innovation and entrepreneurship.

⁵ ERAWATCH 2012: "INNO POLICY TRENDCHART December 2012. Funding Research and Innovation in the EU and Beyond: Trends during 2010 – 2012", Brussels http://ec.europa.eu/enterprise/policies/innovation/files/inno-funding-2012_en.pdf

Case Study: Swiss Commission for Technology and Innovation CTI, Start-up and Entrepreneurship Programme

The Commission for Technology and Innovation (CTI) is the Swiss Federal Administration's agency for the promotion of innovation. In order to “promote entrepreneurial spirit”, it has launched its “Entrepreneurship Programme” which offers free-of-charge training modules to budding entrepreneurs.

Since 1996, CTI has also been helping innovative individuals to set up new companies through its “CTI Start-up” initiative. Individuals apply with a defined business idea which is then evaluated. If selected, they receive practical advice from a pool of some 40 “business coaches” and valuable contacts to the world of venture capital and to technology, marketing and patent expertise. More recently, the independent association CTI Invest has been created in order to support young companies on their way to finding initial financing.

For more information see: www.kti.admin.ch/?lang=en

Currently, direct funding by government remains a common instrument for financing innovation. Traditional forms of direct funding are not always suitable as governments are facing budget cuts due to the on-going financial crisis. Additionally the return on public investments in terms of direct funding is not always quantifiable. Therefore, it is vital to pursue additional forms of direct investment, such as government participation in investment funds. One example is the German High-Tech Gründerfond (HTGF) that provides initial financing of up to 500,000 EUR in the form of a subordinated convertible loan, and acquires a 15% nominal share of the company.⁶ In such a case it is possible that governments are rewarded for eventual wins.

Recommendations for the Member States

Given the above mentioned challenges (and acknowledging that there are several other challenges regarding innovation financing) this paper recommends that EU member states consider the following options in regard to taxation, technology transfer from universities and direct funding:

Taxation

- R&D tax credits should be used by Member State governments to encourage innovation.
- Lower levels of capital gains tax should be put in place for innovative companies. In the UK, for example, a scheme called ‘Entrepreneurial Relief’ sets capital gains tax at just 10% for the first £10 million of an entrepreneur’s exit.⁷ Such schemes have been successful in promoting innovation.
- Income tax breaks should be made available for angel investors as a reward for investing in early stage companies. The EIS and SEIS schemes in the UK are successful examples of this, as the case study below shows.

⁶ For more information on the HTGF see: <http://www.en.high-tech-gruenderfonds.de/>

⁷ For more information on Entrepreneurial Relief, see: <https://www.gov.uk/entrepreneurs-relief>

Case study: The UK EIS and SEIS schemes

The Enterprise Investment Scheme (EIS) provides incentives in the form of a variety of tax relief measures to encourage investment in SMEs. These include allowing angel investors to receive a 30% tax break on income tax if they invest in an early stage company, an incentive that has led to a shift in early-stage investment from venture capital firms to angel investors.

The new Seed Enterprise Investment Scheme (SEIS) is designed to aid new companies in raising capital. It provides 50% tax relief for investors investing in start-up companies.

Under both schemes, investments attract no capital gains tax on eventual realisation if the investments are held for three years or more.

For more information see: <http://www.hmrc.gov.uk/eis/>

Universities

Cooperative innovation projects between universities and enterprises as well as the transfer of intellectual property rights (IPR) from university to spin-out company are difficult processes. In particular, IPR issues pose a major barrier to the sourcing of adequate financing for such cooperative projects. For this reason, more flexible forms of IPR are needed. Some good practice exists, for example the EXIST program in Germany (see case study below).

To expand the capacity for universities to feed into innovation ecosystems, we call for:

- A cultural norm to be promoted within university technology transfer offices for a 2% 'golden share', whereby universities defer immediate payment for the intellectual property invested in spin-out companies in favour of 2% of proceeds when the company owner exits. This could consist of 1% philanthropic giving by the spin-off company, as recognition of the education or opportunities that the university has given its owner, and 1% in return for the intellectual property.
- The broader adoption of 'Easy IP' schemes, where in most cases the university can grant free use of a new technology developed within the university to spin-offs. The university would then re-gain that IP if it had not been exploited.

Case study – EXIST (Germany)

EXIST is a support programme set up to improve the climate for business formation at universities and other research organisations and to increase the number and success rate of technology based start-ups.

EXIST consists of three action lines: support for strengthening the entrepreneurial spirit at universities, scholarships for the preparation phase, and research transfer including technological feasibility studies.

A recent evaluation of the programme concludes that, despite certain shortcomings, the programme has produced positive impacts. A large share of projects led to successful business formation, and the resultant businesses showed a high rate of survival. Detailed analysis has revealed statistically significant relationships between support mechanisms such as business networks, mentoring and coaching and the probability of success by start-ups.

For more information see:

http://www.exist.de/englische_version/index.php

Direct funding

- Governments should commit money to provide seed funding where the market fails to do so, and in particular to technology platforms and ecosystems likely to generate further innovation. Where governments invest in venture capital funds, they should ensure that the public purse is rewarded for wins. This kind of system is already successfully carried out in Finland (by SITRA – see the case study below).
- There is a need for arms-length public bodies that provide innovation financing in European states. These bodies should consist of staff with the appropriate skills to make and manage investment in innovation. The Technology Strategy Board (TSB) in the UK is an example (among others) of how such bodies can use funding tools, procurement and thematic foci to drive innovation. SITRA, a body that takes on this role in Finland has had notable success, and is described in further detail below.

Case study: SITRA, Finland

SITRA is a public fund aimed at promoting new operating models and stimulating business through innovation in Finland, with a core focus on sustainable development. SITRA's capital was started by an endowment and its operations are funded from the returns of endowment capital and capital investments.

SITRA's operations include carrying out practical experiments, compiling cross-boundary networks and developing and financing business operations. SITRA makes investments in Finnish companies with the aim of testing new ideas, enabling risks to be taken and ultimately promoting innovation.

For more information see: www.sitra.fi/en

Innovation Financing at EU Level

The fall in lending and the availability of VC due to the financial crisis is preventing enterprises from finding the funding they require to start up, innovate and internationalise. This situation is aggravated by the strengthening of some rules, which has led investors to become increasingly risk-averse. Several upcoming EU support programmes are being structured to address this.

Starting in 2014 and with a proposed budget of €70 billion, Horizon 2020 will be the key instrument of the EU to support and to finance research and innovation in the EU. The programme aims to facilitate, and to increase expenditure on, research, innovation and technological development. In order to overcome the present limitations on innovation financing, Horizon 2020 and its programme for the Competitiveness of Enterprises and SMEs (COSME) 2014-2020 will use two financial instruments for SMEs' growth and innovation: one for equity, and one for debt. These instruments are a consistent further development of existing rules.

Under the current FP7, the EU legally disposes of an array of support instruments for financing innovations, mainly oriented towards SMEs, the most prominent being the CIP (Competitiveness and Innovation Framework Programme)⁸. During the period of 2007 – 2013 the CIP has had a budget of over €1 billion aimed at facilitating access to loans and equity finance for SMEs where the market fails to provide them. The instruments are implemented by the European Investment Fund (EIF) on a trust basis. They cover different needs depending on the stage of development of the small business by means of its “high growth and innovative SME facility” (GIF) and the “SME guarantee facility” (SMEG).⁹ Apart from these investments in venture capital funds and the provision of loan guarantees, the EU also runs European-wide networks that provide ‘one-stop shop’ services for businesses, such as the Enterprise Europe Network. These assist SMEs with internationalisation, IPR support, network development, and other key tasks. It is strongly advised that access to all these mechanisms improves, and their existence is better promoted.

Despite these efforts by the EU, there are still several considerable challenges.

Recommendations for the EU

Budget increases

- For the sake of Europe’s international credibility and future economic growth, the increases in innovation spending in Horizon 2020 from its predecessor programme (FP7), should be safeguarded and attempts to further reduce the budget in this area should be prevented.

Seed capital funding

- The EU needs to provide early stage seed capital to fund very early stage, risky innovations that the private sector is not prepared to fund, in particular technological

⁸ <http://ec.europa.eu/cip/eip/access-finance>

⁹ In 2014 CIP will be replaced by the Programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME) that aims to further facilitate the access to finance for SMEs.

platforms and ecosystems that are likely to be productive of further innovation. It is also recommended to secure and reinforce already existing instruments and to expand seed activities by the European Investment Bank (EIB) and the European Institute for Technology (EIT).

- This innovation funding should be driven by specific missions, rather than the broad challenges on which Horizon 2020 is focused. Considerable consultation and effort would need to go into developing and selecting these missions. The innovation funding mechanism could work in parallel with improved procurement processes, which could also be driven by a similar set of specific missions.

Facilitating public innovation support at national level by European states

- The EU needs to develop programmes that provide particular support to the governments and agencies involved in innovation in those states with the lowest innovation performance.
- The development of a European loan guarantee system for high growth companies would help to address the problem of banks failing to lend to innovative SMEs.
- Currently national government input into venture capital funds in European states is restricted by EU state aid rules. In most countries, there is a demand for public venture capital on a greater scale than currently exists. Restrictive state aid rules should be relaxed to allow larger funds (of €100 million typically) to be established with some measure of public underpinning.
- Support the evolution of a strong decentralised savings banking system that focusses on investing in the regional economy and building strong ties with regional companies (see case study on Germany below). Despite the competitive pressures being faced by normal commercial banking and the need to amend business models, traditional forms of banking continue to play a vital role for business across Europe. National governments should not take on the role of banks, but should ensure a functioning and diverse banking sector that includes large investment banking as well as more traditional commercial banking.

Case study: Sparkassen and Landesbanken (Germany)

In Germany, the Sparkassen (savings banks) and Landesbanken (regional banks) play a pivotal role in financing private enterprise. Collectively, they account for 42.8% of all loans to German enterprises and self-employed persons. In 2012, these financial institutions financed 10,343 start-ups with a total of €1.1 billion, creating approximately 20,000 new jobs.

During the financial crisis, financing for innovative companies came under pressure, in particular lending activities by private banks. However, the system of savings banks (such as the German Sparkassen) was not hit as hard by the crisis as the investment banking sector, primarily due to savings banks' Joint Liability Schemes, which secure all customer deposits, and their refinancing models, are mainly based on deposits.

During 2009 – 2011, the German Mittelstand suffered a credit crunch, primarily the result of a restriction of credit supply by the private banks due to macroeconomic adversity. During this period, the savings and cooperative banks were able to keep up and even expand their lending activities, providing much-needed stability to the sector and ensuring the supply of credit to SMEs.

While the Sparkassen and Landesbanken may not (and by law cannot) compete with larger investment banks, their clear advantage is the decentralised organisation and regional orientation of lending and savings activities. Based on proximity, personal contacts, and good knowledge of the regional market environment they are able to conduct informed assessments about risks and meet demand for innovation financing.

For more information see: <http://www.dsgv.de/en/index.html>

European Innovation Council

- The European Research Council (ERC) has been successful in driving excellent basic research in Europe. In the longer term, Europe should establish an Innovation Council to develop advanced research projects that address the specific missions highlighted above (see p. 9). As these require multidisciplinary, inventive, innovative and international approaches and in order to promote the transfer of outstanding and visionary scientific results into commercial industrial applications, we propose creating a European Innovation Council (EIC). By assuming the role of an umbrella forum for other existing high-level expert boards and European bodies this new organisation would ultimately reinforce leading-edge innovation in Europe.
- This paper recognises the key role for innovation-driven public procurement. This issue is taken up by the Innovation Platform in a separate paper focussed solely on procurement.

List of References

COM(2011) 811 final: Proposal for a Council Decision establishing the Specific Programme Implementing Horizon 2020 - The Framework Programme for Research and Innovation (2014-2020)

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EU (DG Enterprise and Industry) 2012: Innovation Union Scoreboard 2011, Brussels.

ERAWATCH 2012: "INNO POLICY TRENDCHART December 2012. Funding Research and Innovation in the EU and Beyond: Trends during 2010 – 2012", Brussels

Information about the Euro-CASE Innovation Platform:

Launched in 2012 the Euro-CASE Innovation Platform brings together the expertise of representatives of its member academies from science, engineering and business. The purpose of the Innovation Platform project is to help put in place the necessary conditions for Europe to increase its innovative power.

If Europe is to succeed we need to create the best possible conditions for the individual innovators, entrepreneurs, education system, research organisations and enterprises. We need to develop a culture that stimulates renewal, innovation and risk-taking.

The Euro-CASE Innovation Platform works on policy papers for Euro-CASE in order to give science based policy advice to relevant EU-Institutions and national governments.

In line with Europe 2020 and the flagships Innovation Union and Horizon 2020 the Euro-CASE Innovation Platform contributes to making Europe the most successful innovation region in the world in a proactive way.

Euro-CASE strives to support and advise the EU and national governments on relevant topics where Euro-CASE, as a pan-European organisation with broad links to both academia and industry, are in a unique position to contribute.

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This paper complies with the “Euro-CASE Guidelines on advising policy makers and society”

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