

OECD Studies on SMEs and Entrepreneurship

SMEs, ENTREPRENEURSHIP AND INNOVATION



OECD *Innovation Strategy*

OECD Studies on SMEs and Entrepreneurship

SMEs, Entrepreneurship and Innovation



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The Contributors

This publication has been prepared under the leadership of Pier Carlo Padoan (Deputy Secretary-General and Chief Economist, OECD) and the management of Sergio Arzeni (Director, Centre for Entrepreneurship, SMEs and Local Development, OECD), with support from Jonathan Potter (Senior Economist at the Centre) and Mariarosa Lunati (Senior Economist at the Centre, currently responsible for Entrepreneurship Indicators and Business Statistics in the Statistics Directorate, OECD).

The text was written by members of the Secretariat of the OECD Centre for Entrepreneurship, SMEs and Local Development: specifically, Jonathan Potter (front and back material and Chapter 1), Mariarosa Lunati and Marco Marchese (Chapter 2), Marco Marchese and Jonathan Potter (Chapter 3), Cristina Martinez-Fernandez and Jonathan Potter (Chapter 4), and Antonella Noya (Chapter 5).

Further written inputs were provided by Stefano Menghinello, National Statistical Institute, Italy (the spatial clustering analysis and annexes in Chapter 3) and Andrea Piccaluga, Scuola Superiore Sant'Anna, Pisa, Italy, and Riccardo Pietrabissa, Politecnico di Milano, Italy (sub-section of Chapter 3 on university-industry knowledge transfers).

Foreword

The combined forces of globalisation, technological progress and growing market demand have created a new type of innovation: one that is widespread across many agents and sectors and open. New firms, small and medium-sized enterprises (SMEs) and entrepreneurs are key players in this type of innovation. They are key precisely because they are now bringing new ideas to the market. That contribution to the economy is reflected in the rapid growth of some of these firms, the “gazelles” of the enterprise ecosystem. Governments are seeking ways to help them emerge and carry with them innovations that will go toward meeting our economic and social challenges. But for economic growth and adaptation, it is vital to have incremental innovation from the broader bulk of SMEs as well, and this is often lacking.

Many areas are ripe for SME and entrepreneurship policy action, and fresh innovation policy is emerging in this field in OECD countries and other global economies. This book presents the relevant data and policy information from 40 economies around the world, and so provides an insight into the various challenges of stimulating the creation of new, innovative enterprises and increasing innovation in small and medium-sized firms. Several countries are adopting a systemic policy approach in which SMEs and entrepreneurship are supported as part of broad national innovation strategies. Some countries are supporting clusters. New ways are being developed to help firms overcome the finance gap. More than ever before governments are starting to use public procurement as a means of generating innovation in new enterprises and SMEs. Much can be learned from taking stock of this policy landscape.

The numbers are themselves instructive: the small and medium-sized enterprise sector accounts for 99% of firms in the OECD area, and 50-75% of value added across these countries. SMEs innovate, but not as much on average as large firms and they are also on average less involved in collaboration for innovation activities. SME innovation is instead concentrated in some high-potential enterprises, including the “gazelles” (new firms with rapid growth). And there are, of course, barriers to innovation in SMEs. In addition to access to finance – a traditional concern of small firms – the statistics show that a key obstacle is lack of suitably qualified personnel, both scientific and managerial. Whilst government policies have long grappled with the finance issue, and some effective approaches are emerging, the need to upgrade skills in SMEs and to furnish potential entrepreneurs with skills for successfully setting up ventures is only now becoming clear.

In addition to presenting the data, the report also explores the policy imperatives in three major yet insufficiently recognised action areas that are new to much of the policy world. One concerns knowledge flows: embedding new and small firms in streams of knowledge that will enable them to obtain the ideas they require for innovation and the markets to exploit them. A major message is that small firms do not innovate by themselves but in collaboration with suppliers, customers, competitors, universities, research organisations and others. Their networks help them overcome some of the obstacles to innovation linked to their small size. And the quality of their local entrepreneurship environments – the strength of local technology partners, the quality of local science-industry linkages, and so on – is critical to generating knowledge spillovers that

promote their growth. The focus should not be entirely on the local, however. It is also important to connect small firms to global knowledge flows. Addressing these challenges is one of the major topics of this book.

A second course of policy action is to develop skills and capabilities for entrepreneurship and innovation in new firms and existing SMEs. What skills are in fact required to start firms that will innovate? How can we upgrade capabilities within the SME workforce? What skills are needed to start firms that will innovate? Universities are increasingly providing entrepreneurship training, and this book establishes core principles in this area. The efforts of vocational training institutions and schools are also central to meeting the challenge. But entrepreneurship education is not confined to the classroom or formal structures for learning. Employees also acquire entrepreneurship skills through interactions with their co-workers, suppliers, clients and consultants on projects such as those to improve quality control methods or products. These interactions often take place through interactions between SMEs and providers of what are known as Knowledge Intensive Service Activities (KISAs). The book examines this challenge too, and stresses the need for comprehensive skill strategies to respond.

The third action area is one that is sparking growing policy interest: social entrepreneurship and social innovation. These fit well with the broader notion of innovation that governments are now beginning to adopt, as they realise that the innovation our societies require is not delivered solely through science and R&D but also through actors who put the social first. The goal of social entrepreneurs and enterprises is to provide innovative solutions to unsolved social problems; an example is the Health and Social Care Co-operative in Korea. Social innovation refers to social change implemented in response to social needs and challenges. Individual Development Accounts introduced in the United States, for instance, match the savings that poor people can accumulate with foundation or public money to help them build an asset base from which to grow. These areas are examined, definitions are provided and the main policy needs – those that will render the enabling environment more favourable – are identified.

In highlighting the importance of SMEs and entrepreneurship to innovation in the 21st century and the role of policy in responding to the challenges they face, this book functions as an important complement to the overall OECD Innovation Strategy. The Strategy is a comprehensive set of analyses, policy principles and policy tools that the OECD offers to governments around the world in order to assist them in designing appropriate innovation policies. One of the main planks of their efforts must be the promotion of innovation in SMEs and of innovative new entrepreneurship, and this book identifies new directions for policy in this area.

The book is a flagship publication of the Centre for Entrepreneurship, SMEs and Local Development of the OECD. It is intended to be part of a regular OECD series, providing up-to-date data and highlighting current policy issues of greatest concern. It draws in particular on the expertise and analysis of the OECD's Working Party on SMEs and Entrepreneurship and the Directing Committee of the Local Economic and Employment Development Programme. I would like to thank the delegates, experts and Secretariat members for their contributions. I trust that this publication will provide inspiration to policy makers around the world and, through their efforts, help new and small firms to compete and grow.

Pier Carlo Padoan, Deputy Secretary-General and Chief Economist, OECD

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The following experts comprised the Scientific Advisory Group that helped guide preparation of this publication:

Professor Franco Malerba, Director of KITES (Centre on Knowledge, Internationalisation and Technology Studies), University of Bocconi, Italy

Professor Jay Mitra, Director of the Centre for Entrepreneurship Research, Essex Business School, University of Essex, United Kingdom and Scientific Advisor on Entrepreneurship to the OECD Centre for Entrepreneurship, SMEs and Local Development

Professor Juan Roure, Professor of Entrepreneurship, and *Juan Luis Segurado*, Senior Researcher on entrepreneurship and SME financing, at IESE Business School, University of Navarra, Barcelona, Spain

Professor Luc Soete, Director of UNU-MERIT (the United Nations University – Maastricht Economic and social Research and training centre on Innovation and Technology), Netherlands

Karen Wilson, Senior Fellow at Kauffman Foundation and Director GV Partners, France

Assistance in developing the Country Notes was provided by the following experts:

Petr Adamek, Bergman Group, Czech Republic

Rudy Aernoudt, Ghent University and Brussels University, Belgium

Erma Aminullah, Indonesian Institute of Science, Indonesia

Spyros Arvantis, Federal Institute of Technology (KOF-ETHZ), Switzerland

Kristoffer Astrup, Danish Enterprise and Construction Authority, Denmark

Paul Atkinson, INSEAD, France

Claudine Bichera de Oliveira, The Information Society Institute, Brazil

William Blankley, Human Sciences Research Council, South Africa.

Patric Boekholt, Technopolis, Netherlands

Nadine Brown, Ministry of Economic Development, New Zealand

Maja Bucar, University of Ljubljana, Slovenia

Giorgio Calcagnini, University of Urbino, Italy

Aruna Deo, University of Western Sydney, Australia

Jo Doyle, Ministry of Economic Development, New Zealand

Michael Eilan, Israel Business Information Services Consulting, Israel

Sirin Elci, Technopolis, Turkey

Ilario Favaretto, University of Urbino, Italy

Yacov Fisher, Israel Business Information Services Consulting, Israel
Claudia Gonzalez Brambila, Mexican Autonomous Institute of Technology, Mexico
Ebbe Gravensen, University of Aarhus, Denmark
Heike Grimm, University of Erfurt, Germany
Berglind Hallgrímsdóttir, Innovation Centre Iceland, Iceland
Jain Alain Heraud, University of Strasbourg, France
Can Huang, UNU-MERIT, Maastricht University, Netherlands
Ron Immink, Bookbuzz and Driveforgrowth, Ireland
Jurgen Janger, Austria National Bank, Austria
Jari Kuusisto, Lappeenranta University of Technology, Finland
Leonardo Latelier, University of Chile, Chile
Asa Lindholm Dahlstrand, University of Chalmers, Sweden
Katrín Mannik, Technopolis, Estonia
Jaan Masso, Tartu University, Estonia
Jay Mitra, University of Essex, United Kingdom
Alexey Prazdnichnykh, Bauman Innovation, Russia
Alisdair Reid, Technopolis, Belgium
Stephen Roper, University of Warwick, United Kingdom
Juan Carlos Scapini, Central University of Chile, Chile
Vitor Simões, Technical University of Lisbon Portugal
Karen Siune, University of Aarhus, Denmark
Olav Spilling, NIFUSTEP – Research Institute for Innovation, Research and Education,
Norway
David Storey, University of Warwick, United Kingdom
Joonghae Suh, Korean Development Institute, Korea
Annamária Szukics, Ministry for National Development and the Economy, Hungary
Lena Tsipouri, University of Athens, Greece
Arnold Verbeek, Ideacconsult, Belgium
Charles Wessner, National Academy of Science, Technology, Entrepreneurship and
Innovation, USA
David Wolfe, University of Toronto, Canada
Lee Woolgar, National Graduate Institute for Policy Studies, Japan
Martin Wörter, Swiss Economic Institute – Federal Institute of Technology (KOF-ETHZ).

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The analysis and recommendations presented in this publication have been reviewed and accepted by the delegates to the OECD's Working Party on SMEs and Entrepreneurship and the Directing Committee of the Local Economic and Employment Development Programme.

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Executive Summary

Innovation is one of the most fundamental processes underpinning economic growth, the driver of growth in output per unit of labour and capital invested, and an important basis for developing solutions to economic and social challenges such as climate change, ageing societies and poverty.

The innovation process, however, requires significant and appropriate public policy support to secure the social benefits it can deliver. The OECD is therefore working with governments around the globe to produce a set of policy recommendations, adapted to the current environment and based on sound analysis, that propose how governments and their partners can support innovation in new and more effective ways. These recommendations and the analysis underpinning them are brought together in the *OECD Innovation Strategy*. This book is part of that Strategy: it focuses on one of its major themes, increasing the contribution of new entrepreneurial ventures and small and medium-sized enterprises (SMEs) to innovation.

The double focus on SMEs and entrepreneurship in new ventures is itself an important development. Whereas in the past innovation policy worked through investments in research and development, a broader view now needs to be taken of where innovation occurs and the conditions needed to support it. Innovation is not just science and technology; it is also the creation of a multitude of new products and services in all sectors of the economy, new marketing methods and changes in ways of organising businesses, in their business practices, workplace organisation and external relations. In this framework, new firm creation through entrepreneurship (which typically generates new SME entities but occasionally also “born large” firms) and innovations in existing SMEs play an important role.

The purpose of this book, then, is to examine how governments and their agents can boost innovation by improving environments for enterprise creation and innovation in small and medium-sized firms and strengthening the capabilities of entrepreneurs and SMEs. It examines the innovation performance of new firms and SMEs, the factors driving it forward and holding it back, and the implications for policy.

In examining these questions, the book:

- Sets out the role of SMEs and entrepreneurship in innovation and the drivers of and influences on innovation performance. It makes a distinction between a few very high-performance new and small firms that can have a disproportionate effect on innovation – often by introducing breakthrough innovations to the market – and the bulk of SMEs and entrepreneurs, which have more modest economic impacts individually but together make a substantial difference.
- Presents a set of country-level data on SMEs, entrepreneurship and innovation performance, and a review of major policies and new policy developments in the field.

This information is presented in the form of Country Notes for OECD members and a selected group of non-members.

- Examines three novel but also critical aspects of policies for SME innovation and innovative entrepreneurship:
 - ❖ The participation of new and small firms within global and local knowledge flows, and the barriers that policy should address.
 - ❖ The need for education and training systems to change so as to better foster the growth of entrepreneurial human capital.
 - ❖ The importance of social enterprises and social innovation and the need for an evolution in the governing institutional frameworks in order to facilitate their growth.

Major findings and messages

The environment for innovation has changed; *the importance of new and small firms to the innovation process has increased*. Increasing incomes, more “niched” market demand and changing technologies have reduced the structural disadvantages of small firm size stemming from their more limited economies of scale. In addition, the knowledge economy, more open and distributed innovation, globalisation, a shift to non-technological innovation, the emergence of the “Silicon Valley Business Model” and a new imperative for social innovation and social entrepreneurship have all given rise to a new “entrepreneurial economy”, as opposed to the “managed economy” of the past.

New business ventures and SMEs have a number of critical roles to play in supporting innovation. New firm entry and SME growth contribute to *upgrading the aggregate productivity* of the economy by displacing firms with lower productivity and placing incumbents under competitive threat. New spin-off ventures enable the *commercialisation of knowledge* that would otherwise remain un-commercialised in large firms, universities and research organisations. Small firms on average do not appear to be more innovative after allowing for their size, but they are often active in *breakthrough innovations*. New and small firms also *participate strongly in the flow of knowledge* within innovation systems, not just as knowledge exploiters but also as knowledge sources.

But there is *an uneven distribution of small firm innovation* between a few highly innovative and high-growth-potential firms and the great majority of SMEs that innovate very little compared to their larger counterparts. Policies will need to distinguish clearly between these two groups of firms, reflecting the different ways in which they innovate. The different needs can be characterised by a distinction between a Science, Technology and Innovation mode of innovation on the one hand, focused on R&D and breakthrough innovations, and a Doing, Using and Interacting mode of innovation on the other, focused on incremental innovations in the “ordinary” SME. Both must be encouraged.

On average across the OECD area, SMEs represent a *major share of all firms (99%), all employment (approximately two-thirds) and all value added (over one-half)*. These shares vary significantly by country. Among those presented in Chapter 2, SME activity shares range from minima of 47.2% of employment in industry in the Slovak Republic, 52.6% of employment in services in the United Kingdom and 49.9% of value added in Ireland, to 85.4% of employment in industry, 88.8% of employment in services and 75.2% of value added in Greece, where SMEs are particularly significant. The data also show substantial

shares of total activity accounted for by each of the sub-categories of micro, small- and medium-sized firms.

The data suggest that *SMEs innovate less than large firms* across a range of categories including product innovation, process innovation, non-technological innovation, new-to-market product innovations and collaboration in innovation activities. For example, in Sweden only approximately one-in-five SMEs had introduced a product innovation in the last three years compared to nearly one-half of larger firms. However, when adjusted for size, the innovation gap tends to be smaller, at least when measured in terms of share of turnover due to new-to-market product innovations. In the case of Sweden, approximately 8% of turnover was due to new-to-market innovations in SMEs, compared with approximately 14% of turnover in larger firms.

There are *significant burdens on SME innovation performance* and the administrative process of starting businesses. Large firms also experience problems, but there are certain areas in which SMEs suffer to a greater extent than their larger counterparts, including access to internal and external financing and availability of qualified personnel. For example, in Italy approximately 11% of small firms report lack of qualified personnel as a barrier to innovation, compared with 6% in large firms; and whereas only 15% of large firms report lack of external finance as a barrier, nearly 20% of SMEs do. However, while SME financing problems have generally been recognised by policy makers, the barrier of skills in SMEs has received less attention.

Many *new policies have been pursued* to foster the creation of new innovative enterprises and encourage SME innovation in the countries reviewed. For example, the Austrian programme “AplusB” (Academia plus Business) financially supports centres at universities to foster academic spin-offs. In the Netherlands the *TechnoPartner* programme provides a “package” of policy instruments (seed capital, patenting support, credit guarantees, coaching of entrepreneurs, angel investment) promoting more and better technology-based start-ups (“technostarters”) in and around universities. These programmes can provide inspiration for policy development in other countries.

The first of the thematic chapters examines knowledge flows. The major message is that *new firms and SMEs do not innovate alone* but rather in collaboration with others, including with their suppliers and customers, and with universities and research organisations. Collaboration is an important element in the strategies of innovative SMEs to overcome some of the barriers they face, including limited funding and the lack of management resources, technological competences, and adequate time horizons to invest in a long-term strategy.

There is strong *spatial clustering in knowledge-driven sectors*, i.e. those where R&D intensity, basic university research and highly-skilled workers are most important. This is associated with important local knowledge spillovers in these sectors. Local business linkages and networks are therefore critical to new and small firm innovation.

However, globalisation has also created new opportunities for domestic knowledge to be exploited overseas and for tapping into knowledge generated abroad, raising a new challenge: *connecting to global knowledge flows*. Governments are increasingly promoting global knowledge flows through initiatives to support cross-border alliances among and between firms and research organisations; to create linkages between SMEs and foreign direct investment ventures; and to attract highly-skilled labour from abroad.

The second thematic chapter examines the issue of skills. *Higher education institutions are increasingly providing entrepreneurship education.* This works best when entrepreneurship support is embedded within teaching, entrepreneurship is seen as a strategic objective and ambition of the institutions, clear incentives and rewards are applied for academic staff engaged in entrepreneurship promotion, support is provided for financial and human resources, and entrepreneurship-dedicated structures are in place such as chairs, centres and incubation facilities. Start-up assistance and evaluations of support approaches should also be put in place surrounding the entrepreneurship courses. Entrepreneurship is also increasingly provided in vocational education and training and schools. For example, apprenticeship programmes are good vehicles for developing entrepreneurship skills, but SME participation in apprenticeship and other vocational training is relatively limited, potentially reflecting inappropriate training supply. Shifts are also occurring in school curriculums aimed at fostering in students the ability and desire to act entrepreneurially.

As well as gaps in external provision of entrepreneurship training, in-house training of employees by SMEs is much less common than for large firms. Despite the general importance of vocational education and training (VET) to skills development in firms, *enterprises with less than 50 employees provide significantly less employee training than larger firms.* This is even true for countries known for their strong training cultures, such as Denmark, the Netherlands, Norway and Sweden. There is also a systematic access gap: younger, better-educated workers in highly-skilled occupations such as managers, professionals and technicians have greater access to training opportunities than less educated “routine” (i.e. involved in routine tasks) and older workers. One of the problems is that externally-provided entrepreneurship training approaches for managers and workers are not sufficiently geared to the “how to” nature of competences that firms require.

The smart use of *Knowledge Intensive Service Activities (KISAs)* by SMEs can nevertheless provide a significant boost to the *entrepreneurship skills of SME employees.* This involves SMEs bringing in outside firms and consultants to help them implement change, for example in quality control, marketing or product development. Experts may be called on in a range of areas, such as in research and development, legal, information technology, marketing and other knowledge-intensive activities. Their advice and joint work with SME workforces upgrades skills, increasing the ability of SMEs to develop, absorb and apply knowledge in their broader innovation processes. Yet despite the capacity to support learning in this way, engagement with KISAs is not part of recognised public SME training support programmes.

There is much to be gained from a policy approach which recognises that SME skill acquisition occurs in the context of local skill ecosystems. The concept of skills ecosystems directs attention to the *interdependency of multiple actors and policies in creating and sustaining the local conditions under which appropriate skills can be developed and deployed* in particular regions. These ecosystems involve regional and industry-specific networks that bring together public and private training providers (colleges, universities, etc.), employers, industry representatives, unions, labour market and training intermediaries (temporary work agencies and group training companies), local and regional government agencies, and community representatives, in order to develop skill strategies and deliver training.

The final thematic chapter concerns social entrepreneurship and social innovation. Defining social entrepreneurship is both challenging, given the newness of the concept and differences in how it is conceived across countries, and important for the provision of appropriate legal and administrative environments. The key characteristic of social

entrepreneurship is that it aims to provide innovative solutions to unsolved social problems through some form of business. It often goes hand in hand with social innovation processes. Social entrepreneurship is in fact best thought of as a vehicle and agent of social innovation, although it is not the only one. Examples include individual social entrepreneurs, such as scientist Victoria G. Hale who founded the Institute for One World Health, collective organisations such as the Wonju Health and Social Care Co-operative in Korea, and charities such as the Silai for Skills women’s training and employment initiative in Bristol, United Kingdom.

Social enterprises, like associations or co-operatives, often need different support from that provided to traditional businesses. This support must be cognisant of their special engagement toward social responsibility.

Like social entrepreneurship, social innovation has blurred boundaries. In global terms, however, *social innovation is about social change in response to social needs and challenges.* The OECD has developed the following definition. Social innovation “implies conceptual, process or product change, organisational change and changes in financing, and can deal with new relationships with stakeholders and territories. It seeks new answers to social problems by identifying and delivering new services that improve the quality of life of individuals and communities and identifying and implementing new labour market integration processes, new competencies, new jobs, and new forms of participation, as diverse elements that each contribute to improving the position of individuals in the workforce.”

Recommendations

The main recommendation of the book is that *policies to strengthen entrepreneurship and increase the innovation capabilities of SMEs should be one of the main planks of government innovation strategies.* Furthermore, governments should target SMEs and entrepreneurship as a *major potential source of new jobs* in the recovery from recession. Indeed, well-designed policies may achieve two objectives at the same time: job creation from new firm start-up and SME growth and productivity improvements from increased new and small firm innovation.

To realise these benefits, governments should introduce an *innovation strategy for SMEs and entrepreneurship.* It should stress actions in four main areas (see Annex A, pp. 216-217):

1. Promoting conducive entrepreneurship cultures and framework conditions.
2. Increasing the participation of new firms and SMEs in knowledge flows.
3. Strengthening entrepreneurial human capital.
4. Improving the environment for social entrepreneurship and social innovation.

Favourable entrepreneurship cultures and framework conditions are the foundation of innovative entrepreneurship and social innovation. This covers a range of issues and fields, including securing stable macroeconomic policies, well-designed mainstream policies, enabling regulatory frameworks and tax regimes and positive attitudes to entrepreneurs and entrepreneurship. The following key actions are recommended in this area:

- Foster *positive attitudes* in society to business start up and growth, including through education and the media.

- Ensure that the specific needs and conditions of entrepreneurship and SME activity are taken into account in *framework conditions and regulations affecting business*.
- Facilitate the inter-linked processes of *firm dynamics*, or the combined package of firm entry, growth, decline and exit.
- *Tackle finance gaps* affecting new and small firms, such as in the early stages of innovation.
- Secure conducive conditions for both *high-employment-growth firms* and *innovation in the bulk of new and small firms*.

The emphasis on *knowledge flows* stems from the fact that innovation in firms is not an isolated process, but is enabled by many connections with outside actors. As well as intellectual capital protection, sources of finance, competitive markets, human capital and so on, entrepreneurs and small firms need access to knowledge to innovate. This knowledge is created and exchanged within open and distributed innovation systems at global and local levels involving interactions among customers, suppliers, competitors, and market and technology collaborators. The following recommendations are offered to policy makers seeking to facilitate knowledge flows:

- *Strengthen knowledge-based entrepreneurship* by providing advice and training to start-up entrepreneurs who have strong technological knowledge but lack market and commercial expertise. Programmes should also be developed to promote corporate and university spin-offs with initiatives for proof-of-concept (i.e. testing the technical and commercial viability of early-stage innovative ideas), pre-competitive research and seed funding.
- *Promote partnerships within innovation systems* that involve large and small firms, universities and research institutes, and governments and their development agencies. Use these partnerships to provide soft enterprise support infrastructure (e.g. science parks and business incubators), collaborative research opportunities, services for knowledge transfer (e.g. innovation brokers, labour mobility schemes, programmes for the commercialisation of university research), and intelligence functions aimed at anticipating future needs and opportunities and acting on them through the partnership.
- *Stimulate local knowledge flows* in the following ways: Involve SMEs in interactive learning networks, for example through cluster programmes and programmes to encourage informal interpersonal interactions among entrepreneurs alongside more formal networks, for instance through shared space and facilities. Encourage local universities and research institutes to be actively involved in a “third mission” of helping develop the locality in which they are embedded, for example through collaborative research and consultancy with SMEs, and through technology-bridging institutions that help shape the direction of research and facilitate technology transfers. Strengthen the absorptive capacity of SMEs, for example with skills development and innovation purchasing initiatives. Promote local labour mobility such as through university-industry staff exchange programmes.
- *Use the concept of “related variety”* to guide policy. Related variety strategies promote knowledge spillovers among sectors with related competences and knowledge bases in order to generate new combinations of activities with strong growth potential.
- *Encourage openness to global sources of knowledge* by facilitating cross-border strategic alliances, securing better local embedding of foreign direct investment ventures, and attracting highly-skilled labour from abroad:
 - ❖ Measures for SME cross-border alliances should include providing information and connections to SMEs on potential strategic partners overseas, and supporting SMEs in

their efforts to upgrade their R&D, skills and technologies so as to facilitate the move into more knowledge-intensive networking.

- ❖ Embedding of foreign direct investment ventures should be promoted through integration of inward investment policies and cluster policies; promotion of corporate spin-offs from foreign direct investors; and joint technology development and training initiatives involving foreign affiliates and local SMEs.
- ❖ In the spirit of “brain circulation”, policy should seek to attract talented labour from other countries and facilitate diaspora return. Options include support for attraction of students and researchers into higher education institutions; promoting co-operation between industry and universities in training and hosting researchers; and making diaspora populations aware of local job vacancies.

Learning processes are at the core of entrepreneurship and SME innovation. Yet many emerging and potential business creators are lacking *entrepreneurship skills* such as in risk assessment, strategic thinking, networking, and motivating. These skills are also critical to innovation by employees in existing SMEs. The following recommendations are offered:

- *Build up entrepreneurship education in universities and higher education institutions* by smartly scaling-up, shifting the emphasis from business management to growth-oriented entrepreneurship, introducing interactive teaching methods that incorporate practical experience and linking into wider networks including alumni networks and external economic development organisations.
- *Strengthen VET programmes for business founders, SME managers and SME workforces* by changing the nature of vocational education and training to better fit the needs and motivations of entrepreneurs, offering short duration “Innovation Bootcamps” for SME owner-managers such as weekend seminars and short online courses, and increasing the flexibility of vocational education and training for SME workforces.
- *Embed teaching of an entrepreneurship mindset* in school curricula and accompany this with relevant teacher training and teaching materials designed for entrepreneurship.
- *Reinforce training in SMEs* by launching in-company projects and increasing SME apprenticeships and developing the training function of small business support programmes, such as for business succession, management and training and business counselling.
- *Increase the use of informal learning sources*, by facilitating collaborations with firms and consultants providing knowledge-intensive service activities (KISA), for example using “innovation vouchers” for SMEs.
- *Strengthen local skills ecosystems*. Promote greater participation of SMEs in local training programmes through the engagement of employers, unions and individuals. Create integrated training strategies combining training located in higher education, vocational education and training, and formal and informal training in SMEs.

Finally, the importance of meeting social needs and promoting sustainable development should not be underestimated in innovation policy. Encouraging *social entrepreneurship and social innovation* will help in this respect. The key recommendations are to:

- *Improve financial, fiscal, legal and regulatory environments*. Build environments that enable social enterprises to meet their economic and social goals. Facilitate the development of a social investment marketplace, for example with fiscal incentives to attract investors, multiple forms of credit enhancement, and seed funding programmes for individuals in

the early phases of social entrepreneurship projects. Introduce public procurement measures that include socio-environmental criteria. Experiment with innovative institutional arrangements between civil society, governments, financial institutions and social enterprise ventures.

- *Undertake research into social entrepreneurship and social innovation* and their main components in order to assess the needs of the various entities belonging to the sector. Work to create a clear definition of social innovation and an understanding of how to develop it.
- *Evaluate the impacts of social entrepreneurship and social innovation*, using appropriate methods such as Social Return on Investment measures and balanced scorecards.
- *Provide training opportunities* to social entrepreneurs and include social entrepreneurship in school and university curricula.
- *Introduce social clauses in public procurement procedures* to encourage involvement of social enterprises in provision of social goods and services.
- *Establish social innovation funds*, dedicated to specific fields where social innovation is needed (eldercare and climate change) or to supporting promising experiments and models.
- *Create incubators for social enterprises and social innovation intermediaries* to bring together the skills and expertise necessary to help sustain and develop social projects, provide a space to experiment, support learning across a community of innovators and establish clear pathways for scaling up the most promising models.

Chapter 1

Introduction

The introduction examines what is new about innovation in the 21st century and the role played by SMEs and entrepreneurship. An important shift has occurred from the “managed” to the “entrepreneurial” economy, associated with a fall in the importance of economies of scale in production, management, finance and R&D. It is characterised by a series of trends encompassing the emergence of the knowledge economy, open innovation, global connections, non-technological innovation, the “Silicon Valley Business Model” and social entrepreneurship and social innovation. SMEs and new business ventures are important players in this new environment. They have a key role in processes of creative destruction, knowledge exploitation, breakthrough and incremental innovation, and interactive learning. Ensuring they reach their full potential requires a new innovation policy approach that facilitates entrepreneurship and SME innovation. Priorities include inserting new and small firms in knowledge transfer networks, strengthening entrepreneurship skills, and improving institutional environments for social entrepreneurship.

The creation of new business ventures and innovation in existing small and medium-sized enterprises (SMEs) are critical parts of today's innovation process, and should take a central place in government strategies to promote innovation. Despite their importance, however, SME and entrepreneurship support is not yet fully embedded in innovation policy, and the requirements for effective policies in this area are still not well enough understood.

New firms and innovating SMEs are best seen as agents of change in the economy, introducing new products and services and more efficient ways of working. They underpin the adaptation of our economies and societies to new challenges and drive economic development.

Not all new and small firms are equal in innovation, of course. On one hand, there is a small group of highly innovative and high-growth-potential firms with important individual impacts on jobs and productivity. But their numbers from the Entrepreneurship Indicators Project should not be exaggerated. They make up only a small minority of all SMEs. OECD figures for eleven OECD countries suggest for example that "high-growth enterprises" account for between only 2 and 8 per cent of all enterprises with 10 or more employees, while "gazelles" account for less than 1 per cent of such enterprises.¹ They nonetheless generate large impacts. Anyadike-Danes *et al.* (2009) calculate, for example, that the six per cent of UK businesses with the highest growth rates generated half of the new jobs created by existing businesses between 2002 and 2008. Innovation is a source of the growth of these types of firms (Mason *et al.*, 2009).² The Global Entrepreneurship Monitor survey in 53 countries suggests that only 6.5% of new entrepreneurs are "high-expectation entrepreneurs", who expected to create 20 or more jobs in five years time. Almost 90% of all expected new jobs were foreseen by less than one-quarter of nascent and new entrepreneurs (Autio, 2007). On the other hand, there is the vast majority of SMEs that innovate very little compared to large firms and are associated with only modest growth or decline. Yet these firms should not be neglected either, since even small innovations and small differences in growth amount to a lot when multiplied by the number of firms involved. This book addresses itself to both components of new and small firm innovation.

Many empirical studies have shown the aggregate relationships between entrepreneurship and SME activity and economic growth and job creation. These growth and job creation effects happen through innovation, as new firm creation and SME growth increase productivity and bring new or under-utilised resources into use. Various studies have shown how greater small business numbers and business start-up rates are associated with more rapid economic growth (Audretsch and Thurik, 2001; Audretsch and Keilbach, 2005; Acs *et al.*, 2005; Erken *et al.*, 2008). There is also an important link between new and small firm activity and job creation, as new and small firms take up labour released by downsizing elsewhere in the economy and increase national and local competitiveness (Neumark *et al.*, 2008; Haltiwanger, 1999; Daviddson *et al.*, 1999; Halabisky, 2006; Henrekson and Johansson, 2008). Stangler and Litan (2009) for example show that from 1980-2005 nearly all net job creation in the United States occurred in firms less than five years old, while in

2007 two-thirds of the entire pool of new jobs were created by firms aged between one and five years (hence excluding the very newest and most vulnerable to closure).

This job creation function of entrepreneurship and SME development is of great relevance to the recovery from the global financial and economic crisis since it is clear that policies enabling innovation in new and small businesses will have benefits not just for improving products and services and increasing efficiency but also for meeting the job creation challenge of high unemployment. In the short to medium term there is a real opportunity for governments to use policies for entrepreneurship and SME innovation to meet productivity and job creation objectives at the same time.

There is growing, if still insufficient, recognition that entrepreneurship and small firm development promotes innovation and in so doing meets fundamental economic and social objectives. What is still lacking, however, is a solid and comprehensive understanding of what policy needs to do to release the innovation capacity of new and small firms. This book addresses the issue. It is intended to offer an “*Innovation Strategy for SMEs and Entrepreneurship*”, aimed at policy makers and their advisors with direct responsibility for entrepreneurship and SME policy or working in other policy domains such as education, innovation and social policy who could better realise their goals by adopting strategies that are more aware of and sensitive to the needs and opportunities of SMEs and entrepreneurship.

This chapter sets the context. It focuses on two key questions and draws out the policy implications of each: What is different about innovation in the 21st century (and has SME innovation become more important)? What role do new and small firms play in today’s innovation processes? The major argument presented here is also the leitmotif of the book: A new type of innovation has emerged in recent years, which relies much more strongly than in the past on entrepreneurship and SMEs, but institutions and policies have yet to fully adapt to this new reality. To do so, a wider agenda must be adopted that encompasses stimulating SME participation in knowledge networks, developing entrepreneurial human capital and bringing about social entrepreneurship and social innovation.

The chapter starts by examining how global trends towards the knowledge economy, open innovation, global connections and non-technological innovation and the emergence of national and regional economic models and new types of social innovation have increased the importance of SMEs and entrepreneurship to innovation. It then discusses how SMEs and entrepreneurship contribute to innovation by driving processes of creative destruction, commercialising research, making break through and incremental innovations, participating in interactive learning processes and working in different modes of innovation. The major policy implications are then pulled out. The final section sets out how the main themes are developed further in the rest of book.

What is new about innovation in the 21st century?

The innovation process of the 21st century is radically different to that of the preceding one. Perhaps the most important difference is the new or renewed importance of new and small firms. The change can be resumed as a shift from the “Managed Economy” to the “Entrepreneurial Economy” (Thurik, 2009; Audretsch and Thurik, 2004). In the former, science and systematic large firm R&D was the key. In the latter, entrepreneurship is one of the foundations of innovation.

New and small firms have become critical innovation players because of their ability to recognise and exploit the commercial opportunities emerging from technological, competitive and market changes. Furthermore, economies of scale in research and development are no longer the barriers they once were to small firm participation in innovation. Rather, innovation today tends to be carried out in collaborations among universities, research organisations, customer, supplier and competitor firms and consumers, with costs and roles shared, while the massive shift from manufacturing to services is bringing with it new types of non-technological innovation that render economies of scale in R&D far less significant.

In presenting the shift from the “managed” to the “entrepreneurial economy”, Thurik (2009) distinguishes between three major historical phases of innovation and contrasts the importance of SMEs and entrepreneurship in each.

1. *The Schumpeter Mark I regime*. Schumpeter’s initial view was developed in the first decades of the 20th century. Schumpeter in this period saw the entrepreneur as playing a major role in challenging incumbent firms by introducing new inventions rendering current technologies and products obsolete, thus replacing obsolete businesses with new ones in a process of industrial reorganisation or “creative destruction” (Schumpeter, 1934).
2. *The Schumpeter Mark II regime or the “Managed Economy”*. Schumpeter later revised his view as the power of large firms began to grow, exploiting high price elasticities of demand (Schumpeter, 1942). Innovation from the 1940s to the 1970s fits this model: dominated by large corporations able to exploit large economies of scale in production, distribution, management and R&D (Chandler, 1977; Galbraith, 1972). Studies suggested that SMEs participated only to a limited degree in innovation in this period, reflecting their low R&D expenditures (Scherer, 1991; Acs and Audretsch, 1990). These years correspond to what Thurik refers to as the Schumpeter Mark II regime, or the “Managed Economy”. In this new environment, established and large firms were seen to outperform new and smaller firms in innovation because of a close link between in-firm R&D spending and innovation.
3. *The “Entrepreneurial Economy”*. From the late 1970s to today the structures and operations of advanced economies have again been changing. Now, the importance of economies of scale has reduced and the role of new and small firms in innovation and economic development has grown again.

The key to understanding the renewed role of SMEs and entrepreneurship in today’s economy is the reduced importance of economies of scale and scope in production, management, finance and R&D. This has occurred for a number of reasons. As incomes have risen, consumers have developed an increasing taste for variety. This is associated with the emergence of multiple market niches, which new and small firms are quick to fill. Changing markets, increased competition and new technologies have reduced product life times, demanding more rapid creation of products and their more rapid destruction. New technologies such as computer-numerically-controlled production tools have made it possible for small firms in many industries to produce small batches as efficiently as large firms once produced large batches. These trends have favoured the new and small firm, or at least taken away much of one of the main advantages that large firms enjoyed in the past – namely producing standardised products in large volumes at low cost. Thus a major force in the emergence of the “entrepreneurial economy” has been a reduction in the product standardisation that was the force of large firms in the middle of the 20th century. New information and communications technologies also appear to have played a role, by

reducing the transaction costs associated with managing different parts of the production process, hence reducing the importance of co-ordination by hierarchies (within vertically- and horizontally-integrated firms) as opposed to co-ordination by markets (Williamson, 1975). All this has been associated with what has been termed “flexible specialisation”, i.e. the capacity of firms and economies to specialise, able to produce output for niche markets, at the same time as to be flexible, and adapt their output rapidly as markets change (Piore and Sabel, 1984; Hirst and Zeitlin, 1992). This does not mean that large firms have been supplanted. They too can practise flexible specialisation and may play important roles in flexibly-specialised industrial districts for example (Chiarvesio *et al.*, 2010; Sabel, 1989). Nevertheless, what has emerged is an environment in which entrepreneurship and SMEs have moved up the agenda.

A number of further associated trends have changed the way that innovation is carried out in the 21st century, with significant implications for the importance of new and small firm innovation and how it operates: the knowledge economy; open innovation; global connections; non-technological innovation; the “Silicon Valley Business Model”, and social innovation and social entrepreneurship. These are discussed in turn.

The knowledge economy

One of the features of the transition from the 20th to the 21st century has been the emergence of the knowledge economy, which has significant implications for the importance of new and small firms in innovation and how they innovate. One of the reasons for its arrival has been the out-sourcing of standardised production from high- to low-labour-cost countries and hence a shift in the specialisation of advanced-economy firms towards more knowledge-based activities that are more closely tied to local knowledge resources and capabilities. However, the knowledge economy is not just an advanced world phenomenon. Emerging economies as well are engaging more with science and technology and ideas-based production as firms around the world all seek to achieve product differentiation and greater productive efficiency. In this new environment, it is the creativity and adaptability in applying knowledge provided by SMEs and entrepreneurship that have made them essential drivers of innovation, growth and employment creation.

The major feature of the knowledge economy is the increased importance of knowledge as a factor of production. As Romer (1986) points out, there is something particular about knowledge as a factor: It is non-rival, cheap to share, pervasive and generates an aggregate learning curve effect that increases the productivity of new knowledge investments. This is what is now generally seen by economists to be the major factor behind the bulk of economic growth, the growth that is not due to additions to capital and labour stocks. It is therefore critical for policy to stimulate knowledge creation and exploitation in firms.

Some of the ideas driving economic growth may be the result of scientific breakthroughs in large firms and universities, but the capacity of entrepreneurs to commercialise this type of invention through spin-off enterprises and knowledge transfers is critical. Others may be small ideas, but they still require entrepreneurs and SME workforces that are able to generate and exploit them by applying creativity and problem-solving approaches. Indeed, one of the reasons that new start-ups and small firms have become more important today is that innovation in the knowledge economy is coming from creativity and the unexpected, and this is more likely to be found in new and small operations than in the systematic research that characterises large firm R&D laboratories.

Open and distributed innovation

Innovation today involves going beyond exclusive reliance on internal ideas from within any one business for development (“closed innovation”) to innovation that leverages internal *and* external sources of ideas and paths to market, i.e. “open innovation” (Chesbrough, 2006). This has put an end to the “knowledge monopolies” of large firm R&D laboratories and opened up innovation to new enterprises and SMEs that participate in knowledge transfer networks with universities, large firms and other players.

Not all firms and sectors are heavily involved in open innovation and some activities remain in-house, but as a general trend there is increasing collaboration among external actors in the innovation process, as demonstrated for example by growing numbers of joint patent applications (OECD, 2008). The collaborations involved range from joint ventures and joint development contracts to contract R&D, licensing and venturing, including small firms as well as large ones.

External ideas for innovation can come from many places – from collaborations with universities and other firms or business angels, from labour mobility among firms and organisations and from informal social capital contacts. A further increasingly important source is the consumer or user. Users and consumers are playing a growing role in innovation, for example in helping to test new products. New ICT in particular helps users and consumers to input into decision making about product design.

The key consequences are the increased importance of collaboration and the opening of innovation to SMEs. It implies, however, the need for better insertion of new and small firms in knowledge networks, in turn requiring both connections with other players and capabilities to exploit these connections by absorbing innovation.

Global connections

Many recent shifts in innovation processes are bound up with globalisation. Trade barriers have reduced and transport and communications have improved. Cross-national trade and investment have therefore increased, escalating competition and specialisation. This puts a premium on innovation. At the same time, innovation itself is globalising (Archibugi and Iammarino, 1997). This has important consequences for innovation in new and small firms. Above all, globalisation has increased the importance of cross-border collaboration in innovation – both in obtaining inputs for innovation (ideas, finance, skills, technologies) from abroad and in exploiting its outputs (products and services, patents, licenses, etc.) in foreign markets. It has become important for new and small firms to collaborate internationally with other SMEs, multinationals, universities and research organisations, requiring both innovation competencies and international connections. One of the ways of achieving this is through participating in globalised value chains and networks of innovation.

Non-technological innovation

One of the key messages of the OECD Innovation Strategy as a whole is that innovation is not just about science and technology. It is also about other forms of innovation. The implementation of new organisational methods in firms’ business practices, workplace organisation and external relations can have substantial impacts on firms’ competitiveness, productivity growth and value creation. Marketing innovations can also

make a major difference, such as changes in product design or packaging, product placement, product promotion or pricing.

Non-technological innovations involve a wider range of actors, processes and settings than technological innovation and can be very important for SMEs. For example, it may involve SMEs in tracking competitors' actions through electronic monitoring of news and information services or the introduction of total quality management techniques on the work floor. It may also be the source of rapid growth for some firms. Certainly, high-growth firms seem to be just as present in low-technology as high-technology sectors (OECD, 2010b forthcoming; Anyadike-Danes *et al.*, 2009). This does not necessarily mean that SMEs are relatively specialised in non-technological innovation compared with larger firms. Rather the evidence suggests that they tend to lag larger firms in both (see Acs and Audretsch, 1990; and Audretsch, 1995, for R&D intensities and Chapter 2 for non-technological innovation rates), although this view must remain tentative, since evidence is less reliable for non-technological innovation and data is not commonly available for non-technological innovation as a proportion of firm employment or turnover. Instead, the major conclusion to be drawn is that the drivers of SME innovation may vary between technological and non-technological innovation, but both are important, suggesting new ways to stimulate innovation. For example, for SMEs, the use of knowledge-intensive service activities offered by consultants and other firms often brings new non-technological ideas into the firm with respect to business practices, workplace organisation and marketing (OECD, 2010a, forthcoming).

Another issue is that whereas technological innovation tends to be more associated with manufacturing, non-technological innovation is equally important to services and manufacturing (European Commission, 2007). This is very significant because the services sector has seen a dramatic rise in its share of economic value added in recent years (rising for example from 55% to 70% of Japanese and from 63% to 77% of United States value added from 1975 to 2007) and now accounts for more than two-thirds of total OECD-area GDP. It has not however been given its full due of attention by policy makers until recently, perhaps because of mistaken views about its status as a "dependent" rather than a "propulsive" economic sector. The new European Union Services Directive is part of a move to redress the balance in Europe by removing legal and administrative barriers to the full tradability of services within the European Single Market. One of the keys to releasing its growth potential will be facilitating non-technological innovation as well as more technology-based product and process innovation.

NESTA (2007) examines how such innovation ("hidden innovation") occurs in so-called "low-technology sectors" such as construction, retail banking, and education. It is seen, for instance, to include the development of new drilling techniques in oil production, back-office technologies in financial services, and new, more successful programmes for the rehabilitation of criminal offenders. As a further example, non-technological innovation is very important in driving productivity improvements in tourism. What appears most important in that sector is intimate familiarity with consumer needs and preferences in particular specialised markets and speedy and imaginative responses to how these needs might be catered to. Typical tourist industry innovations include new forms of business alliance, electronic commerce and co-operative marketing and individualising mass market products by product differentiation (OECD, 2006).

Many non-technological innovations are small, “everyday” innovations. But whether they are small or more radical combinations of existing technologies, the major policy problem is that they take place “under the radar”, i.e. are not picked up by traditional science and R&D-based innovation measures. Indeed, if SMEs were relatively specialised in this type of innovation, as appears intuitively to be the case, this might explain relatively low measured innovation rates in small versus large firms on traditional science and R&D-based indicators. Clearly this is an area where measurement needs to be improved to properly inform policy.

The “Silicon Valley Business Model”

There have been changes in the entrepreneurship environment in some very dynamic national and local innovation environments that have made it easier for new start-ups to gather the resources required to become viable businesses and grow them to scale. In the past, the large firm was in a privileged position to obtain or put up finance to develop ideas, construct plant, apply engineers and staff to the task, test and develop the product or service and find and negotiate with distributors and suppliers. In many places today, however, the new company can get to market with its idea – *quickly and at scale* – by mobilising under its own control what formerly only the big company could dispose of: capital; teams of engineers; competitive quality and cost manufacturing capabilities; logistics, product service and ancillary corporate services.

Cohen (2010) calls this the “Silicon Valley business model”, for where it first developed into a significant economic force. The Silicon Valley environment has not been replicated in its intensity, but many of its important features have been taken up to a significant degree in the most innovative national and local environments of the 21st century. Venture capital firms can now provide capital quickly to the most promising ventures whether or not they are in a large firm context. Their initial contributions can release further funding downstream if important milestones are met. Venture capitalists can also, if needed, help round up teams of engineers and other key staff from other firms. Engineers and other key staff may shift as groups, responding to equity stakes which for them could result in fortune, and which on the other side dramatically lower cash costs for the start-up. There also exists an array of contract manufacturers available to new and small firms who can manufacture the product – at any volume – to the same norms as they produce for established companies. The onerous costs and huge time delays of setting up own manufacturing can thus be circumvented, while the contract manufacturers can also provide invaluable assistance on designing the product for manufacturability, durability, and so on, of the sort that only a mature producer is capable of obtaining. And packaging, shipping, product support and servicing can similarly be resolved in the market in highly entrepreneurial environments.

Whilst this favours the SME, large corporations are adapting to become important players within this type of business model rather than treating it solely as a threat. Many are involved in buying the firms with the most promising technologies and markets in their areas, hence providing an exit to the original innovators and venture capital investors. They may also be even more closely involved for example in venture investing, provision of complementary assets and technologies, and even the provision of key people, including the would-be innovating entrepreneur. In this way a more symbiotic relationship is emerging between small and large firms, significantly increasing the prospects of major innovation in small firms.

Social entrepreneurship and social innovation

So far, the discussion has been implicitly oriented around the creation of economic value added. But a further ramification of a broader notion of innovation is the need to consider its social contribution. Social entrepreneurship is defined by its paramount logic of providing entrepreneurial business solutions to *social* challenges. Social innovation shares the same logic of providing answers to *social* problems but can occur either through or independent of business ventures.

Social entrepreneurship and social innovation are of fundamental importance today because welfare states are changing. New social needs are emerging as people live longer, healthcare possibilities improve, income distributions become more unequal and growing economic development generates greater expectations for social support. But state budgets are not keeping pace with the growing needs and expectations, particularly with the consequences of the global financial and economic crisis, which has opened up a gap for the entrepreneurial supply of social goods and services.

This too can be seen as part of the above-mentioned shift from the managed to the entrepreneurial economy. The managed economy was a mass production society based on stable employment in large firms and a central role of unions and employers in regulating the economy and society in partnership with government. The social contract included regulation of labour markets and a strong welfare state. The reduced power of large firms and unions, and arguably the reduced capacity of government to raise taxes in an era of mobile capital, resulted in a pulling back of the welfare state at the same time as greater turbulence and labour market flexibility increased the strain upon it.

Social entrepreneurs and social enterprises such as non-profit organisations have stepped into this breach (OECD, 2003; Noya and Clarence, 2007). They generate new goods and services such as environmental protection and services to the individual. At the same time many address problems of unemployment and the social problems of poor neighbourhoods. This is of great relevance in the current post-crisis context in which unemployment rates are high and societies are struggling to adapt to economic change. Furthermore, whilst many of the goods and services offered through social enterprise and social innovation seek to fill gaps in purely public provision by welfare states, social entrepreneurship is also now usefully entering fields where there is some public or private sector provision, but where new forms of delivery can improve efficiency or quality.

Social entrepreneurs of course are still entrepreneurs. They share many needs and behaviours with their commercial counterparts. But there are also some differences in opportunities and constraints. Social enterprises may have greater problems accessing capital markets, for example, since they are not well understood by traditional banks. They may also need special support for human capital development, since they are often driven by people with different motivations and capacities.

Taken together, the trends outlined above – the shift from the managed to the entrepreneurial economy, the growth of the knowledge economy, open innovation, increased global connections, non-technological innovation, the Silicon Valley business model, and social innovation and entrepreneurship – represent an important change in the environment in which innovation takes place. What has emerged is an economy in which SMEs and entrepreneurship are now critical players in a broader, more distributed innovation process. The next section looks more closely at the role that SMEs and entrepreneurship now play in innovation, before we examine the implications for policy.

What is the role of SMEs and entrepreneurship in innovation?

The major function of SMEs and entrepreneurship in innovation is the introduction of advances in products, processes, organisational methods and marketing techniques into the economy. This occurs at two basic levels: making breakthrough innovations that push forward the technological frontier; and adopting incremental innovations that bring the economy closer to its technological frontier. The ideas for these innovations may be developed internally by the SME or start-up, or they may be accessed from external sources. Another function of SMEs and entrepreneurship in innovation is to provide ideas and inputs to ideas generation that are exploited by large firms, universities/research organisations and other small firms.

There are nonetheless several ways of thinking about these contributions, revealing different aspects of the innovation process. It is useful to start by considering how a number of seminal authors have seen the connection between entrepreneurship and innovation (see also Ahmad and Seymour, 2008, p. 7):

- *The entrepreneur as a disruptor.* Schumpeter (1934) saw entrepreneurs as the principal actors in innovation. It is entrepreneurs who bring about change in an economy by providing “new combinations”: new or improved goods, methods of production, markets, sources of supply of inputs, organisation of an industry, or management processes within a firm. They disrupt markets, leading to long-run evolutionary growth in the economy.
- *The entrepreneur as an opportunity identifier.* Kirzner (1973, 1997) stressed the role of entrepreneurs as discoverers and early exploiters of previously-unnoticed profit opportunities. They gain temporary monopolies until the attention that they draw to the opportunity leads to competitor entry, which eliminates the profit. Innovation occurs as entrepreneurs discover new opportunities. But as opposed to Schumpeter’s view of the entrepreneur as a disruptor of markets and instigator of evolutionary economic development, this is a static view: the entrepreneur facilitates matching of supply and demand and the achievement of equilibrium following shocks.
- *The entrepreneur as a risk taker.* Knight (1921) focused on a related aspect of the role of entrepreneurs in innovation. Entrepreneurs take risks by offering new solutions in the market in the face of uncertainty about whether their solutions will be profitable. Here the entrepreneur is seen as facilitating economic adjustment by predicting where new profit opportunities will open up and providing products, processes and business models to fit – at the risk of failure. The entrepreneur innovates by experimenting.
- *The entrepreneur as a resource shifter.* Drucker’s (1985) interest was in how entrepreneurial managers within firms shift resources from lower to higher productivity activities. In this way, entrepreneurs endow existing resources with new wealth-creating capacity. This will clearly support productivity increases over time, although Drucker’s main focus is more on firm strategy and competitiveness than aggregate economic growth.
- *The entrepreneur as a breakthrough innovator.* Like Schumpeter, Baumol (2002) adopts a dynamic framework examining the relationship between entrepreneurship, innovation and economic growth. However, unlike Schumpeter (1934), who took the entrepreneur rather than the large firm to be the central actor in innovation, Baumol considers that small and large firms both play critical and complementary roles. Start-ups and small firms are seen to generate disruptive or breakthrough innovation thanks to their lack of

ties to existing technologies. Large firms are seen to undertake more incremental innovation, based on systematic research in their existing development channels.

All of these authors identify essential roles for entrepreneurship in innovation: in both static and dynamic frameworks; with the entrepreneur as either the sole or principal source of innovation, or simply one source among others. Clearly, there is a range of roles – combining in new ways, discovering opportunities, taking risks, shifting resources and creating breakthrough innovations – and these roles moreover are not mutually exclusive. Rather, it is better to think of them as different aspects of a multi-faceted process, with a number of implications for policy support.

But in which settings is entrepreneurship to be found? There are many competing views and some degree of confusion in this area. To provide clarity, the OECD offers a definition with the three following components (Ahmad and Hoffman, 2008)³:

- *Entrepreneurs* are those persons (business owners) who seek to generate value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets.
- *Entrepreneurial activity* is the enterprising human action in pursuit of the generation of value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets.
- *Entrepreneurship* is the phenomenon associated with entrepreneurial activity.

The definition of entrepreneurship is therefore not synonymous with either SMEs or business start-up, but reflects instead the human action behind innovation. Entrepreneurial activity may occur in start-up enterprises, SMEs, large firms or public sector organisations. What is important is that people are enterprising in the creation of value through innovation.

Our emphasis in this book is on two parts of the spectrum, namely the new start-up venture (which is generally but not always of small size) and the small and medium-sized enterprise. Our focus in both cases is on entrepreneurship and innovation – *i.e.* the generation of value from the identification and exploitation of new products, processes and markets. We are not then concerned with new firm and SME operation and management *per se*, but with innovation-oriented entrepreneurship within new firms and SMEs. It is this innovation-oriented activity that promotes economic growth and solves social problems.

In order to understand more fully how start-up enterprises and SMEs contribute to innovation and identify the public policy implications, it is useful to consider the following (overlapping) aspects of the modern innovation process in more detail: creative destruction; knowledge spillovers and entrepreneurship; large and small firm roles in breakthrough and incremental innovation; distributed and open innovation; and the Science-Technology-Innovation (STI) and Doing-Using-Interacting (DUI) modes of innovation. These are addressed in turn below.

Creative destruction

Venture creation and SME growth renew economies by forcing the contraction, exit or upgrading of incumbent competitors. It is this process that Schumpeter (1934) called “creative destruction”. It is creative in the sense that new and growing firms carry innovation with them. New firms that succeed in sustainably entering the market and

SMEs that grow clearly have some productivity advantage that enables them to compete (either from greater productive efficiency or from the greater value of output for given inputs that results from product differentiation). As they enter and grow they displace less productive firms, thus increasing the average productivity of the economy and driving economic growth. There is also an indirect impact, since the mere competitive threat of new and small firms, or contestability of their markets, may force incumbents to upgrade. Empirical evidence across 24 countries confirms the relationship between productivity growth and “enterprise churning” (measured for example by net entry: entry minus exits) (Bartelsman *et al.*, 2009).

The creative destruction process is particularly important in recession and recovery, and is therefore of great interest today. Now the concern is not just about productivity but is also about employment. As unemployment rates rise, it is critical that new firms are able to enter and grow so that recent job destruction is balanced by job creation in the short to medium term. At the same time productivity may be enhanced as new firms bring better products and services and better technologies into the economy.

Knowledge spillovers

New venture creation and knowledge exchanges between knowledge-generating organisations and SMEs also enable the commercialisation of knowledge that would otherwise remain un-commercialised in large corporations, universities and research organisations. This type of knowledge spillover process is at the heart of the logic of endogenous growth theory, the lens through which many economists understand economic growth. Investments in new knowledge are seen to spill over in part to other agents, increasing their returns to innovation and driving further investment and growth. Knowledge built up in universities, large firms and research organisations does not spill over automatically, however. It may remain unexploited.

The new start-up enterprise is one of the significant players in commercialising knowledge. This largely occurs as individuals leave universities, research organisations and large corporations to start enterprises based on knowledge they developed there in the form of “spin-off” companies, but also as external entrepreneurs commercialise ideas from these sources. Both public policy makers and firms and research organisations themselves have become increasingly interested to support such commercialisation, seeing spin-offs as one of the key ways to exploit untapped knowledge, alongside the more traditional patent and licensing routes and the publishing and teaching activities of universities. In the USA, for example, the Bayh-Dole Act of 1980 increased incentives to universities to invest in the commercial exploitation of their knowledge by giving them control of the intellectual property arising from the federal government funded research they undertake. In Canada, the University of British Columbia has a venture fund, the University of Guelph has raised money for commercialisation by listing its intellectual property portfolio on the stock market, and a range of “entrepreneurship boot camps”, mentoring programmes, entrepreneurship resource centres and entrepreneurship courses for researchers have been introduced (McNaughton, 2008).

It should nonetheless be recognised that spin-off numbers are not high and represent only a small proportion of new enterprise starts. Callan (2001) reports that academic spin-offs accounted for no more than 2% of new firm creation across eight OECD countries, and that even in the United States, which seems to have one of the highest rates of university spin-offs, only two spin-offs were created per research institution per year. Neither are university spin-

offs high-growth firms on average, while they also tend to grow slowly (Lindholm-Dahlstrand, 2008). Moreover, a small proportion of institutions are responsible for a large proportion of spin-offs. While forefront research establishments like Oxford University in the UK, the University of Wisconsin, Madison, in the USA, and the University of Waterloo in Canada are key drivers of entrepreneurship in their areas through spin-offs (84 spin-offs in Madison; 64 spin-offs and 50 “founder affiliates” in Oxfordshire; 106 spin-offs in Waterloo) (Potter and Miranda, 2009), the contribution of other types of institutions tends to be more in upgrading existing local firms and effecting local technology transfers (Malecki, 2008). On the other hand, whilst spin-offs represent only a small proposition of all new starts, they nonetheless represent a higher proportion of new technology based start-ups. Almost half of all new technology based firms in Sweden are corporate spin-offs and an additional one-sixth are spin-offs from universities. They also appear to be increasing in frequency over time and tend to be more innovative than other new technology-based firms (Lindholm-Dahlstrand, 2008).

Considering entrepreneurship as all venture start-ups, Audretsch *et al.* (2006) and Acs *et al.* (2004, 2005, 2009) suggest that commercialisation of knowledge by new start-ups explains part of the link between entrepreneurship and economic growth through their role in promoting knowledge spillovers. The relationship may involve not just the role of new start-ups in exploiting knowledge themselves but also the role of new enterprises and SMEs as participants in knowledge exchange networks within innovation systems, stimulating knowledge transfers from universities and other sources to a broader group of firms. There is cross-country empirical evidence from 20 OECD countries of a link, with entrepreneurship acting to convert knowledge into growth by exploiting spillover originating in a country’s R&D stock (Acs *et al.*, 2004).

Breakthrough and incremental innovation

There is lively debate over the relative roles and importance of SMEs and large firms in innovation. It does not appear to be the case that small firms generally are responsible for proportionately more innovation, even after allowing for their size, *i.e.* comparing innovation rates per employee not per firm (Audretsch, 1995). On the other hand, there is a strong suggestion that SMEs are particularly associated with bringing forward so-called breakthrough innovations.

Baumol (2002) has been the main promoter of the idea that new start-ups and SMEs play a different role to large firms in innovation. He introduces a dual characterisation of innovation: breakthrough and incremental. Breakthrough innovations are discontinuous, representing revolutions in technologies and markets (*e.g.* the assembly line, the integrated circuit, the personal computer). Incremental innovations are the opposite: small improvements on existing products and processes. While there are relatively few breakthrough innovations, their individual impacts are very large. On the other hand, while the impact of each individual incremental innovation is small, they represent a significant step forward in aggregate.

Baumol’s argument is that the majority of breakthrough innovations in recent decades have come from new or small firms, while large firms have concentrated on incremental innovations. He further argues that this pattern is to be expected considering that new firms and SMEs often work outside of dominant paradigms, without strong ties to existing products and technologies, while large firms are constrained by the need to incrementally improve their existing products and processes, even though they spend proportionately more on R&D.

There is certainly evidence that small firms and new ventures are active in breakthrough innovation in sectors such as biotechnology and information and communication technologies. Baumol himself provides a convincing account of the small-firm origins of many breakthrough innovations. The empirical evidence is not entirely clear-cut, however. The association between small size and breakthrough innovation does not hold in all sectors. In pharmaceuticals, for example, large firms have dominated the breakthroughs. Furthermore, some empirical work casts doubt on a general characterisation of small firms as breakthrough innovators and large firms as incremental innovators (Chandy and Tellis, 2000).

It nonetheless appears fair to argue that there are differences in the specialisations of new and small firms and large firms with regard to breakthrough and incremental innovations, even if they are not entirely distinct. But both types of innovation are of importance in the new and small firm sector, requiring differentiated support. Moreover, the attention to contrasting small and large firms in this way should not be allowed to obscure another key point, namely that the interactions between them are critical. New and small firms may develop a high proportion of breakthrough innovations, but large firms often acquire and imitate them, securing their mass exploitation. Indeed, large firms often deliberately use SMEs as laboratories, acquiring and integrating the technologies that interest them the most. One of the mechanisms is spin-in, *i.e.* the acquisition by large firms of new technologies or ways to access markets through the purchase of SMEs or their intellectual assets.

Interactive learning

One of the major developments in innovation in recent years is the increasing importance of networks. By tapping into distributed knowledge networks and open innovation methods, firms are using a wider variety of knowledge inputs from a wider range of sources. This is interactive learning.

SMEs and start-ups are important participants in interactive learning networks – both exploiting knowledge developed elsewhere and contributing to knowledge development. Their role is documented by a substantial literature on SMEs and inter-firm and university-industry linkages (*e.g.* Branscomb *et al.*, 1999; Etzkowitz and Leydesdorff, 2000; Freel, 2003; Mansfield, 1995; Potter, 2008; Potter and Miranda, 2009; Shane, 2004). The links may be both formal, *i.e.* underpinned by deliberate market transactions and contracts, and informal, *i.e.* driven by social capital networks or networks stemming from location in clusters.

It is particularly important for new and small firms that they draw on networks because this helps them to compensate for their relatively limited internal resources in areas such as technology, financing and skills as compared with large firms. It is reflected in evidence indicating better innovation and growth performance in SMEs with external innovation linkages compared to those without (Powell and Grodal, 2005; Stuart, 2000; Baum, Calabrese and Silverman, 2000; Davenport, 2005; OECD 2010b, forthcoming).

There are some important potential barriers to the efficient operation of innovation networks, however. One way of assessing them is through the national, local and sectoral innovation system concept (Chaminade and Edquist, 2006). This framework examines the interactions among sets of organisations including firms, universities, venture capitalists and public agencies mediated by institutions that set the rules of the game, such as intellectual property regulations and rules and norms influencing the relations between universities and firms. Within any innovation system, a close articulation is needed

between what is known as the knowledge exploration subsystem, in which universities and research organisations are the central players, and the knowledge exploitation subsystem, in which new and small firms are key players along with larger firms. These two subsystems must fit together well for successful innovation to take place. This requires appropriate knowledge-generation assets, good connections among actors, and significant capabilities of the players involved to disseminate and absorb knowledge (Asheim and Gertler, 2005). Such knowledge transfer relationships tend to be particularly strong in local industry clusters (Potter and Miranda, 2009).

The use of the innovation systems approach permits the identification of a range of potential policy problems or system failures affecting interactive learning (Potter, 2005). For example, they may include lack of infrastructure for knowledge generation and transfer (*e.g.* universities and science parks); lack of adaptability of firms, individuals, institutions and policies to change (*e.g.* to move into new technologies and markets or include new players); lack of capabilities in firms to absorb external knowledge (*e.g.* workforce skills for identifying and collaborating with partners and using external information about promising markets and technologies); and lack of complementarity between the knowledge exploration and exploitation sub-systems (*e.g.* lack of fit between university research and teaching specialisms and the specialisms of firms).

Modes of innovation

A key distinction needs to be made between the role of SMEs and entrepreneurship in the Science, Technology and Innovation (STI) mode of innovation and the Doing, Using and Interaction (DUI) mode (Jensen *et al.*, 2007). The STI mode is based on the production and use of R&D and codified scientific technical knowledge in breakthrough innovations. It is essentially a “science-push” approach in which R&D in universities and large firms is critical and exploitation through knowledge-based spin-offs and high-technology collaborations between firms and universities and research institutes has an important role to play. The result is innovation that in principle could be applied in other firms and contexts and protected through intellectual property rights such as patents and licenses. The DUI mode, on the other hand, is a user-driven approach that relies on experienced-based know-how and informal processes of adaptive learning. Learning by doing, using and interacting occurs on the job as employees face ongoing changes that confront them with new problems and can be fostered by organisational practices within the firm, such as project teams, problem-solving groups, and job and task rotation, and by closer interaction with users of products and services outside the organisation. The result is innovation with localised usability in addressing problems faced by the firm. The “ordinary” SME has a more important role in this mode, making incremental innovations that upgrade traditional sectors (Asheim, 2009).

While the two modes of innovation are not mutually exclusive and both firms and economies combine them to varying degrees, the distinction serves to highlight the need for a holistic innovation approach that recognises the importance of both kinds of processes and differences in the types of barriers that affect SMEs and start-ups under each. Whereas typical problems for STI-based innovation are under-investment in scientific research, lack of connections between science and industry and poor access to finance for knowledge-based start-ups, the major barrier to incremental innovation in ordinary SMEs is lack of knowledge networks and human capital to absorb knowledge.

Policy implications

As is clear from the above discussion, SMEs and entrepreneurship are fundamental to the modern innovation process. Yet their place is not fully established in today's innovation policies. This state of affairs arises as a consequence of the shift from the managed to the entrepreneurial economy and the lag involved in adapting policies to the new needs. As Thurik pertinently points out (2009, p. 227), "using the wrong lens leads to the wrong policy choice". Whereas the managed economy implied an innovation policy that could be focused on encouraging basic research in universities and R&D spending in large firms, innovation policy in the entrepreneurial economy must expand to include new types of actions for entrepreneurship and SMEs. This book seeks to correct the policy lens.

The root of the predicament is that while government policy agendas around the world have a strong focus on promoting innovation, this is still too often understood as being about investment in science and R&D policies, leaving aside the crucial issues of diffusion and exploitation of research and excluding large parts of the non-technology economy. It is typified by the European Union Barcelona Summit headline goal of achieving an increase in the proportion of European GDP invested in research and development from 1.9% in 2002 to 3.0% in 2010. The problem is not so much that the target is not being achieved, but more that it is wrongly placed. The emphasis is on R&D inputs to the innovation process whereas it is the exploitation of R&D and non-R&D-based types of innovation that will make the difference to growth and welfare (particularly when global knowledge flows make it possible to capture research results paid for in other countries). New firms and SMEs have a major role to play in the latter – through both breakthrough and incremental innovations – although they also face problems and barriers to meeting their potential.

Government policy, then, has not yet adjusted to the new reality. Large-scale research subsidies to national champions, other large firms and basic-research silos in national universities and research organisations are not the most effective way to generate innovation in an environment where knowledge flows globally, where collaborations, networks and absorption capabilities are required and where innovation can emerge from unexpected as much as from predicted research channels. Policy is slowly reacting against the one-sided focus on R&D. To be successful it will need to meet a number of challenges:

- *Entrepreneurship cultures.* With entrepreneurship at a premium, it is important for policy to engender conducive cultures and attitudes where possible. For example, education systems, the media and business support organisations can help foster entrepreneurial motivations (Potter *et al.*, forthcoming, 2010).
- *SME and entrepreneurship framework conditions.* There should not be unnecessary obstacles to SMEs and entrepreneurship in the institutions of the economy such as taxation, social security, bankruptcy legislation, competition policy, product market regulation, labour market regulation, finance markets and intellectual property protection. OECD research shows for example how unbalanced taxes on company profits and losses and high average tax rates on SMEs relative to large firms can diminish SME and entrepreneurship activity (OECD, 2009).
- *Firm dynamics.* Since the entry and growth of SMEs drives productivity improvements by replacing less productive contracting and exiting firms, policy should promote entry and exit and competition in the market. Furthermore, the process of creative destruction is most pronounced in periods of economic crisis and recovery, as the global economy is

experiencing today. As the incumbent firm stock is contracted, room is created for innovative firms to enter and grow when demand picks back up. It is critically important that incumbents are not over protected at such a time, since this would block the potential for new business models and technologies to emerge in the new and small firm sector. This illustrates a timely opportunity for well-designed policies to achieve two objectives at the same time: the creation of jobs in SMEs in response to an aggregate demand stimulus or targeted employment and investment subsidies and the improvement of productivity by helping new and small firms to carry innovations into the economy.

- *Access to finance.* Research clearly identifies a finance gap in many locations for new and small firms involved in the early stages of innovation, especially in the market for high-risk capital. This represents a potentially serious barrier to innovation. Policy responses such as grants, loans, loan guarantees, mezzanine finance, seed capital, venture capital, business angel finance and investor readiness programmes need to be explored (OECD, 2006b, 2007).
- *High-employment-growth firms.* One of the contributions of new firms and SMEs to the economy is breakthrough innovation. It involves a small minority of firms that are highly innovative, often exploiting new science developed in universities and research laboratories. They make up an important component of the high-employment-growth firm sector. Facilitation and support for breakthrough innovation in this group may promote both innovation and jobs, including facilitation of both spin-offs and spin-ins (OECD, 2002, 2010b forthcoming).
- *Innovation in the bulk of SMEs.* Baumol may have seen large firms as the archetypal incremental innovators, but it seems clear that the concept of incremental innovation does not apply exclusively to large firms but must also characterise a large proportion of the SME population. Moreover, innovation is not just about technology but is about non-technological innovation as well. This implies that policy should recognise the latent potential of the bulk of SMEs, which could contribute more to the economy if they begin to innovate incrementally and strengthen their non-technological innovation. They require a different type of innovation support to high-growth-potential enterprises, focused more on increasing their capacity to *absorb* knowledge from outside the firm. It suggests the need for DUI-mode policy support focused on a wider set of institutions affecting learning and innovation, to accompany more traditional STI support. Embedding SMEs in knowledge exchange networks and increasing workforce skills to draw in and exploit innovations from elsewhere is a key policy priority in the DUI mode.
- *Knowledge transfer.* One of the key drivers of SME innovation and innovative entrepreneurship is knowledge exchange between and among explorers and exploiters, particularly for the exploitation of new, science-based knowledge. This implies the need for strong policy attention to knowledge transfers and overcoming networking problems in innovation systems. Examples of relevant policy approaches include creation of science parks and business incubators, encouraging mobility of staff between universities and industry, and facilitating knowledge exploitation through licenses, patents and university and corporate spin-offs, and shared foresight and strategy development activities (OECD, 2004; OECD, 2009; OECD, 2008).
- *Workforce skills in SMEs.* The typical SME needs to upgrade its skills to participate in DUI innovation and hence make incremental improvements in its products, processes,

organisational methods and marketing approaches. This may be achieved through better access to formal training, but also through informal methods such as the creation of problem-solving work teams and engagement with external knowledge intensive service activity providers such as consultants (OECD, 2010a, forthcoming).

- *Entrepreneurship skills.* Another often overlooked factor affecting the propensity for successful business start-up is the degree to which motivated people possess adequate entrepreneurship skills. This includes small business management skills (such as business planning and accounting), strategic skills (such as decision-making and opportunity recognition), and entrepreneurial traits (such as leadership and creativity). It implies the need for a change in curriculums, pedagogies, structures and strategies in education and training systems to better import these skills (Potter, 2008).
- *Social entrepreneurship and social innovation.* Entrepreneurship is not only about profit-making. Social entrepreneurship and social innovation are important features of a broader vision of innovation and are expanding at a rapid pace. Institutional arrangements, however, are often not well adapted to the needs and modus operandi of these organisations and approaches. National legal, financial and fiscal frameworks for social enterprises therefore need to be reviewed and adjusted and accompanied by capacity building, skills development and network creation for social entrepreneurs.

This is not a comprehensive account of all areas of policy intervention for SMEs, entrepreneurship and innovation, but rather a form of “priority list” for policy in adapting to new forms of innovation.

Plan of the book

This book examines the importance of new and small firm innovation in the 21st century and the major features of how this innovation occurs. It calls for governments to introduce an *innovation strategy for SMEs and entrepreneurship*, recognising both the potential of SMEs and entrepreneurship in innovation and the barriers that policy needs to overcome (see Annex A).

The next chapters will examine the major issues in more detail. Evidence is presented on what can be measured in this new area. Three themes are then explored, which are of major importance but merit more attention than traditionally received: inserting SMEs in knowledge flows; improving the skills of new start-up entrepreneurs and SME workforces; and facilitating social entrepreneurship and social innovation.

Chapter 2 provides data on SME innovation performance and constraints across 40 economies and examines the major and new policies that have been introduced. Among the issues identified, it underlines the relevance of three major policy areas highlighted in this introduction, namely access to finance and access to skills as barriers to SME innovation and the relevance of support for knowledge exchange.

Chapter 3 examines the latter issue in detail, namely how new firms and SMEs are embedded in local, national and international knowledge flows and the barriers that still exist. It shows that new and small firms do not innovate alone but in interaction with suppliers, competitors, customers, research organisations and others. It also shows that the quality of local environments for knowledge generation and transfer counts and that they are particularly favourable in innovation clusters. Policy can reinforce this. But it is also important to connect local innovation clusters to global knowledge pipelines, for

example through embedding of foreign direct investment, attraction of highly-skilled labour from overseas and building cross-national SME alliances.

Chapter 4 examines the skills issue. It shows that while entrepreneurship skills are needed to start successful firms, they are not well understood or supported. They may be imparted through school education, universities and vocational training colleges. Training in SMEs is also very dependent on relationships with the public sector because while large firms have in-house training mechanisms SMEs generally do not. Thus while SME skills may be imparted by in-house training and other skills-upgrading activities, small enterprises tend to do less than large firms and there is a particular SME skills gap among older and routine workers. These problems need to be addressed.

Finally, Chapter 5 examines social innovation and social entrepreneurship. While there is a growing interest in the area, it is still not yet well understood. Social innovation involves conceptual, process or product change, organisational change, changes in financing etc., focused on improving the welfare of individuals and communities through employment, consumption or participation. The social entrepreneur is an agent of social innovation but not the only one. The chapter provides better definitions and clarity, and gives some telling examples of social entrepreneurship and social innovation that offer inspiration for wider adoption. It also highlights improvements needed in surrounding institutions to facilitate the further growth of a sector that is fundamental to addressing the social challenges of today.

Notes

1. "High-growth enterprises", as measured by employment, are enterprises with average annualised growth in employees greater than 20% a year over a three year period and with ten or more employees at the beginning of the observation period. "Gazelles", as measured by employment, are enterprises which have been employers for a period of up to five years, with average annualised growth in employees greater than 20% a year over a three-year period and with ten or more employees at the beginning of the period.
2. See also NESTA (2009).
3. The OECD/Eurostat Entrepreneurship Indicator Programme is developing internationally-comparable indicators of entrepreneurship based on this definition.

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Chapter 2

SMEs, Entrepreneurship and Innovation: An Overview by Country

This chapter presents information on policy initiatives to promote the creation of innovative firms and encourage innovative activities in SMEs in OECD members and accession and enlargement countries. The Country Notes point either to the overall policy approach, or to a major policy in the field of entrepreneurship, SMEs and innovation. Examples are given of recent policy innovations that are of interest because of their novelty or proved effectiveness. Each Country Note is accompanied by structural data on the SME sector and selected indicators showing SME innovation performance, perceived barriers to innovative activities, and financing instruments for and burdens on creating a start-up.

Introduction

The following chapter presents key figures on the SME sector and the innovation performance of small and medium-sized firms in the 30 OECD member countries. When available, data are also presented for accession countries (Chile, Estonia, Israel, Russia and Slovenia) and enhanced engagement countries (Brazil, China, India, Indonesia and South Africa).

Each country section also illustrates the main policy initiatives to promote innovative entrepreneurship and innovation activities in SMEs. Information was collected by national experts and delegates to the OECD Working Party on SMEs and Entrepreneurship and OECD Local Economic and Employment Development Committee.

Box 2.1. Basic methodological references

Data presented in the chapter come from three main sources:

- OECD Structural and Demographic Business Statistics Database;
- Innovation Surveys (*e.g.* the Community Innovation Surveys; national innovation surveys);
- OECD Product Market Regulation Indicators.

For some countries, specific national sources have been used to complement the available information.

Structural indicators of the enterprise population

Data are drawn from the OECD dataset Business Statistics by Size Class, which is part of the OECD Structural and Demographic Business Statistics Database. The dataset comprises five dimensions: country, industry, year, size class and variable. The variables presented in this chapter are: value added at factor costs/basic prices; number of enterprises/establishments and employment; number of persons engaged/number of employees. The dataset follows the International Standard Industrial Classification (ISIC) Rev. 3 for the classification of economic activities (see Annex 2.A1).

The breakdown of enterprises by size class used by national bureaus of statistics varies across countries, as indicated below.

Box 2.2. Firm size classifications by country

	Micro	Small	Medium	SME	Large
EU countries, Iceland, Norway, and Switzerland	1-9	10-49	50-249	1-249	250+
Australia	0-9	10-49	50-199	0-199	200+
Canada	0-9	10-49	50-499	0-499	500+
Japan	4-9	10-49	50-249	1-249	250+
Korea	5-9	10-49	50-199	5-199	200+
Mexico	0-10	11-50	51-250	1-250	251+
New Zealand	1-9	10-49	50-99	0-99	100+
Turkey	1-19	20-49	50-249	1-249	250+
United States	1-9	10-99	100-499	1-499	500+

Innovation activities of enterprises

The *OECD Oslo Manual, Third Edition*, defines innovation as the implementation of a new or significantly improved product (good or service), or a new process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations. Four types are identified:

- *Product innovation*: The introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user-friendliness or other functional characteristics.
- *Process innovation*: The implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software.
- *Marketing innovation*: The implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.
- *Organisational innovation*: The implementation of a new organisational method in the firm's business practices, workplace organisation or external relations.

Indicators on product and process innovations presented in this chapter correspond to innovations developed *in-house*, i.e. the introduction of new or significantly improved products or production processes developed by the enterprise itself or by the group to which the enterprise belongs. A group consists of two or more legally defined enterprises under common ownership. Also, innovation surveys typically cover firms with more than 20 employees, and therefore exclude micro enterprises.

OECD Product Market Regulation (PMR) indicators

The PMR indicators measure the economy-wide regulatory environment in OECD countries. Qualitative information on country laws and regulations, collected through a questionnaire in 1998, 2003 and 2008, has been turned into quantitative indicators. The PMR database comprises three broad sets of indicators on: state control, barriers to entrepreneurship, and barriers to trade and investment. The indicator "Barriers to entrepreneurship" measures different regulations in the domain of entrepreneurship and is composed of three sub-indicators: "Administrative burdens to the creation of new firms" (low-level indicators are: administrative burdens for corporations, administrative burdens for sole proprietor firms, sector-specific administrative burdens); "Regulatory and administrative opacity" (low-level indicators are: licenses and permits system, communication and simplification of rules and procedures); and "Barriers to competition" (low-level indicators are: legal barriers, antitrust exemptions, barriers in network sectors and barriers in services). More information about the OECD PMR Indicators is available at : www.oecd.org/document/1/0,3343,en_2649_34323_2367297_1_1_1_1,00.html.

Australia

AusIndustry

AusIndustry is the Australian government's principal business programme delivery division in its Department of Innovation, Industry, Science and Research. AusIndustry administers and delivers a range of over 30 business support programmes – involving innovation grants, tax and duty concessions, small business development, industry support and venture capital – worth AUD 2 billion to more than 12 000 businesses and about 85 000 individuals every year.

One of these business programmes, targeted at SMEs, is *Commercialising Emerging Technologies (COMET)*. Started in 1999 and centred on merit-based grants, COMET aims to increase the uptake of innovative products, processes and services by early-growth-stage companies, spin-offs and individual entrepreneurs. These grants can be between AUD 5 000 and AUD 120 000 for projects lasting up to two years. The programme was allocated AUD 170 million from 1999-2011, AUD 9.5 million of which was distributed in grants to 148 projects in 2008-09 alone.

Other programmes run by AusIndustry specifically target small businesses. The *Small Business Advisory Service* is an AUD 46 million programme that provides low-cost advisory services to small businesses; additional support and advisory services have been provided during the global financial crisis. The *Small Business Support Line*, also created in response to the crisis, provides an initial “single” point of contact to access information and referral that assist with services that include but are not limited to finance and cash-flow management; government regulation; business planning; and marketing/promotion. Finally, *Small Business Online* is a competitive, grant-based programme designed to help small businesses go online, significantly enhance their web facilities, and engage in e-business capabilities to help reduce their costs and improve their market opportunities.

Enterprise Connect

Launched in May 2008, Enterprise Connect is an Australian government initiative. Administered by the Department of Innovation, Industry, Science and Research, it aims to provide comprehensive support to SMEs in Australia. With funding of AUD 50 million per annum, Enterprise Connect provides a national network of services for SMEs through two main channels, the Manufacturing Centres and the Innovation Centres. There are six of each.

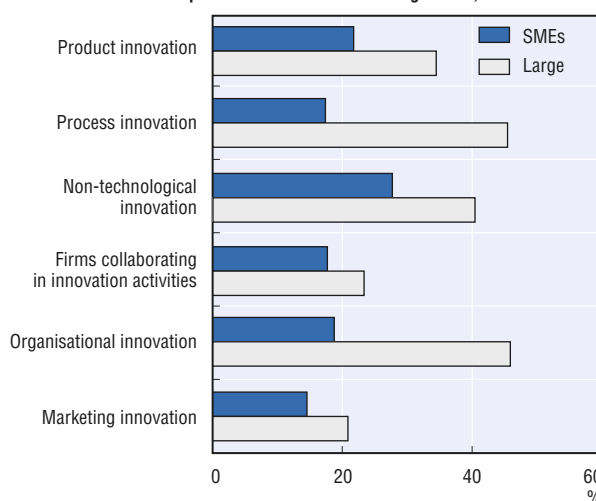
The Innovation Centres and their locations are the Creative Industries Innovation Centre in Sydney; the Clean Energy Innovation Centre in Newcastle; the Innovative Regions Centre in Geelong; the Mining Technology Innovation Centre in Mackay; the Remote Enterprise Centre in Alice Springs; and the Defence Industry Innovation Centre in Dandenong. These Centres provide a number of services for SMEs, including business reviews at no cost to them. These reviews identify strengths and opportunities for the firm, benchmark against best practices, and furnish access to world-class business tools, processes and technology. Enterprise Connect encourages SMEs to adopt the recommendations of the business review by contributing half the cost of adoption, up to a maximum of AUD 20 000. Centres may also help organise placement of university researchers within SMEs under the “Researchers in Business” initiative. Finally, Enterprise Connect also runs both the Workshops, Industry Intelligence and Networking programme, to help SMEs network within their sector; and the Technology and Knowledge Connect service, to provide a referral service linking firms to experts within industries.

Australia

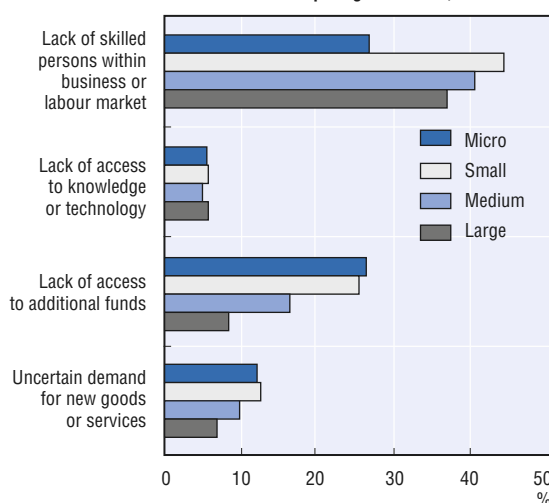
A. Structural indicators on enterprise population, 2006

	Number of enterprises					Total employment					Value added		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		%	No. engaged	%	No. engaged		%	%	Industry
Micro	529 216	95.8	1 249 603	96.4	96.2	683 000	34.6	1 576 000	35.6	35.3	23.0	37.1	31.1
Small	19 298	3.5	39 216	3.0	3.2	382 000	19.4	757 000	17.1	17.8	15.8	17.0	16.5
Medium	2 920	0.5	5 633	0.4	0.5	257 000	13.0	497 000	11.2	11.8	12.3	12.2	12.3
SMEs	551 434	99.8	1 294 452	99.9	99.9	1 322 000	67.0	2 830 000	63.9	64.9	51.1	66.4	59.9
Large	924	0.2	1405	0.1	0.1	651 000	33.0	1 598 000	36.1	35.1	48.9	33.6	40.1

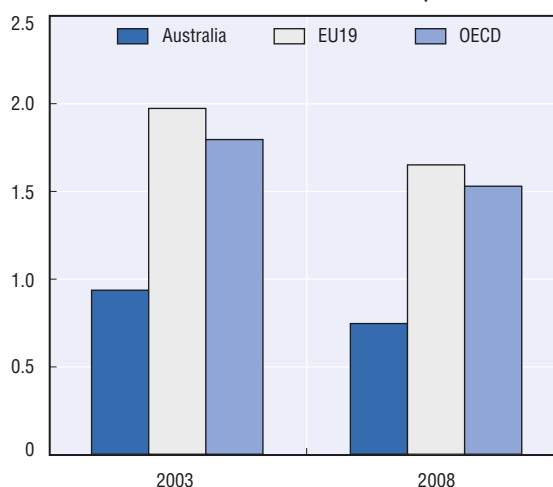
B. Innovation performance of SMEs and large firms, 2007-08¹



C. Factors hampering innovation, 2006-07²




D. Administrative burdens on start-ups³



Notes: 1. As % of all firms within size class. 2. As % of innovating firms. 3. Index scale of 0-6 from least to most restrictive.

Source: Table A: OECD, *Structural and Demographic Business Statistics*. Chart B: Own calculations based on Australian Bureau of Statistics, *IT Use and Innovation in Australian Business, 2007-08*; Australian Bureau of Statistics, *Innovation in Australian Business, 2006-07*. Chart C: Australian Bureau of Statistics, *Innovation in Australian Business, 2006-07* (August 2008). Chart D: OECD, *Product Market Regulation Database*.

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Austria

In Austria, a number of linked policies work in unison to foster entrepreneurship and SME innovation. Among these are schemes to encourage high-tech research in small firms, technology transfer, co-operative research and innovation, patenting, and first-time innovation.

Seedfinancing

The *Seedfinancing* programme fosters the creation of small innovative firms via mezzanine capital paid to those firms in the form of a loan of up to EUR 1 million. The money is paid out in stages and can be used both for research and commercialisation. Loan repayment rates depend on the firm's success (up to a maximum of 50% of annual profit). In case of bankruptcy, the loan may be lost altogether. The time frame for paying back the loan may be ten years or more. The programme also provides management and start-up coaching and early links with private venture capital funds.

A 2004 evaluation showed that approximately half of the firms selected for the programme fail. Private venture capital funds feature a similar failure rate. Given the earlier stage of the firms financed by the programme, this is actually a favourable outcome. In the period between 1989 and 2003, roughly a quarter of all firms supported turned into "highflyers" – by the programme's own definition, firms with a turnover in excess of EUR 4 million.

The programme is intended to bridge the financing gap that arises at the early funding stage of highly innovative young firms, when information asymmetries and risk are very high, often preventing traditional bank financing and even access to private venture capital funds. Participation in the programme acts as a signal to private investors, "crowding" them "in" rather than "out". Hence, the Seedfinancing programme contributes to building up the underdeveloped Austrian risk capital market. Its budget is determined on a yearly basis out of the general government budget; in 2006, it amounted to EUR 8.5 million. It is administered by the agency AWSG (Austria's National Promotional Bank).

AplusB

The *AplusB programme* (AcademiaplusBusiness) financially supports institutionalised centres at universities to foster academic spin-offs. The objective is to increase the number of innovative start-ups and their quality and success rate. Further, the programme aims to improve technology transfer, to bridge academic research and business and to enhance the potential for start-ups by anchoring entrepreneurship as an interesting academic exit option. The tasks of the centres include: awareness building for firm creation among university students and scientists; start-up coaching for 1.5 years; facilitating access to external experts; and providing physical office space.

Nine centres have been selected in two competitive tenders. Their set-up and operation are supported for a maximum of ten years, subject to interim evaluations and ongoing monitoring. Centres are limited liability companies that must be partly owned by the corresponding university; other companies and venture capital funds can be co-owners. In bi-yearly meetings of the centres, knowledge and best practice are shared, including with international experts. The budget for the whole intended programme life cycle amounts to EUR 77 million, a third of which comes from federal money, a third from the regions, and a third from the centres themselves.

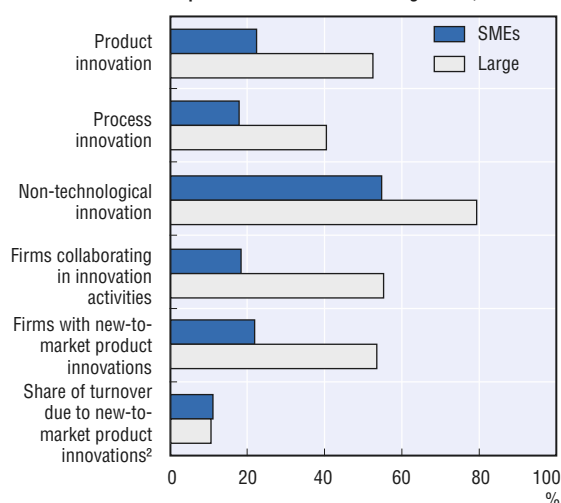
A 2008 evaluation concluded that from 236 technology projects, 171 start-ups were created and 144 successfully entered the market; 180 patents have been filed and 280 projects coached. Evaluators confirm good performance, even in international comparisons with university incubators. The programme is administered by the agency FFG (Austrian Research Promotion Agency).

Austria

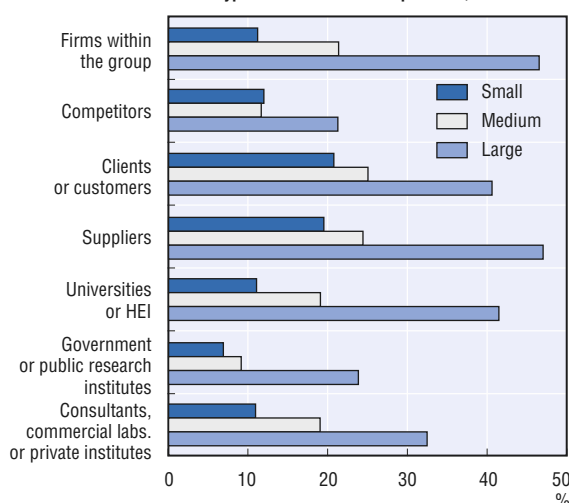
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		No. engaged	%	No. engaged	%		Industry	Services	Total
Micro	44 341	76.8	207 111	90.2	87.5	131 948	14.2	490 288	31.6	25.1	9.6	26.8	18.8
Small	10 675	18.5	19 579	8.5	10.5	212 438	22.8	363 303	23.4	23.2	16.0	23.0	19.8
Medium	2 170	3.8	2 520	1.1	1.6	224 725	24.2	243 663	15.7	18.9	22.4	21.0	21.6
SMEs	57 186	99.0	229 210	99.8	99.6	569 111	61.2	1 097 254	70.7	67.1	48.0	70.8	60.2
Large	563	1.0	446	0.2	0.4	361 337	38.8	454 980	29.3	32.9	52.0	29.2	39.8

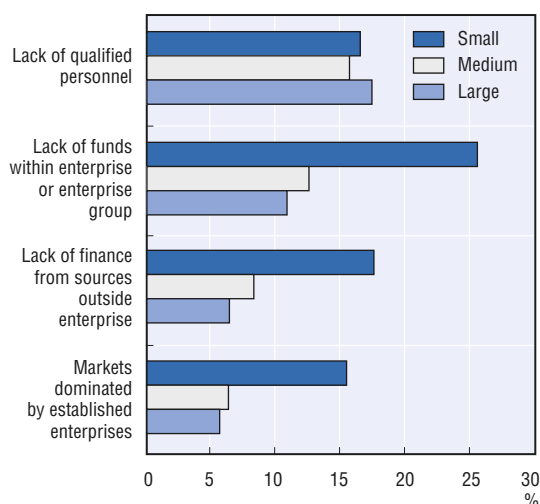
B. Innovation performance of SMEs and large firms, 2004-06¹



C. Types of innovation co-operation, 2004-06³



D. Factors hampering innovation, 2004-06³



E. Administrative burdens on start-ups⁴



Notes: 1. As % of all firms within size class. 2. As % of total turnover. 3. As % of innovating firms. 4. Index scale of 0-6 from least to most restrictive.

Source: Table A: OECD, *Structural and Demographic Business Statistics*. Charts B, C and D: Eurostat, *Community Innovation Survey 2006*. Chart E: OECD, *Product Market Regulation Database*.

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Belgium

Belgian policy to promote innovative entrepreneurship or innovation activities is largely designed and delivered at the regional level, aside from elements captured in the national Lisbon Reform Programme. Federal responsibility in these matters is restricted to fiscal incentives and actions to improve the business environment. This includes actions for administrative simplification as well as a tax measure to support the hiring of R&D personnel in young innovative companies.

At the regional level, initial support for incubators and business innovation centres and financial measures have in the past few years shifted towards a more strategic emphasis on fostering commercialisation of the academic research base, on supporting entrepreneurship (regional entrepreneurship action plans) and on providing access to finance (business angel networks). In Flanders, the Participation Company Flanders works to boost the innovativeness of regional SMEs, by leveraging additional risk capital for new ventures (*Vinnof*: the Flemish Innovation Fund, capital of EUR 50 million) or existing SMEs (*ARKimedes*: approximately EUR 36 million per annum). In Wallonia, a *pre-activity grant* can be applied for by individuals who propose to create a new firm based on an original idea (EUR 136 million per annum), and an *innovation grant* aims to support SMEs' innovation activities (EUR 500 000 per annum) through support for consulting missions, the production of prototypes or the acquisition of necessary research equipment. In addition, SMEs can make use of different existing schemes to get advice on technological and non-technological innovation.

Flemish Co-operative Innovation Networks (VIS)

This initiative aims at stimulating technological innovation in Flemish enterprises, primarily SMEs, by increasing awareness, improving access to technological knowledge and supporting diffusion of knowledge in enterprises. The programme is a comprehensive scheme consisting of eight threads. IWT, the Flemish Institute for the Promotion of Innovation, implements the following types of measures in the VIS programme: financial resource provision for collective research projects; networking tools; raising awareness on technological innovation and co-operation; and networking/matchmaking through the setting up of competence poles and advice on innovation and technology. The VIS scheme is one of the most substantial measures in the Flemish innovation policy mix (about EUR 129 million in 2009), and is often referred to as a best practice instrument in Belgium. According to the latest evaluations of the scheme in 2008, the beneficiaries found it successful in connecting the needs of companies to knowledge supply. About 63% of the companies indicated that the VIS scheme well or perfectly matched their needs. The scheme is estimated to support 8 100 companies per year.

Walloon Pre-activity Grant

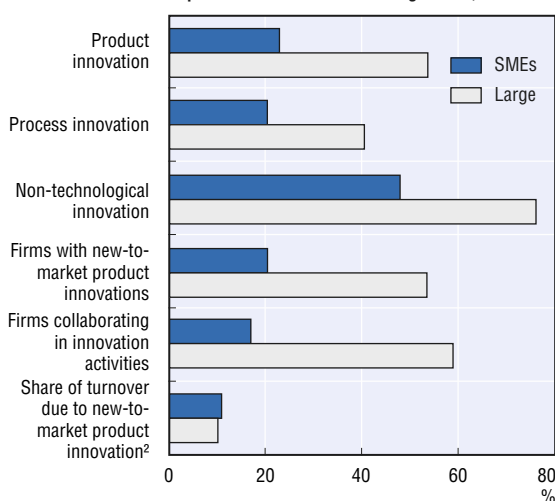
The Walloon Pre-activity Grant is available to individuals who propose a project for the creation of a new firm based on an original and realistic idea in almost any sector of the economy. The grant can cover up to 80% of eligible costs up to a maximum of EUR 12 500 (total annual budget: EUR 1 million). This scheme, launched in 2001, replaced a former grant scheme focused on patented or patentable ideas and supporting costs related to the protection of intellectual property rights for individual inventors. The decision was taken to widen the scope of the scheme to novel ideas that are not purely research based in order to fit with regional needs. An evaluation of the scheme in 2007 has shown that the number of grants awarded has increased from year to year, going from 157 applications in 2002 to more than 300 in 2007. Out of a total of 1 263 grant applications, 56% have been awarded funding. Furthermore, 55% of the beneficiaries have created an activity. In comparison, the projects that have not been supported by the scheme have achieved a creation rate of 11%.

Belgium

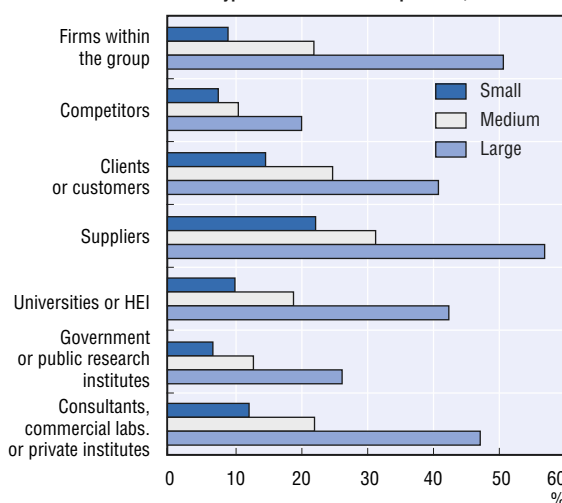
A. Structural indicators on enterprise population, 2007

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	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		No. engaged	%	No. engaged	%		Industry	Services	Total
Micro	93 693	88.7	298 290	93.6	92.4	194 309	21.4	555 404	34.1	29.5	12.2	24.9	19.5
Small	9 643	9.1	17 876	5.6	6.5	197 388	21.7	344 387	21.1	21.3	15.7	23.0	19.9
Medium	1 911	1.8	2 056	0.6	0.9	196 161	21.6	196 070	12.0	15.5	20.8	17.2	18.8
SMEs	105 247	99.6	318 222	99.9	99.8	587 858	64.7	1 095 861	67.2	66.3	48.8	65.1	58.1
Large	429	0.4	417	0.1	0.2	320 369	35.3	533 733	32.8	33.7	51.2	34.9	41.9

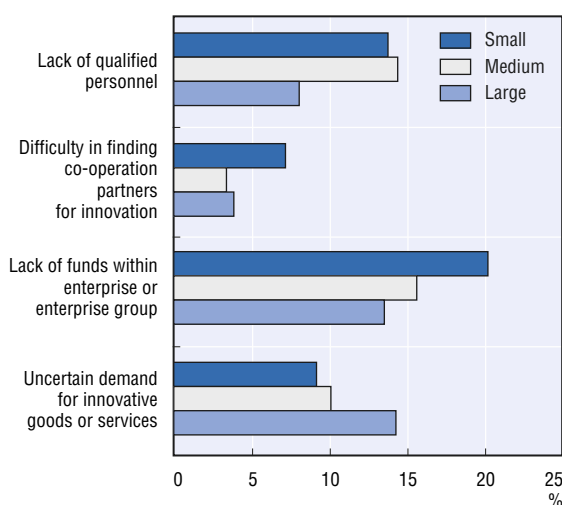
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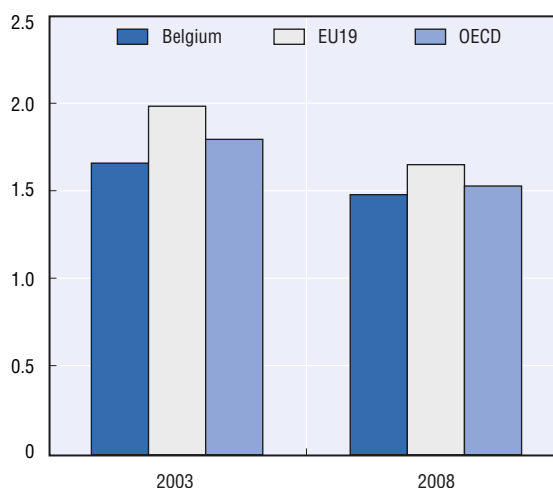
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Canada

National Research Council of Canada Industrial Research Assistance Program

The main national policy in Canada that addresses the innovation activities of SMEs is the *National Research Council of Canada Industrial Research Assistance Program (NRC-IRAP)*. Described as the government of Canada's premier innovation and technology assistance programme, NRC-IRAP provides support to SMEs for the development of new technologies and their successful commercialisation in a global context. The shared-cost programme has been in existence for more than 60 years, and is delivered by a network of over 250 industrial technology advisors located in universities, community colleges and other technology transfer organisations across the country. Each year, qualified SMEs from all industrial sectors access a range of NRC-IRAP services – including technical and business-oriented advisory services, competitive intelligence, non-repayable financial support, and networking and linkages to potential partners. The programme also plays a key role in bringing together key players and creating synergy in the Canadian innovation system, closing the innovation gap in a way that benefits SMEs.

In the past, programme funding levels for contributions to firms and organisations have remained relatively stable, at approximately CAN 60 million per annum since 1995-96. This funding has provided customised solutions to over 8 000 SMEs annually. However, in recent years, with the steady increase in Canadian firms engaged in R&D activities, demand for the programme's services and financial support has exceeded supply. NRC-IRAP has also seen an increase in demand for more complex multi-year projects requiring greater funding per project. In response to this unmet demand, as part of Canada's Economic Action Plan 2009, NRC-IRAP received an additional investment of CAN 200 million over two years to stimulate innovation in Canadian SMEs. The programme also received an additional CAN 45 million for the financial year 2009-10 as part of the Economic Action Plan's specific effort to stimulate job creation and the economy in Southern Ontario. NRC-IRAP is committed to using all of this funding to improve the long-term competitiveness of Canadian firms and help the government build a competitive advantage for Canada based on excellence in science and technology.

NRC-IRAP has been evaluated a number of times, and it has consistently been rated as one of the most effective innovation programmes delivered by the federal government in Canada. In the 2007 Impact Evaluation it was shown to provide an average CAN 7 return to Canada through benefits for each NRC-IRAP dollar spent. Moreover, on average, for every CAN 1 of NRC-IRAP funding, there was a demonstrated CAN 1.88 investment from the client and other sources at the initial stages of a project.

Sustainable Development Technology Fund

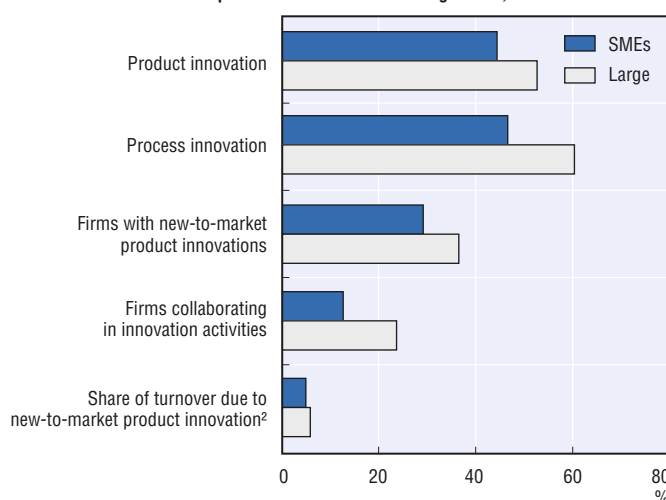
The *Sustainable Development Technology Fund (SDTF)* is an original programme aimed at supporting the late-stage development and pre-commercial demonstration of clean technology solutions: products and processes that contribute to clean air, clean water and clean land that address climate change and improve the productivity and global competitiveness of the Canadian industry. The programme is set up as a CAN 550 million fund. Sustainable Development Technology Canada, the agency that administers the fund, does not require any repayments of the financial contributions it provides to projects funded through SDTF. Although the programme does not specifically target SMEs, the overwhelming majority of recipients of funding from this programme have been SMEs. The funding provided serves a combined goal: supporting the innovative capabilities of SMEs in Canada by helping them develop clean technologies.

Canada

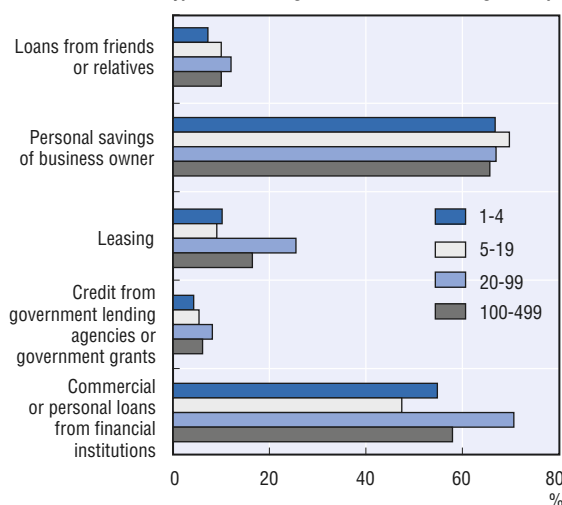
A. Structural indicators on enterprise population, 2008

	Number of business establishments					Total employment				
	Industry		Services		Total	Industry		Services		Total
	No. firms	%	No. firms	%		%	No. engaged	%	No. engaged	
Micro	136 788	72.1	387 046	73.4	73.1	199 285	7.1	298 391	6.6	6.8
Small	40 776	21.5	116 049	22.0	21.9	769 377	27.3	1 468 658	32.3	30.4
Medium	11 519	6.1	23 332	4.4	4.9	854 927	30.4	1 154 593	25.4	27.3
SMEs	189 082	99.7	526 427	99.9	99.8	1 823 589	64.8	2 921 642	64.2	64.4
Large	610	0.3	776	0.1	0.2	991 267	35.2	1 627 309	35.8	35.6

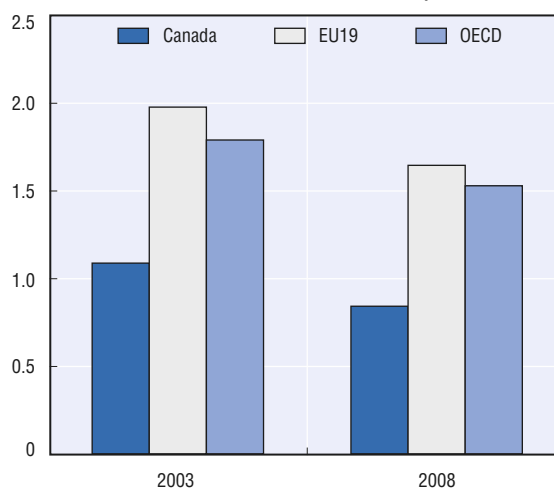
B. Innovation performance of SMEs and large firms, 2002-04¹



C. Types of financing instruments used during start-up



D. Administrative burdens on start-ups³



Notes: 1. As % of all firms within size class. Manufacturing only. 2. As % of total turnover. 3. Index scale of 0-6 from least to most restrictive.

Sources: Table A: Statistics Canada, *Key Small Business Statistics* 2009. Chart B: Statistics Canada, *Survey of Innovation* 2005. Chart C: Statistics Canada, *Survey on Financing of Small and Medium Enterprises*, 2007. Chart D: OECD, *Product Market Regulation Database*.

StatLink  <http://dx.doi.org/10.1787/812772716231>

Czech Republic

Entrepreneurship and enterprise innovation policy in the Czech Republic is institutionally anchored within the Ministry of Industry and Trade. The major public policy targeted at stimulating innovation-based growth of Czech firms is implemented through the European Regional Development Fund-co-financed *Operational Programme Enterprise and Innovation 2007-2013 (OPEI)*.

The OPEI can be characterised as a complementary set of sub-programmes rather than one general entrepreneurship policy. There are seven priority threads to the programme, six of which focus on different areas of public intervention in the enterprise sector with the overall aim of improving the competitiveness of Czech firms. The total financial allocation for this programme is over EUR 3.5 billion, distributed across six thematic priorities: creation of firms (2.6%), development of firms (8%), efficient energy (4.0%), innovations (22.4%), environment for business and innovations (35.4%) and business development services (6.9%). Measures for these priorities include start-up support, SME financing and technology upgrade assistance, ICT and innovation systems, strategic services and R&D function development support, support to projects improving energy efficiency, support to the establishment of training centres, marketing efforts, property development, and consulting and assistance services. In addition, a large component of the programme supports the development of a collaborative environment in which companies can enhance their international competitiveness through strategic co-operation (clusters and technology platforms).

OPEI was approved in December 2007, and during 2008 and 2009 over 8 000 project applications were received for over EUR 3.5 billion. A decision to grant support was made for over 2 000 of these, budgeted at a total of over EUR 500 million. Implementation of these projects is currently under way; a number of smaller projects are already completed. Grants are not the only supporting instruments. Financial engineering instruments such as loan and guarantee funds were also launched and their implementation is ongoing. The evaluation of absorption capacity shows that despite problems at the start of the programme, the Czech business community is eager to utilise this support.

Technology centres and centres of strategic business support services

One of the major challenges of the business sector in the Czech economy is to move up the value chain and shift the basis of global competitive advantage from low-cost manufacturing to higher value added service activities.

This has been mainly pursued through the promotion of business support services especially in sectors of strategic relevance to the Czech economy such as automotive, machinery engineering, electronics, life sciences and information and communication technologies. In particular, technology centres developing new technologies and high-tech products have been established and business support services have been targeted at export-oriented companies through subsidies for operation costs and training and re-training schemes.

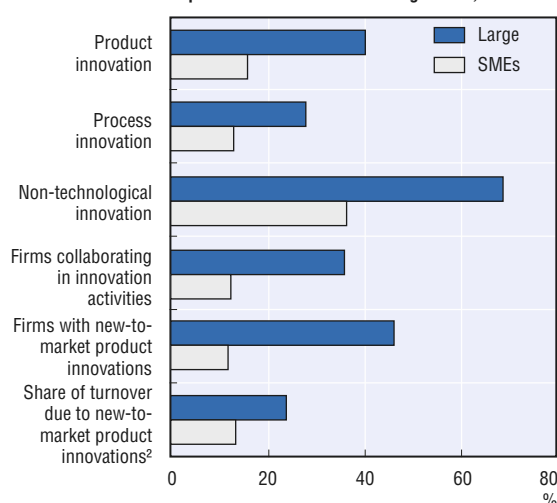
This programme supported 183 projects from 2002 to 2009 and is estimated to have created over 28 430 jobs in the business service sector, which collectively represent investments of EUR 817.6 million. State aid in the form of a business activity subsidy reached EUR 191.9 million, and state aid in the form of a training/retraining subsidy attained EUR 28.4 million at the end of 2009.

Czech Republic

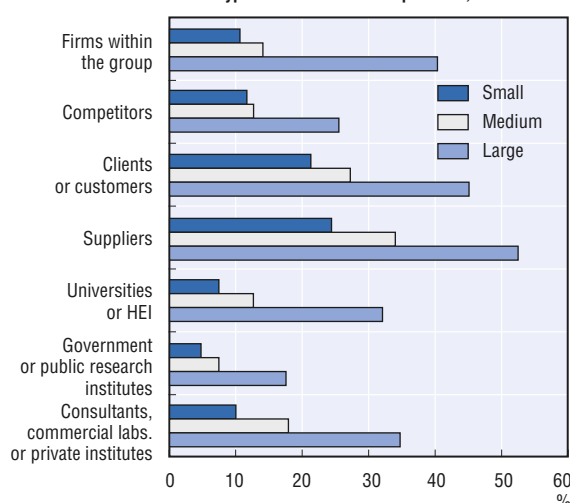
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		%	No. engaged	%	No. engaged		%	%	Industry
Micro	286 335	93.2	552 982	96.2	95.2	367 788	19.5	675 890	39.0	29.2	10.4	29.8	19.1
Small	15 523	5.1	18 455	3.2	3.9	321 125	17.1	348 474	20.1	18.7	12.9	20.5	16.3
Medium	4 392	1.4	2 709	0.5	0.8	464 140	24.7	261 631	15.1	20.2	21.3	18.2	19.9
SMEs	306 250	99.7	574 146	99.9	99.8	1 153 053	61.3	1 285 995	74.3	68.1	44.6	68.5	55.3
Large	1 022	0.3	453	0.1	0.2	729 366	38.7	444 904	25.7	31.9	55.4	31.5	44.7

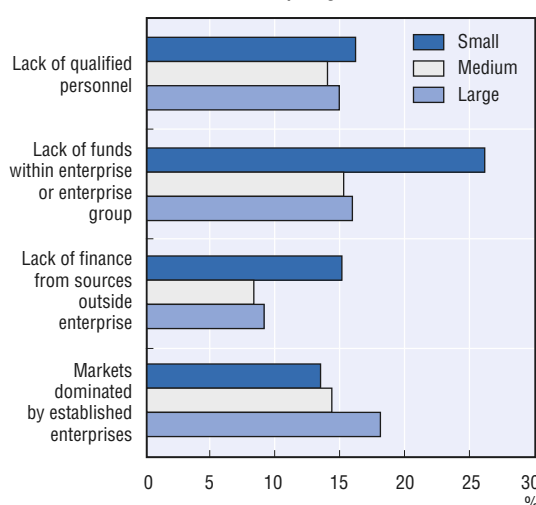
B. Innovation performance of SMEs and large firms, 2004-06¹



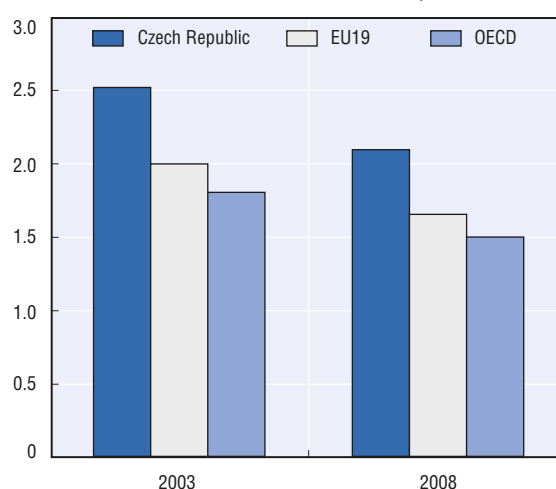
C. Types of innovation co-operation, 2004-06³



D. Factors hampering innovation, 2004-06³



E. Administrative burdens on start-ups⁴



Notes: 1. As % of all firms within size class. 2. As % of total turnover. 3. As % of innovating firms. 4. Index scale of 0-6 from least to most restrictive.

Sources: Table A: OECD, *Structural and Demographic Business Statistics*. Charts B, C and D: Eurostat, *Community Innovation Survey 2006*. Chart E: OECD, *Product Market Regulation Database*.

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Denmark

With the Danish Globalisation Strategy, the Danish government has created a comprehensive framework that sets out to strengthen Danish competitiveness. The Strategy, which became operative in 2006, contains 350 specific initiatives that introduce reforms in key areas such as education and training, innovation, research and entrepreneurship. For 2010 the funds allocated to initiatives in the Strategy exceeds DKK 8.5 billion. Among other things, the Strategy aims at making substantial improvements in the framework conditions for growth and innovation in new and existing enterprises. The *Regional Centres of Growth* and *Programme for User-driven Innovation* are two of the Strategy's initiatives.

Regional Centres of Growth (Vaeksthuse)

The *Regional Centres of Growth* are the result of local government reform in 2007 and are a key piece in the new framework of business services. Their role is to support the creation and expansion of high-growth start-ups by providing free and impartial assistance, referring enterprises to private advisors and relevant government agencies and organisations. The public counsellors at the centres aim to help entrepreneurs by determining the sort of advice needed and to redirect them to competent private advisors. This set-up also meets the government's intention to strengthen the private market for business advisory services.

The centres, which have a generalist profile, co-operate with the Trade Council to promote internationalisation, and with the Patent and Trademark Office to help companies with intellectual property rights-related issues. The co-operation between the centres and other actors is regulated by written agreements, which differ from organisation to organisation. In order to create national coherence and synergies between the centres, a common webpage, telephone number, user evaluation system, intranet, competencies development programme, and customer relationship management system (CRM) have been established for all five existing centres.

Basic funding for the *Regional Centres of Growth* amounts to DKK 92.8 million a year (including administrative costs). Ten per cent of these funds are reserved for bonuses that are allocated to the centres based on the performance of their customers. In addition, DKK 42 million in 2007 and DKK 60 million in 2008 and 2009 were allocated to the centres on the basis of the agreement on the implementation of the Globalisation Strategy. While the previous part of the funding allows financing of existing products and services, the latter part is devoted to the development of new products and services.

Programme for user-driven innovation

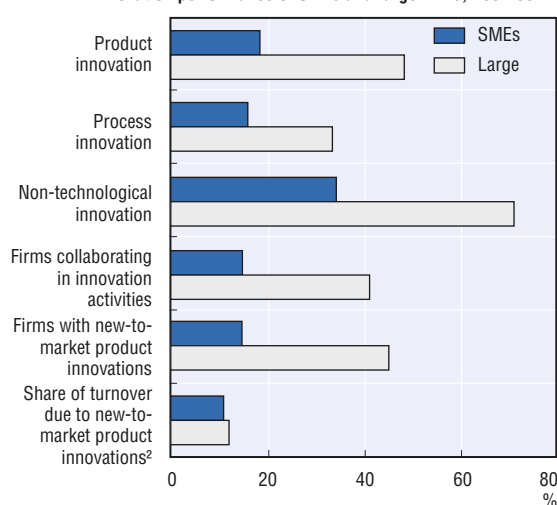
The *Programme for user-driven innovation* has a yearly budget of DKK 100 million and runs for 2007-09. By strengthening the diffusion of methods for user-driven innovation in the private and public sector, the programme aims to help increase growth in the participating companies and increase user contentedness and/or efficiency in participating public institutions. The programme should also result in the development of new products, services and concepts, as well as in an increase of the qualifications of the employees taking part in the innovation processes of the beneficiary companies and public institutions. Applicants and projects from educational, cultural and knowledge institutions are welcomed. Projects involving cross-sectoral consortia are particularly encouraged. The programme is administered by Danish Enterprise and Construction Authority, which is part of the Ministry for Economic and Business Affairs.

Denmark

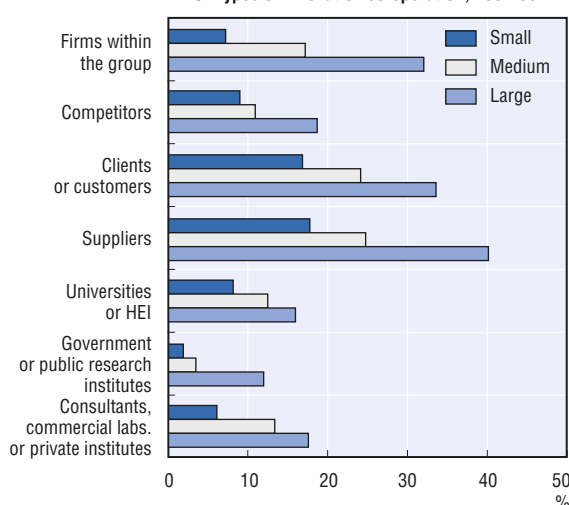
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		No. engaged	%	No. engaged	%		Industry	Services	Total
Micro	48 191	83.3	136 365	88.4	87.0	103 805	16.1	254 212	21.7	19.7	14.5	27.6	22.7
Small	7 808	13.5	15 015	9.7	10.8	156 419	24.3	293 755	25.0	24.8	19.8	23.0	21.8
Medium	1 581	2.7	2 446	1.6	1.9	153 330	23.8	232 142	19.8	21.2	22.7	18.4	20.0
SMEs	57 580	99.5	153 826	99.7	99.7	413 554	64.2	780 109	66.5	65.6	57.0	69.0	64.5
Large	303	0.5	420	0.3	0.3	230 931	35.8	393 802	33.5	34.4	43.0	31.0	35.5

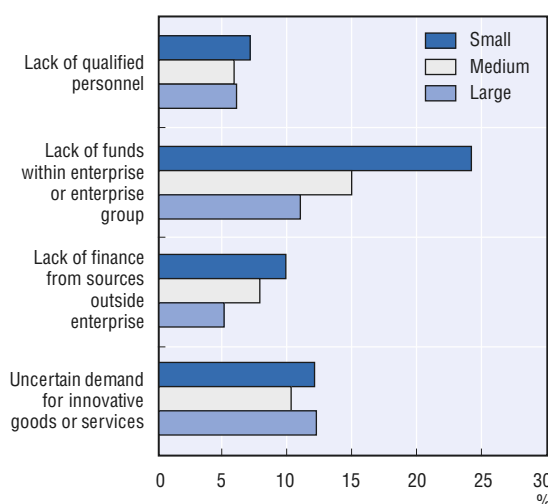
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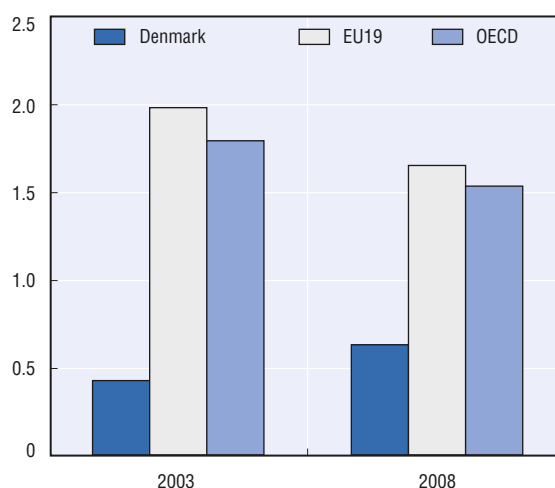
C. Types of innovation co-operation, 2004-06³



D. Factors hampering innovation, 2004-06³



E. Administrative burdens on start-ups⁴



Notes: 1. As % of all firms within size class. 2. As % of total turnover. 3. As % of innovating firms. 4. Index scale of 0-6 from least to most restrictive.

Source: Table A: OECD, *Structural and Demographic Business Statistics*. Charts B and C: Eurostat, *Community Innovation Survey 2006*. Chart D: Eurostat, *Community Innovation Survey 2004*. Chart E: OECD, *Product Market Regulation Database*.

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Finland

In Finland, support for innovative entrepreneurship and the innovation activities of SMEs is based on a systemic policy approach. The Finnish Funding Agency for Technology and Innovation (Tekes) provides well-established programmes aimed to encourage SME participation in co-operative research, development and innovation projects. The funding is heavily concentrated on R&D in small businesses and covers more than one-third of R&D in businesses with less than 50 employees, but less than 3% of R&D in businesses with more than 500 employees. Tekes directed approximately 26% of the total funding for businesses to the smallest enterprises employing less than ten employees, approximately EUR 75 million in 2008. An additional EUR 10-15 million was directed towards SMEs through projects in large businesses, which increases the SMEs' share by 5-8%.

The Ministry of Employment and the Economy (TEM) is building a modern growth entrepreneurship policy that seeks to create first-rate conditions for Finnish growth ventures. To that end, two initiatives were recently launched: the *Funding for Young Innovative Enterprises* programme (NIY) and the *Startup Accelerator* scheme (VIGO).

Funding for Young Innovative Enterprises and Start-up Accelerator

The *Funding for Young Innovative Enterprises* programme aims to increase the number of enterprises that seek fast growth and internationalisation. The selection criteria for the funding programme focus on the applicant's capabilities and potential, the quality and potential of the business idea, ambition and potential for growth and international markets, the team's and owners' commitment, and the competence of the key persons involved in the enterprise.

The beneficiary must be an independent small enterprise, which has been in operation for less than six years and with less than 50 employees, and willing to seek and accept new owners and investors. R&D expenses need to represent at least 15% of its total operating expenses over the past three years. Funding can be granted in three phases: business plan preparation (1-6 months/up to EUR 50 000), early growth (6-24 months/up to EUR 250 000) and rapid growth (1-3 years/EUR 750 000). The maximum funding is EUR 1 million per enterprise and it may take the form of a grant, loan, or risk capital. It can cover up to 75% of the eligible costs, e.g. those for business purposes: personnel costs, travel costs, materials and equipment, external services. At each stage, the funding decision involves external panel evaluation, and only 10-20 businesses per year are expected to reach the third phase of financing.

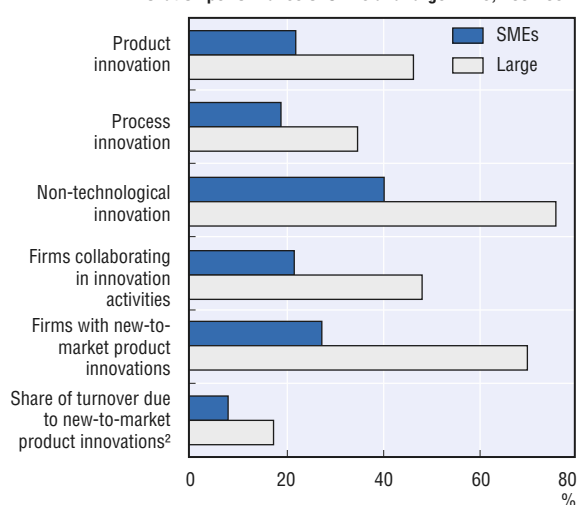
Under the *Start-up Accelerator* scheme, a number of qualified, private start-up accelerators are committed to providing potential growth enterprises with world-class expertise and access to substantial, flexible early-stage funding. The scheme is managed by TEM and co-ordinated by Tekes. The public sector provides incentives for experts, such as serial entrepreneurs, to become mentors and active developers in new ventures. Such experts are well positioned to offer high-quality advice and contacts for start-ups to accelerate their growth and internationalisation, and to prepare them to be more investment-ready for venture capital placements. The first three start-up accelerators were selected by a steering committee in June 2009. These accelerators are focusing on growth enterprise development in different industries that include: life sciences, information and communication technologies, media technologies and spin-offs from research projects. Another two or three private accelerator partners are to be selected, which will target innovative start-ups in the clean tech, energy, services and welfare areas.

Finland

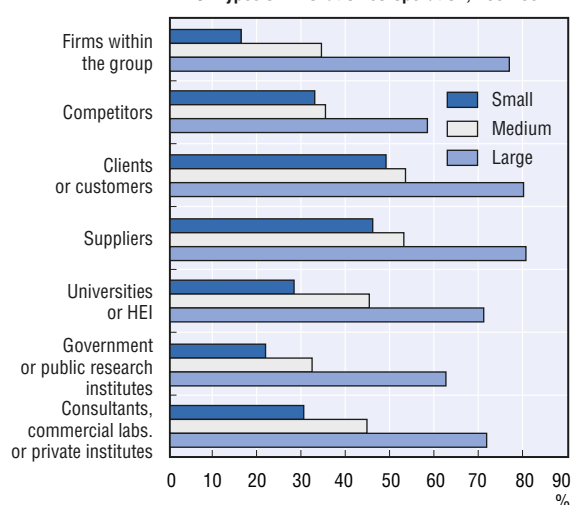
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	No. firms	%	No. firms	%		%	No. engaged	%	No. engaged		%	%	Industry
Micro	61 546	89.9	136 752	94.1	92.8	96 059	16.7	204 320	27.9	23.0	11.4	28.5	19.4
Small	5 394	7.9	7 157	4.9	5.9	107 756	18.7	141 935	19.4	19.1	13.8	19.9	16.7
Medium	1 232	1.8	1 084	0.7	1.1	124 620	21.7	106 600	14.6	17.7	18.5	16.2	17.4
SMEs	68 172	99.6	144 993	99.8	99.7	328 435	57.1	452 855	61.8	59.7	43.8	64.5	53.5
Large	298	0.4	311	0.2	0.3	246 991	42.9	279 732	38.2	40.3	56.2	35.5	46.5

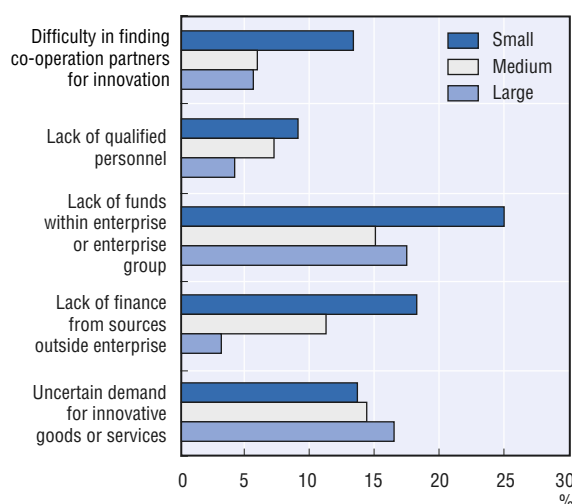
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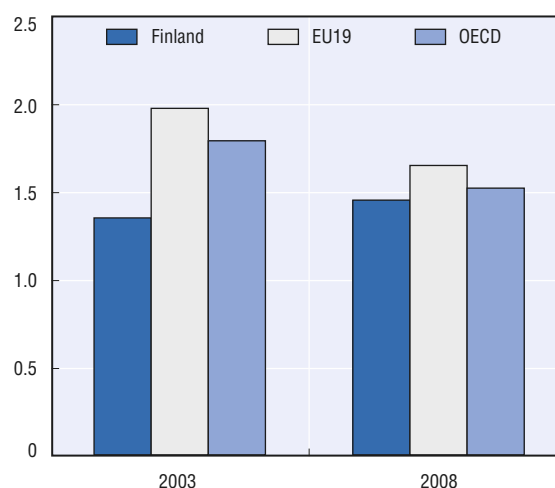
C. Types of innovation co-operation, 2004-06³



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E. Administrative burdens on start-ups⁴



Notes: 1. As % of all firms within size class. 2. As % of total turnover. 3. As % of innovating firms. 4. Index scale of 0-6 from least to most restrictive.

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France

During the 1980s the *Agence Nationale de Valorisation de la Recherche*, ANVAR, created in 1974 to promote the exploitation of public research results, was progressively reoriented to the mission of supporting SMEs by means of tools such as loans for innovative projects, contacts with research societies, recruitment of researchers and PhD students and counselling in intellectual property. In the nineties ANVAR opened regional delegations, which started to play a central role in the state/region multi-level governance of innovation policy.

A further institutional development in 2005 was the merger of ANVAR with the SME development bank BDPME, forming the OSEO group. This public holding, which reports to the Ministry of Finance and the Ministry of Higher Education and Research, has the responsibility of providing assistance and financial support to SMEs in crucial stages of their development: start-up, innovation, development and buyout. OSEO-Innovation's annual budget is around EUR 530 million, of which 35% is devoted to subsidies and the rest to reimbursable loans.

Also, the research tax credit (*Crédit Impôt Recherche*), introduced in 1983, was modified in 2004 and 2005 to better adapt to the needs of SMEs. In 2007 the system was extended to cover a larger array of expenses than only R&D costs, such as: technology surveys, R&D subcontracting and other partnerships, human resources for research, and patent application procedures. Since 2008, the tax principles have been considerably simplified in the sense that they are no longer based on R&D expense increases but on their level: 50% for the first year, 40% the second year and 30% the years after. The reform of the tax credit has made it more attractive for smaller and newly created firms.

Pôles de compétitivité

In late 2004 the French government introduced *pôles de compétitivité* (*competitiveness poles*) to encourage entrepreneurship and SME innovation in the country. These poles are associations of enterprises and research and training centres that share a development strategy implemented through joint projects. The objective of the poles is thus to encourage co-operation and collaboration among key local development stakeholders around related industries in a specific geographical area. This makes them a form of “institutionalised clusters”.

Competitiveness poles were originally selected through a call for tender in 2005, and a total fund of EUR 1.5 billion was earmarked for the period 2006-08. Funding mainly came from the Business Competitiveness Fund, the newly created National Research Agency, the Innovation Agency OSEO, and the relevant local authorities. Most of the funding is to cover R&D projects, although “supportive” projects in related fields such as training and ICT infrastructure can also be financed.

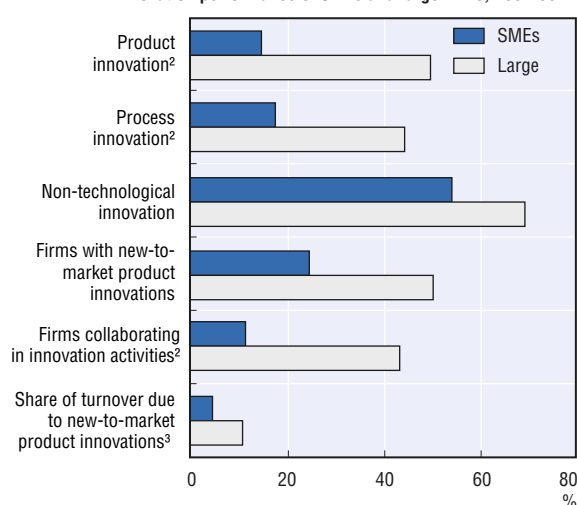
Seventy-one poles have been selected and over 300 projects have been supported. These projects have leveraged EUR 3 billion of R&D and have resulted in the hiring of 9 000 additional researchers. SMEs are largely represented in the programme, comprising approximately three-quarters of the firms that are members of the poles. Indeed, some poles nearly exclusively consist of small firms (e.g. Cap Digital in the Ile de France or Micro-Techniques in the eastern region of Franche-Comté). For an SME, joining a *pôle de compétitivité* has become an occasion to break out of isolation and share the risk of R&D and innovation investments with other local partners.

France

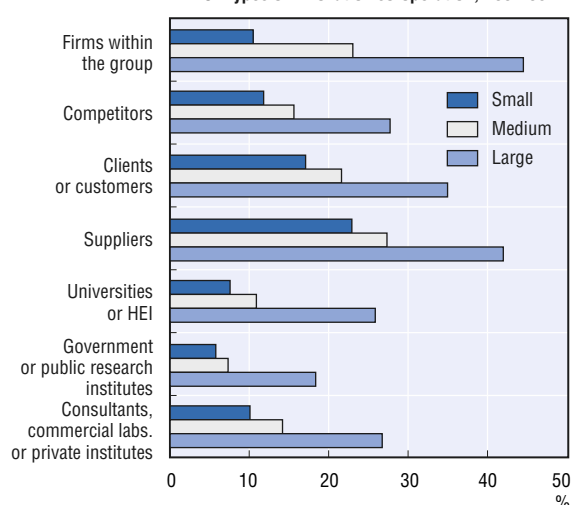
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Small	59 603	8.5	92 223	4.9	5.9	1 220 992	22.0	1 853 526	19.4	20.4	18.1	19.3	18.8
Medium	9 573	1.4	13 540	0.7	0.9	996 611	18.0	1 392 798	14.6	15.8	16.6	14.3	15.2
SMEs	697 547	99.7	1 863 633	99.9	99.8	3 417 996	61.6	5 719 596	59.9	60.5	49.7	60.0	56.0
Large	2 370	0.3	2 740	0.1	0.2	2 133 045	38.4	3 833 615	40.1	39.5	50.3	40.0	44.0

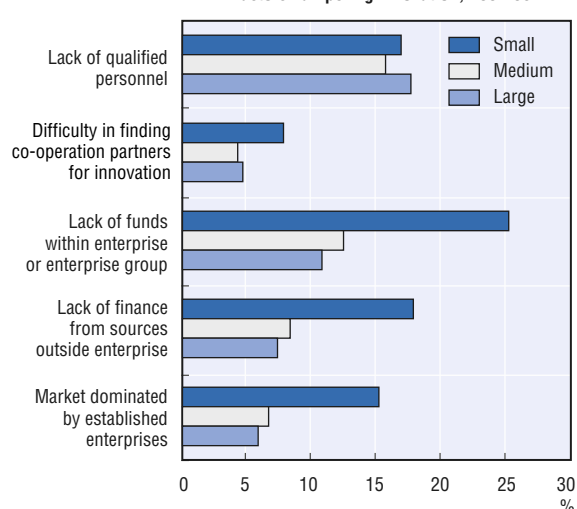
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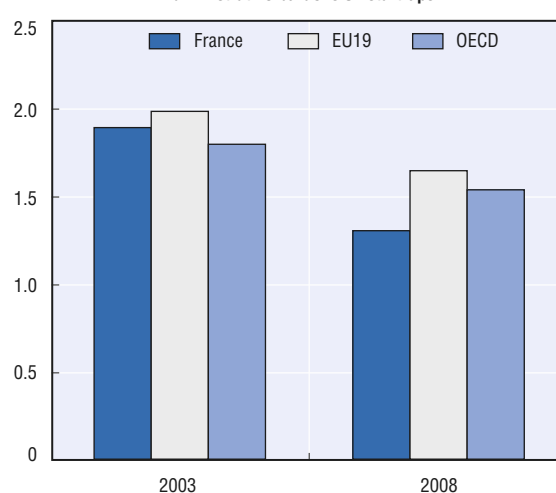
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D. Factors hampering innovation, 2004-06⁴




E. Administrative burdens on start-ups⁵



Notes: 1. As % of all firms within size class. 2. 2002-04. 3. As % of total turnover. 4. As % of innovating firms. 5. Index scale of 0-6 from least to most restrictive.

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Germany

With the so-called High-Tech Strategy for Germany, from August 2006 onwards the German government started bundling a great variety of measures in the field of innovation and technology policy, and further improved the overall policy environment to foster high-tech entrepreneurship and SME development. To do so the government joined together with the KfW banking group and the industrial corporations BASF, Deutsche Telekom and Siemens to initiate the *High-Tech Gründerfonds*. The amount of capital provided by the fund's investors totalled EUR 272 million. The fund invests venture capital in young, high-opportunity technological companies implementing promising research results in an entrepreneurial manner. In an initial step, successful applicants receive up to EUR 500 000 in risk capital and management coaching. In a subsequent financing round, the fund can provide selected participating companies with an additional EUR 500 000.

Since its inception in August 2005, more than 2 100 applications for financial aid have been submitted. As of July 2009, the start-up fund pledged aid in 197 cases, had 156 companies in its portfolio, and distributed over EUR 90 million in capital. Those companies receiving aid from the fund have identified additional investors in second-round financing stages, demonstrating the success of the concept in stimulating the early-stage venture capital market.

Exist

EXIST is a support programme of the Federal Ministry of Economy and Technology. It is specifically designed to improve the entrepreneurial environment at universities and research institutes and to increase the number of technology and knowledge-based company formations. The EXIST programme is also a component of the government's High-Tech Strategy for Germany and is co-financed by the European Social Fund. EXIST has three pillars. The first, *Culture of Entrepreneurship*, aims at promoting entrepreneurship among university employees and students. Projects at universities and non-university research institutes can apply for financial support in the form of a non-repayable grant over a three-year period. In all three application rounds, 120 applications were submitted, of which 48 projects at 64 higher education institutions were approved. The total amount of grants in the year 2008 was over EUR 39.8 million.

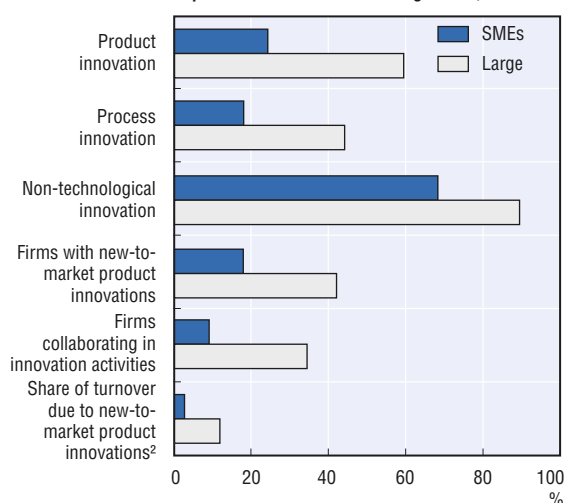
The second pillar, *Business Start-Up Grants*, supports the preparation of innovative business start-up projects at universities and research establishments. It helps scientists, university graduates and students to develop their business ideas into business plans and to advance their ideas for products and services. The entrepreneurs receive a subsistence grant from EUR 800 to EUR 2 500 per month for a maximum period of 12 months; materials and equipment (worth EUR 10 000 for individual start-ups and EUR 17 000 for team start-ups); funding for coaching (EUR 5 000); and, if necessary, child benefits of EUR 100 a child per month. A total of 247 out of 416 applications were approved from January 2007 to December 2008. The research institute *Forschungszentrum Jülich* has judged that the quality of the applications has constantly improved, so that the approval rate went up from 48% in 2007 to 65% in 2008. The total amount of funding since the Business Start-Up Grants were created was EUR 18.1 million. The third programme line, *Transfer of Research*, promotes especially sophisticated technology-based business start-up projects in the pre-start-up and start-up phase. During the first funding phase, entrepreneurs can apply for staff expenses for up to three staff members and EUR 50 000 for materials and equipment. During the second phase, companies can be supported with up to EUR 150 000 to continue product design and be able to attract external funding for their company. In 2008, a total of 96 draft concepts for research transfer were submitted. Of these, the selection panel recommended that 28 receive aid. The total amount of grants in 2008 was EUR 9.7 million.

Germany

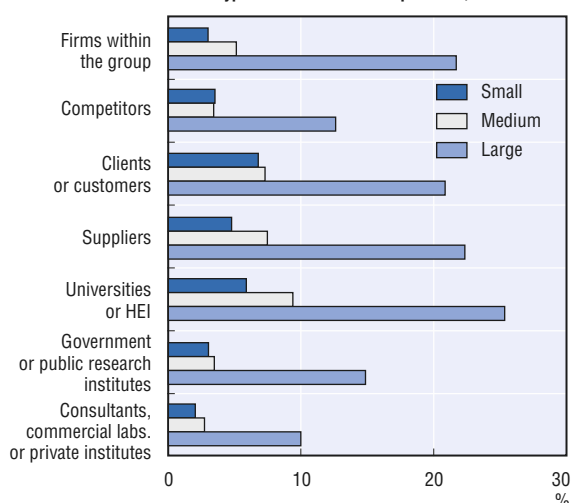
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		%	No. engaged	%	No. engaged		%	%	Industry
Micro	311 230	72.7	1 199 186	86.2	83.0	1 064 132	11.7	3 179 320	24.3	19.1	6.0	24.8	16.1
Small	91 875	21.4	1 663 896	11.8	14.1	1 740 469	19.1	3 060 121	23.4	21.6	13.4	21.2	17.6
Medium	20 632	4.8	23 095	1.7	2.4	2 122 243	23.3	2 232 646	17.1	19.6	21.2	18.8	19.9
SMEs	423 737	98.9	1 386 177	99.7	99.5	4 926 844	54.0	8 472 087	64.8	60.4	40.7	64.8	53.6
Large	4 635	1.1	4 360	0.3	0.5	4 194 743	46.0	4 605 487	35.2	39.6	59.3	35.2	46.4

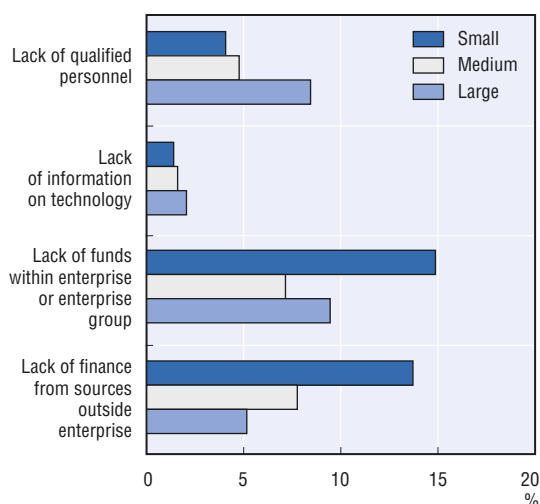
B. Innovation performance of SMEs and large firms, 2004-06¹



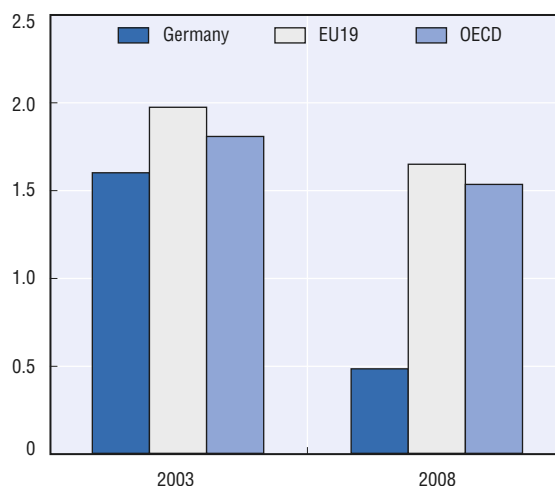
C. Types of innovation co-operation, 2002-04³



D. Factors hampering innovation, 2002-04³



E. Administrative burdens on start-ups⁴



Notes: 1. As % of all firms within size class. 2. As % of total turnover. 3. As % of innovating firms. 4. Index scale of 0-6 from least to most restrictive.

Sources: Table A: OECD, *Structural and Demographic Business Statistics*. Chart B: Eurostat, *Community Innovation Survey 2006*. Charts C and D: Eurostat, *Community Innovation Survey 2004*. Chart E: OECD, *Product Market Regulation Database*.

StatLink  <http://dx.doi.org/10.1787/813110872302>

Greece

The National Strategic Reference Framework 2007-2013, co-funded by the European Regional Development Fund, is geared towards transforming Greece into a highly competitive and open economy. The *Operational Programme “Competitiveness and Entrepreneurship”* (OPCE) and five *Regional Operational Programmes* are the main tools for improving competitiveness and entrepreneurship and fostering innovation. The total of EUR 732 million, part of which goes to innovative start-ups, are allocated to two priorities of the OPCE (Priority 1: Creation and development of innovation supported by research and technological development, and Priority 3: Improvement of the entrepreneurial environment) as well as to threads of the five regional operational programmes related to entrepreneurship and digital convergence.

The OPCE provides for a good number of measures, of which the most relevant for entrepreneurship includes support of a broad range of infrastructures (clusters, large-scale research and innovation platforms, and networks in advanced research sectors), the creation of intermediary organisations and the set up of incentives for venture capital funds and of grant schemes for special categories of entrepreneurs (e.g. the youth and women’s entrepreneurship).

Creation – Support to New Innovative Enterprises

In the 2000-07 programming period the General Secretariat for Research and Technology of the Ministry of Development launched programmes such as *ELEFTHO* (business incubators), *TECHNOCELLS* (research-based technology parks and business incubators), *Poles of Innovation* (industry-university co-operative research), *PRAXE* (research spin-offs) and the *Zone of Innovation* framework programme. As a whole, these programmes have provided incentives to both university and the private sector to work together, whilst cushioning the financial risk for people willing to invest in technology-based start-ups.

The *Creation – Support to New Innovative Enterprises* programme for 2007-13 builds on this past experience and expands to assist small young technology-based companies (no more than six years of age) established or being established by researchers from Greece and abroad or by parent companies. The public funds allocated to the whole programme are EUR 25 million over four years (2010-13). A budget of up to EUR 1.5 million per project is foreseen with a maximum public contribution of 70% of the overall project costs.

“*Innovation Vouchers*” launched at the end of 2008, on the other hand, aim to support SMEs in the manufacturing sector and software industry, in buying innovative consulting services and know-how from so-called “innovation agents”, which also include universities. SMEs have to identify a problem that requires know-how or expertise supplied by the innovation agent. Then the vouchers, individually valued at EUR 7 000, will be given to applicant companies and exchanged for consulting services from the innovation agents.

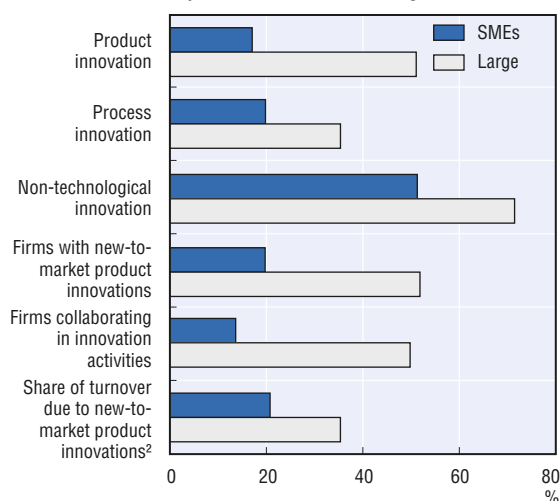
The applications are selected on the basis of their date of registration and availability of funds in the relevant operational programme. In a two-month time from the selection date the beneficiary has to register the contract with the innovation agent through the managing unit of the scheme, otherwise they miss the priority date. The duration of each project is limited to four months. At the end, the recipient company transfers the voucher to the innovation agent, who can cash it from the funding authorities.

Greece

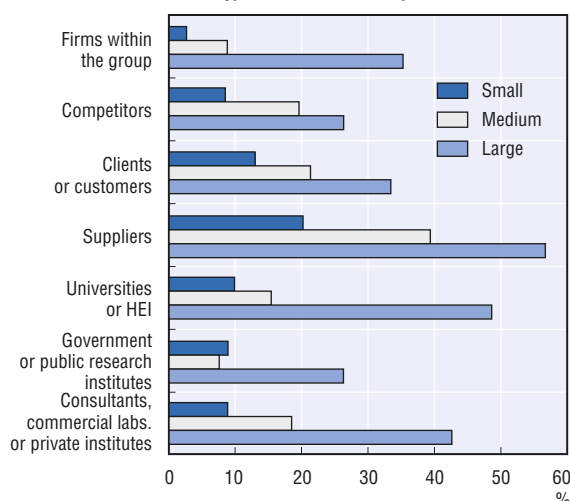
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		No. engaged	%	No. engaged	%		Industry	Services	Total
Micro	91 979	96.4	6 049 12	96.8	96.8	189 207	44.0	1 137 990	60.3	57.2	27.3	38.2	35.1
Small	2 475	2.6	17 905	2.9	2.8	55 695	12.9	332 472	17.6	16.7	9.6	24.7	20.4
Medium	798	0.8	1 758	0.3	0.4	81 294	18.9	165 547	8.8	10.6	18.2	14.3	15.4
SMEs	95 252	99.8	624 575	100.0	99.9	326 196	75.8	1 636 009	86.6	84.6	55.1	77.2	71.0
Large	148	0.2	298	0.0	0.1	104 079	24.2	252 464	13.4	15.4	44.9	22.8	29.0

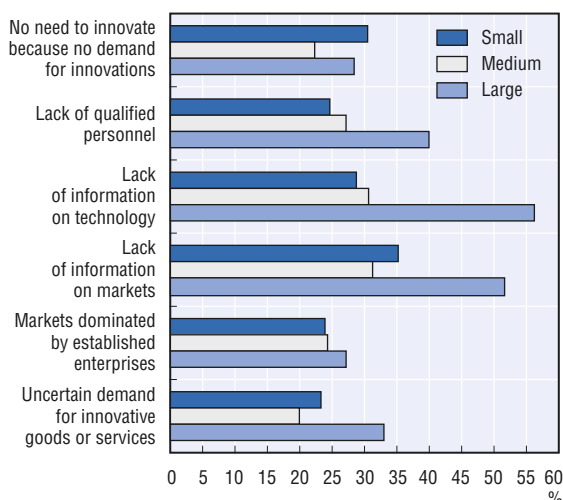
B. Innovation performance of SMEs and large firms, 2004-06¹



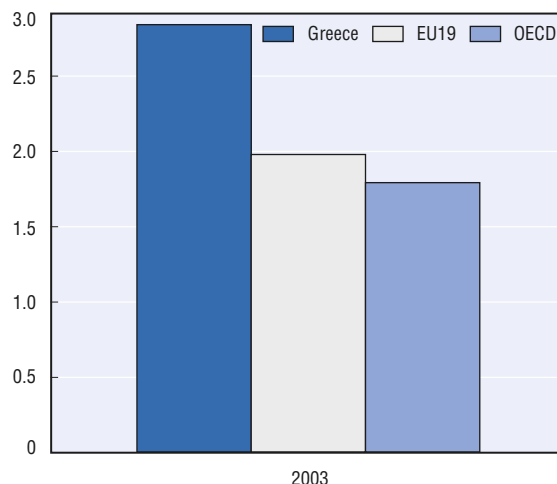
C. Types of innovation co-operation, 2004-06³



D. Factors hampering innovation, 2004-06³



E. Administrative burdens on start-ups⁴



Notes: 1. As % of all firms within size class. 2. As % of total turnover. 3. As % of innovating firms. 4. Index scale of 0-6 from least to most restrictive.

Sources: Table A: OECD, *Structural and Demographic Business Statistics*. Charts B, C and D: Eurostat, *Community Innovation Survey 2006*. Chart E: OECD, *Product Market Regulation Database*.

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Hungary

In Hungary, the total expenditure on research and development was HUF 245.7 billion in 2007; this exceeded the previous year's figure by 3.3% at current prices. The main sources of aid provided by national sources are the *Hungarian Scientific Research Fund Programmes (OTKA)* and the *Research and Technology Innovation Fund (KTIA)*. In 2008 the amounts paid from the KTIA Fund increased to HUF 18.3 billion from HUF 13.3 billion in 2007, with SMEs getting priority in the distribution of funding.

The EU co-finances the *Economic Development Operational Programme (EDOP)* of the New Hungary Development Plan and the *Competitiveness and Innovation Framework Programme (CIP)*. Priority 1 of the Economic Development Operational Programme – *R&D and Innovation to Promote Competitiveness* – stimulates industrial research and R&D activities implemented in close co-operation by enterprises, universities and research institutes. It also promotes the establishment of up-to-date research infrastructure and patent right procedures in certain high-priority areas. Another goal is to establish innovation and technology parks accommodating research activities and innovative enterprises, and to develop already existing institutions.

Act 134 of 2004 on Research and Development and Technological Innovation was Hungary's first comprehensive legal act regulating this area. Its purpose is to enhance competitiveness, research commercialisation, and innovation. In 2007 the government adopted the medium-term *Science, Technology and Innovation Policy (STI) Strategy for 2007-13*. The main measures of the Strategy targeting SMEs include: direct support facilities and special tax allowances for innovative, early-stage enterprises; establishing and developing technological incubators; helping the early stage and growth phase of innovative enterprises by venture capital funds and financial instruments, e.g. the *New Hungary Venture Capital Programme* (HUF 40.5 billion); improving SMEs' knowledge of intellectual property protection and industrial law, e.g. *VIVACE+ Programme*. The latter is managed by the Hungarian Patent Office (HPO) and funded by the National Office for Research and Technology (NKTH) with a two-year budget of HUF 109.5 million. Through this programme, SMEs receive information and orientation services on industrial property protection and HPO has been able to bolster its existing regional partner network, acting as a mediator and multiplier.

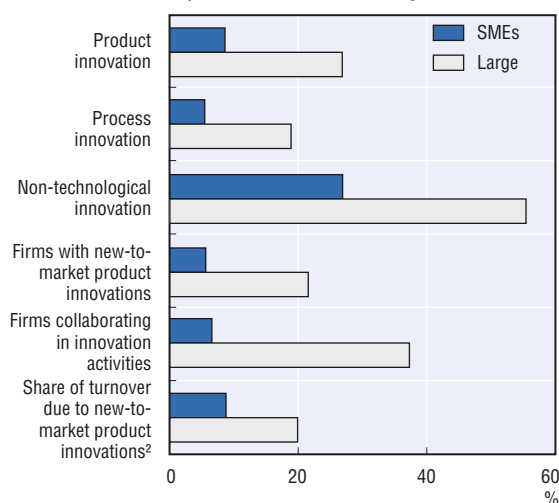
Another programme for SMEs is the *Innocheque Plus* grant scheme, which promotes innovative initiatives to be implemented by small enterprises, and to stimulate demand for innovation facilitating services. The grant scheme was announced in mid-2008 by the National Office for Research and Technology (NKTH) and will operate for a period of three years with a total fund of HUF 12 billion.

Hungary

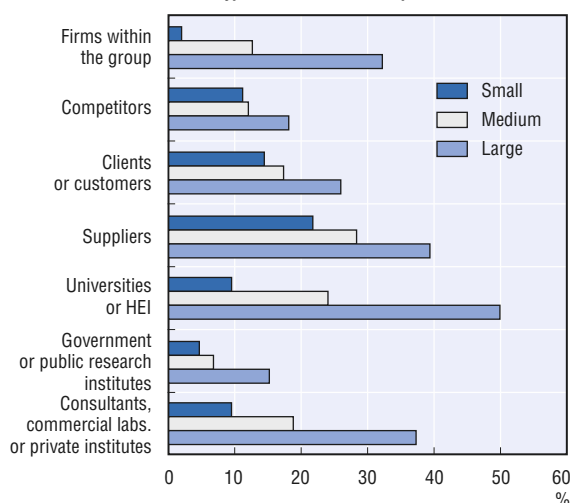
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		No. engaged	%	No. engaged	%		Industry	Services	Total
Micro	117 391	89.8	399 447	95.7	94.3	229 320	21.5	679 206	44.7	35.2	7.2	27.8	15.1
Small	10 477	8.0	15 655	3.7	4.8	211 002	19.8	287 495	18.9	19.3	11.7	17.6	14.0
Medium	2 312	1.8	2 076	0.5	0.8	236 676	22.2	194 569	12.8	16.7	19.1	16.5	18.1
SMEs	130 180	99.6	417 178	99.9	99.8	676 998	63.5	1 161 270	76.5	71.2	38.1	61.9	47.2
Large	541	0.4	310	0.1	0.2	388 569	36.5	356 536	23.5	28.8	61.9	38.1	52.8

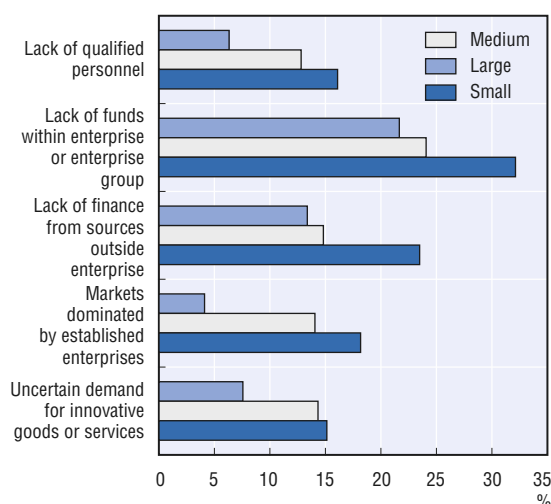
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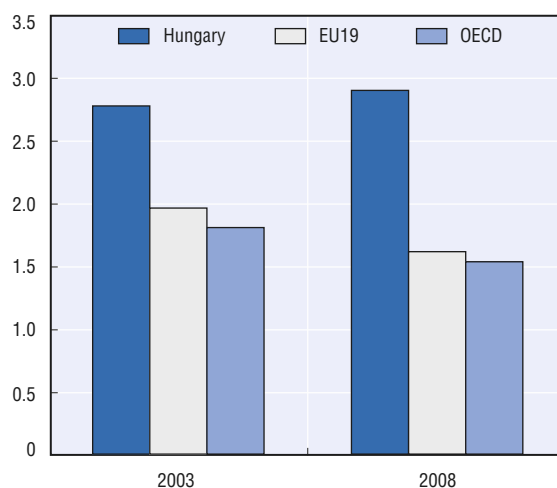
C. Types of innovation co-operation, 2004-06³



D. Factors hampering innovation, 2004-06³



E. Administrative burdens on start-ups⁴



Notes: 1. As % of all firms within size class. 2. As % of total turnover. 3. As % of innovating firms. 4. Index scale of 0-6 from least to most restrictive.

Source: Table A: OECD, *Structural and Demographic Business Statistics*. Charts B, C and D: Eurostat, *Community Innovation Survey 2006*. Chart E: OECD, *Product Market Regulation Database*.

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Iceland

IceTec – Icelandic Technological Institute

The *Icelandic Technological Institute (IceTec)*, operating under the Ministries of Industry and Commerce, is charged with the role of transferring technologies and expertise to business and industry. IceTec possesses a budget of ISK 242 million (USD 2.6 million), of which the majority comes from the government via institutional and competitive funding channels. IceTec has a role in assisting companies in innovation, productivity and R&D as well as providing information and advice to entrepreneurs and SMEs. IceTec operates a series of business incubators that can house up to nine companies, usually chosen from the biotech sector. Within an incubator, these companies are exposed to innovative business ideas and concepts.

In addition, the Icelandic Technological Institute runs a unit named the *Service Centre for Entrepreneurs and SMEs (IMRPA)*. Begun in 2002, IMRPA acts as an intermediary between individuals, companies and government bodies. With a 2008 budget of around ISK 300 million (approximately USD 2.4 million), the Service Centre for Entrepreneurs and SMEs aids entrepreneurs in developing and refining business ideas as well as providing counselling on start-up growth and management strategy. The Service Centre for Entrepreneurs and SMEs also provides regional support through programmes that aim to provide knowledge on how to make business plans and foster business knowledge within rural communities.

Another, similar project that seeks to bring together individuals and companies, though not directly run by the Icelandic Technological Institute, is a programme started in 1998 named the *Step Ahead* project. This project is a series of forums that promote innovation sharing and collaboration between firms in certain industries. With a revised budget of ISK 4 million (USD 117 000), the programme has already been renewed once in 2003. The forums organised by the Step Ahead project are based on industry groups and include a Seed forum, Health Technology forum and a Fisheries Technology forum. The Seed forum is the most concerned with SMEs: it aims to help small, unlisted technology-based firms achieve growth targets with the eventual goal of becoming a listed company on the stock exchange.

New Business Venture Fund

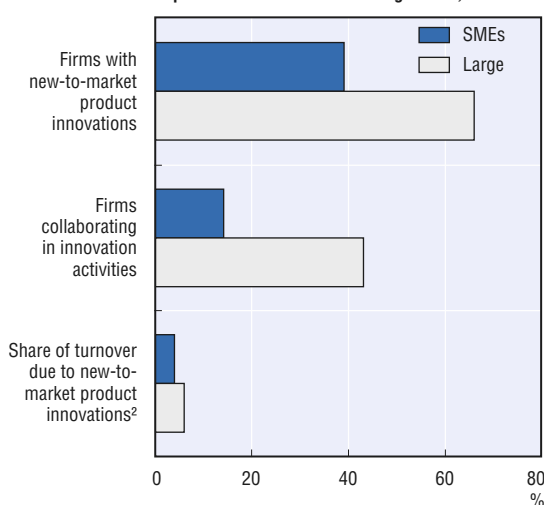
The government launched a programme in 1998 entitled the *New Business Venture Fund*, which became an important source of funding for SMEs. This Fund, which is owned by the government and operates under the supervision of the Ministry of Industry and Commerce, subsidises lending to innovative start-ups. The official purpose of the Fund is to strengthen Iceland's economy and increase internationalisation. In pursuit of this goal, the Fund participates in innovation-oriented investment projects and assists SMEs in developing their marketing skills. With an initial budget of ISK 5 billion (USD 53 million) in 1998 and ISK 1 billion in 2004 and 2005, the Fund typically provides capital or grants in the start-up, early or developing stages of SMEs, in return for approximately 20-25% ownership equity.

Iceland

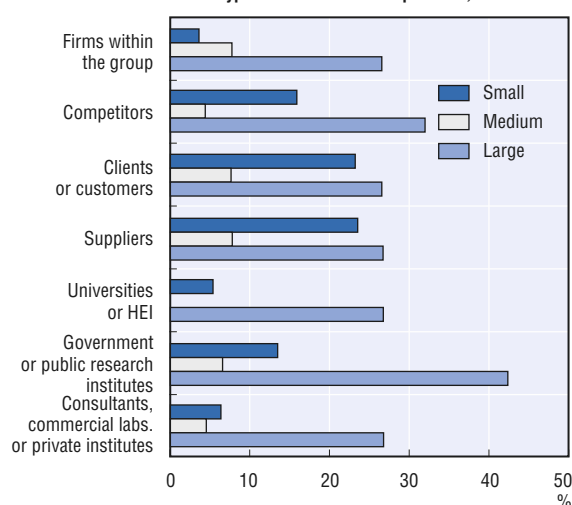
A. Structural indicators on enterprise population, 2005

	Number of enterprises				
	Industry		Services		Total
	No. firms	%	No. firms	%	
Micro	5 620	89.6	9 226	90.5	90.1
Small	525	8.4	824	8.1	8.2
Medium	108	1.7	120	1.2	1.4
SMEs	6 253	99.7	10 170	99.7	99.7
Large	19	0.3	29	0.3	0.3

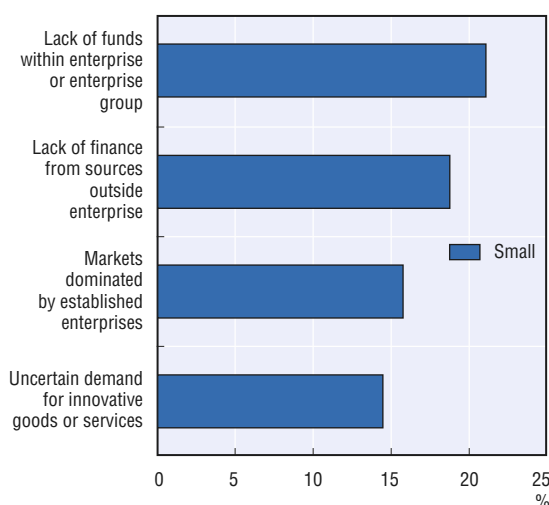
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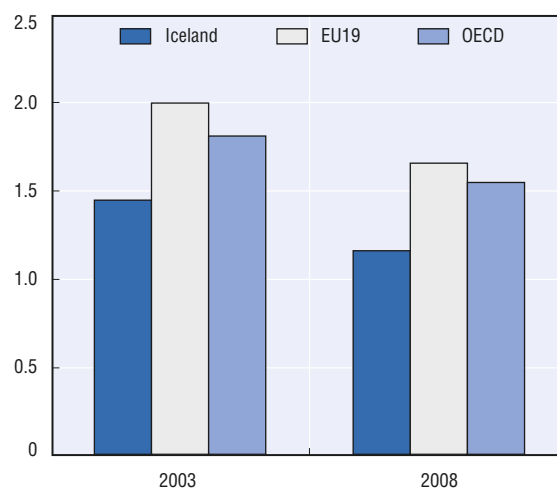
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Ireland

Creating a leading innovative economy has been identified as a key priority of the Irish government. EUR 8.2 billion has been allocated in the National Development Plan to the *Strategy for Science, Technology and Innovation (SSTI) 2006-2013*. SSTI interlinks all policy areas for supporting and sustaining innovation. The strategy takes a holistic approach and combines education in science and engineering; social and economic development; policy in agriculture, health, environment, marine and natural resources; foreign direct investment; increasing output; tech transfer; and the development of a fourth level in the higher education sector into an integrated framework, in order to develop a world-class research and development capacity in Ireland.

With regard to SMEs, the focus is on transforming the quality and quantities of research undertaken by enterprises – both directly and in co-operation with third-level institutions. World Class Research STI has an allocation of EUR 3.46 billion. The second biggest allocation is to Enterprise STI, EUR 1.29 billion between 2006 and 2013. The aim is to grow R&D business expenditure from EUR 1 billion in 2003 to EUR 2.5 billion by 2013 and increase numbers of firms engaging in meaningful R&D (EUR 100 000 per year) from 462 in 2003 to 1 050 by 2013.

The main bodies responsible for implementing SSTI are the Irish Development Authority (responsible for attracting FDI), Science Foundation Ireland (responsible for making the fundamental research portfolio in Ireland a global leader) and Enterprise Ireland (responsible for developing world-class Irish indigenous enterprises).

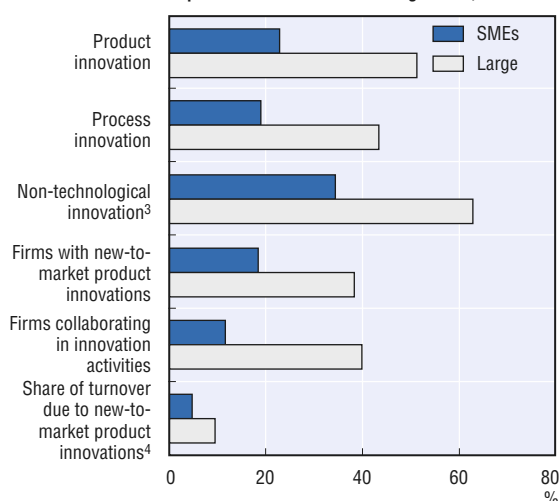
A key challenge is to strengthen the links between the public research infrastructure and industry, and the low research absorption capability of enterprises. Four key initiatives have been put in place to address this. i) *Centres for Science, Engineering and Technology (CSETs)* – This investment programme links scientists and engineers across academia and industry. CSETs grants can total EUR 25 million over five years per project to exploit opportunities for discovery and innovation that smaller research projects cannot. Current CSETs are in pharma-biology, digital enterprise, nanotechnology, regenerative medicine, telecommunications, software engineering, biomedical diagnostics, next-generation localisation and sensor webs. ii) *Technology Transfer Offices (TTOs)* – A fund of EUR 30 million has been made available to improve the knowledge flow between higher education and the enterprise sector. The aim is to ensure better economic returns from R&D investments. iii) *Research and Development Fund* – This is a EUR 500 million grant scheme available to enterprises to support their R&D. It offers up to 45% funding for R&D activities (50% if they are collaborative). The programme was launched in the spring of 2008 and so far 174 proposals have been approved; most of the projects focus on software, engineering, services and food. iv) *Innovation Vouchers* – The voucher initiative offers businesses with limited experience of R&D the chance to collaborate with any of the 22 higher education institutes, to obtain an innovation solution to an enterprise need. It also stimulates the development of relationships between SMEs and the higher education institutes, and ultimately the development of new products and services. A total of EUR 10 million is available for the scheme. To date 1 623 vouchers have been issued.

Ireland

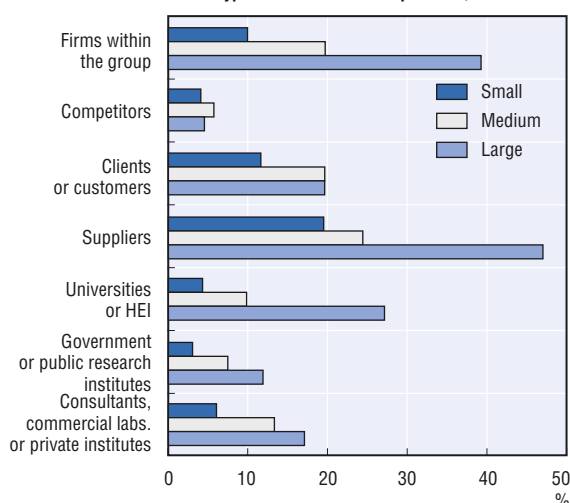
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	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		%	No. engaged	%	No. engaged		%	%	Industry
Micro ¹	2 556	46.8	74 758	84.0	81.8	13 020	5.7	210 474	25.1	20.9	2.1	21.4	12.8
Small	2 071	37.9	12 036	13.5	14.9	446 24	19.4	224 228	26.7	25.1	6.9	27.3	18.2
Medium	657	12.0	1 965	2.2	2.8	68 605	29.8	178 875	21.3	23.1	21.7	20.1	20.8
SMEs	5 284	96.8	88 759	99.7	99.5	126 249	54.8	613 577	73.1	69.2	30.7	68.7	51.8
Large	177	3.2	269	0.3	0.5	104 122	45.2	225 848	26.9	30.8	69.3	31.3	48.2

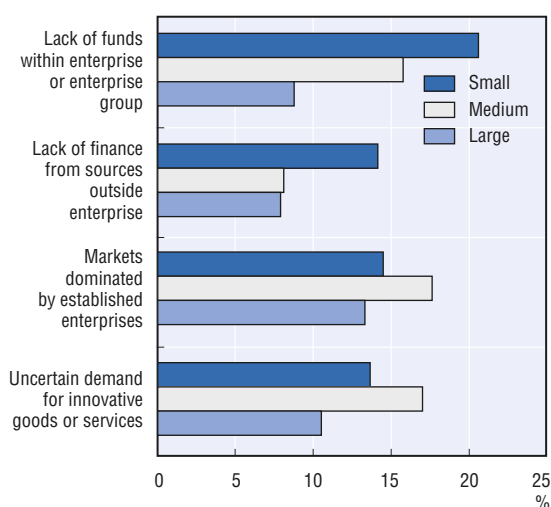
B. Innovation performance of SMEs and large firms, 2004-06²



C. Types of innovation co-operation, 2004-06⁵



D. Factors hampering innovation, 2004-06⁵




E. Administrative burdens on start-ups⁶



Notes: 1. Data only reflect enterprises with 3 or more persons engaged. 2. As % of all firms within size class.

3. 2002-04. 4. As % of total turnover. 5. As % of innovating firms. 6. Index scale of 0-6 from least to most restrictive.

Sources: Table A: OECD, *Structural and Demographic Business Statistics*. Charts B: Eurostat, *Community Innovation Survey 2004 and 2006*. C and D: Eurostat, *Community Innovation Survey 2006*. Chart E: OECD, *Product Market Regulation Database*.

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Italy

Promoting the design of large innovative industrial projects is one of the most important recent changes in Italian industrial and innovation policies. This new approach has two main thrusts: general support for all firms in the form of automatic incentives (a tax credit), and the *Industria 2015* project designed in 2006-08.

Industria 2015

Industria 2015 aims to change the entire business support system, particularly with regard to SMEs, by forging a stronger link between industrial and innovation policies. Three main strategic areas are identified within *Industria 2015*: industrial innovation, innovative finance, and firm networks. Their joint working will favour the development of new production within high-tech industries and a strengthening of the SME system.

The philosophy of *Industria 2015* is to concentrate projects and financial resources in selected thematic areas. The most important one aims at improving the competitiveness of Italian industry by means of Industrial Innovative Projects (IIP). There are five main IIP themes: energy efficiency; sustainable mobility; new life-improving technologies; new technologies for so-called “made-in-Italy” sectors (fashion, furniture/housing, food, and mechanics); and new technologies for national cultural heritage. The three-year budget for the five IIPs established by the budgetary law for 2007 was EUR 990 million, and is managed through the Competitiveness and Economic Development Fund.

The projects will favour partnerships and synergies among universities, research centres, private companies, private investment equity, and local governments. The projects intend to improve the competitiveness of Italian industry over the medium and long run by co-ordinating R&D activities carried out by consortia of large, medium and small enterprises in collaboration with public and private research units. As of today, there have been calls for tender only for three Industrial Innovative Project themes: energy efficiency, sustainable mobility, and new technologies for made-in-Italy products. These calls for tender fund R&D projects that seek to develop prototypes in one of the thematic areas specified by each Industrial Innovative Project. The intended participants of the calls for tender are companies, universities, public and private research units, and final users such as public entities, associations and so on (the latter participating on voluntary basis, without grants) that stipulate co-operative agreements.

There has been substantial interest with regard to projects submitted under these three themes. For energy efficiency, there have been 92 applications submitted from 474 firms, of which 118 were small firms and 138 micro firms. The value of the 92 projects amounts to EUR 1.69 million. Only 30 projects were funded with R&D investments of about EUR 500 million.

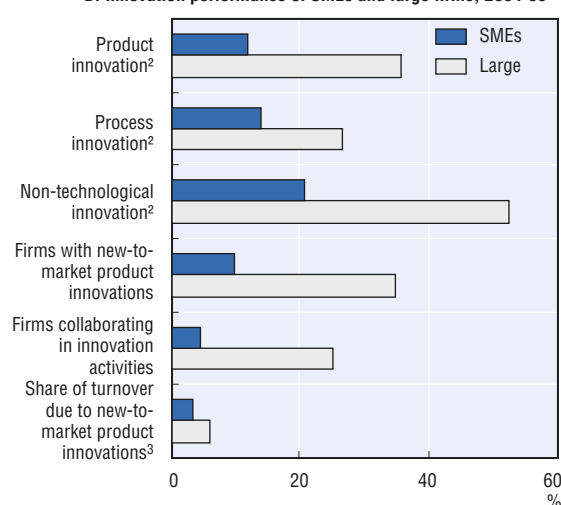
Additionally, 50 projects from 420 firms, of which 108 were small firms and 97 micro firms, were submitted under the sustainable mobility theme. The value of the 50 projects amounts to EUR 1.434 million. Only 25 projects were funded with investments of about EUR 450 million, of which EUR 180 million were state contributions. These projects involved 250 companies and 100 research bodies. Finally, 429 projects were submitted with reference to new technologies for the “made-in-Italy” sectors. Only 237 projects passed the first evaluation phase (about 60% of all submitted projects); these involved 1 041 small and micro firms, and more than 20 000 researchers and technicians. The overall investment value is EUR 2.2 billion. The selected projects concern new products and processes (158), firm co-operation systems (34), and new distributive formats and logistic systems (45).

Italy

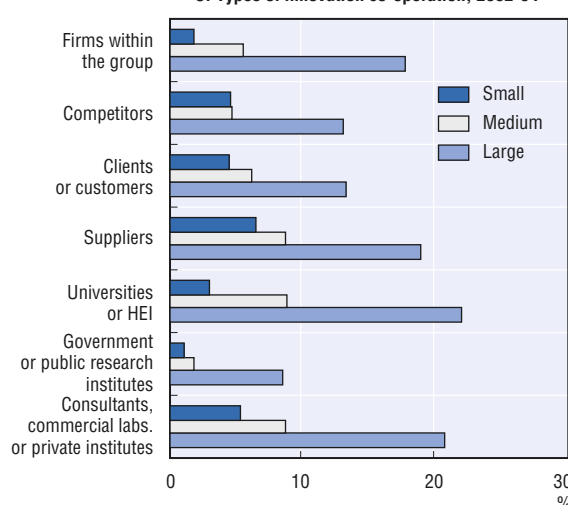
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		%	No. engaged	%	No. engaged		%	%	Industry
Micro	1 009 128	89.1	2 679 560	96.6	94.4	2 428 034	36.1	4 840 805	54.6	46.6	21.3	41.5	31.5
Small	110 689	9.8	83 348	3.0	5.0	2 000 860	29.8	1 441 427	16.3	22.1	27.9	20.0	23.9
Medium	11 814	1.0	8 192	0.3	0.5	1 128 553	16.8	802 470	9.1	12.4	20.8	11.0	15.9
SMEs	1 131 631	99.9	2 771 100	99.9	99.9	5 557 447	82.6	7 084 702	79.9	81.1	70.0	72.5	71.3
Large	1562	0.1	1542	0.1	0.1	1 167 527	17.4	1 779 523	20.1	18.9	30.0	27.5	28.7

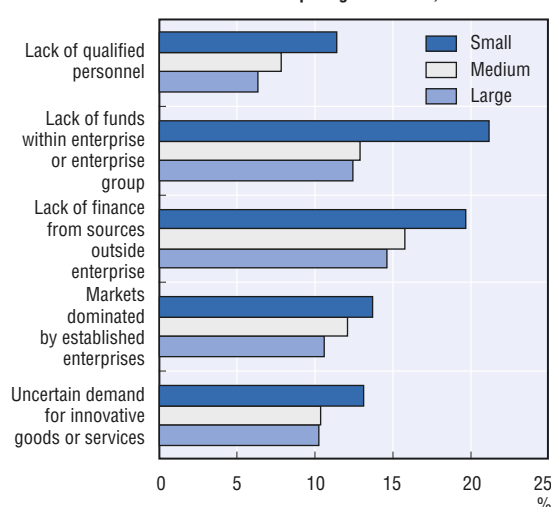
B. Innovation performance of SMEs and large firms, 2004-06¹



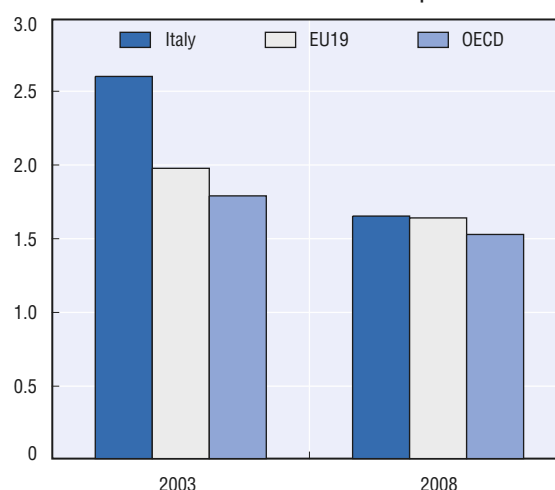
C. Types of innovation co-operation, 2002-04⁴



D. Factors hampering innovation, 2002-04⁴



E. Administrative burdens on start-ups⁵



Notes: 1. As % of all firms within size class. 2. 2002-04. 3. As % of total turnover. 4. As % of innovating firms. 5. Index scale of 0-6 from least to most restrictive.

Source: Table A: OECD, *Structural and Demographic Business Statistics*. Chart B: Eurostat, *Community Innovation Survey 2004 and 2006*. Charts C and D: *Community Innovation Survey 2004*. Chart E: OECD, *Product Market Regulation Database*.

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Japan

Small Business Innovation Research

The *Small Business Innovation Research (SBIR)* programme was first introduced in 1999 and is implemented by seven government ministries, with the budget set annually by the Cabinet. Budget allocations awarded under the programme have gradually increased from JPY 26.1 billion in 2003 to JPY 37.1 billion in 2007.

There are 17 programmes through which Small Business Innovation Research is implemented, provided by research funders such as the Japan Science and Technology Agency (JST), and New Energy and Industrial Technology Development Organisation (NEDO), among others. Two types of support are offered: i) research and development support through subsidies or contract grants; and ii) support for technological application development, such as patent fee reductions, loan guarantees, capital investment loans, and loans for facilities. Funding recipients should have less than 300 employees or capital below JPY 300 million. The majority of schemes target venture companies and SMEs.

The number of projects awarded to participants over time has been relatively stable. In 2003, 1 242 projects were supported, while in 2007 the number was 1 365. The programme does, however, suffer from a lack of applications, and has been found to be administratively difficult to implement. In particular the methods of application are too complex.

Japan basically follows the United States' Small Business Innovation Research model but with a budget about one-fifth of the size, and it funds around a quarter of the number of projects awarded in the United States.

Support for Development of Networks between Upstream and Downstream Companies

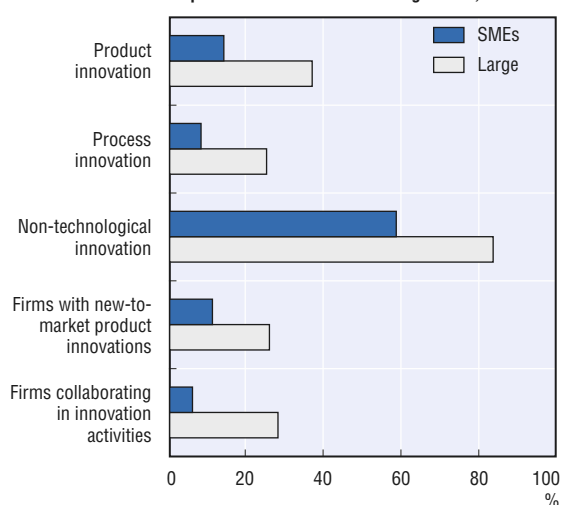
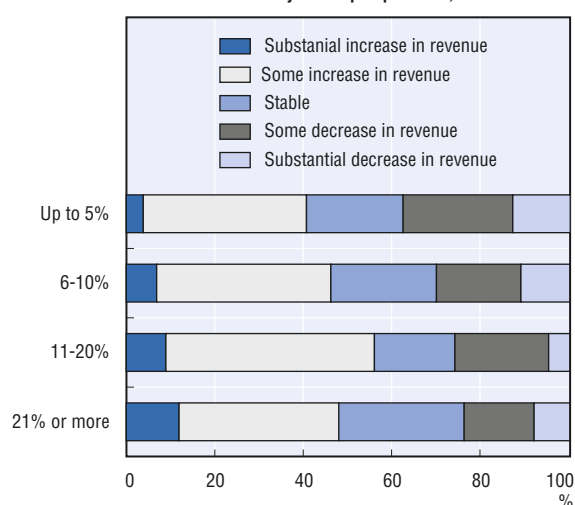
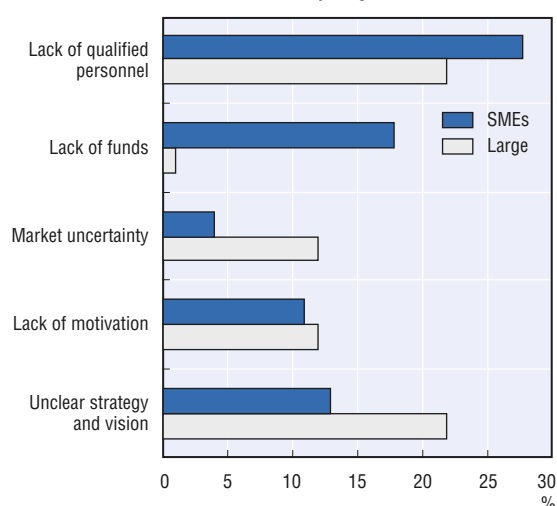
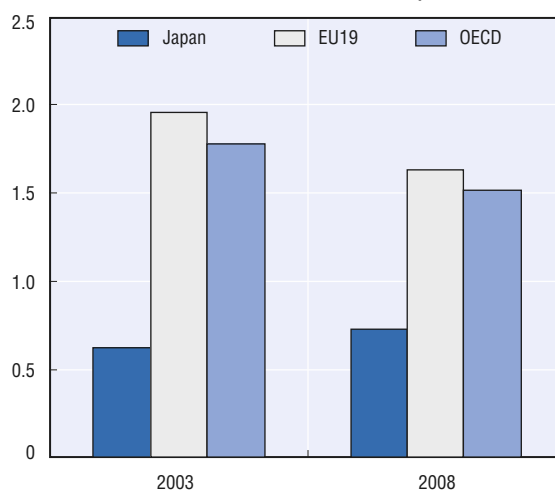
Japan resembles other OECD countries in the types of policies it implements to promote innovative entrepreneurship and innovation in SMEs. A programme unique to Japan is the *Support for Development of Networks between Upstream and Downstream Companies*. This programme, which is operated by the Small and Medium Enterprise Agency, seeks to contribute to the manufacturing capabilities of Japanese industry by creating networks between SME companies that possess core basic technologies with downstream normal industry, to link technological seeds with market needs. Through co-ordinators, communication and interaction is facilitated via targeted forums, seminars and matching events, enabling companies to collaborate and improve products. This programme has been operating since 2006, and was renewed in 2007, 2008 and 2009. The budget in 2009 was JPY 190 million (EUR 1.4 million), with 16 projects selected. Projects are implemented by companies or non-profit organisations that act as co-ordinators on specific themes, linking in with regional cluster policies. The programme has not yet been formally evaluated.

Most network initiatives focus on interaction between universities and industry, or between different firms with similar competences; the focus on companies of different technological capabilities, particularly SMEs, appears relatively unique to Japan.

Japan


A. Structural indicators on enterprise population, 2007

	Number of establishments			Total employment			Value added Industry %	
	Industry	Services	Total	Industry		Services		Total
				No. engaged	%			
	%	%	%			%	%	
Micro ¹	117 231	45.4		725 025	8.4			4.0
Small	110 023	42.6		2 287 938	26.5			17.3
Medium	26 332	10.2		2 677 556	31.1			28.0
SMEs	253 586	98.2		5 690 519	66.0			49.3
Large	4 571	1.8		2 930 874	34.0			50.7

B. Innovation performance of SMEs and large firms, 2002-04

C. Changes in revenue for shares of sales due to newly developed products, 2008²

D. Factors hampering innovation, 2008

E. Administrative burdens on start-ups³


Notes: 1. For manufacturing, data only reflect enterprises with 4 or more persons engaged. 2. As % of SMEs with new product sales. 3. Index scale of 0-6 from least to most restrictive.

Source: Table A: OECD, *Structural and Demographic Business Statistics*. Chart B: *National Innovation Survey*. Chart C and D: Mitsubishi UFJ Research and Consulting Co., Ltd, *Survey on the Innovation Situation through the Creativity and Research and Development of companies* (Dec. 2008). Chart E: OECD, *Product Market Regulation Database*.

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Korea

Small and Medium Business Administration (SMBA)

Founded in 1996, the *Small and Medium Business Administration (SMBA)* operates numerous schemes that are all targeted at assisting SMEs in the areas of entrepreneurship, human resources, financing, marketing and innovation.

Among the schemes operated by SMBA is the company designation *Inno-Biz*, a label given to technologically innovative and competitive SMEs with future growth potential, linked with financing, technology and marketing support. This scheme is intended to select and support innovative businesses which are self-sustainable and can compete on global markets with the world's leading groups.

Another scheme is *Korea Small Business Innovation Research*, a system that encourages government ministries and government-financed institutions to allocate part of their R&D support budget to cover the R&D activities of small firms. In 2008, approximately USD 870 million was awarded through this system. SMBA also operates the *SME's Technology Innovation Programme*, which allows SMEs to recover up to 75% of the cost of developing new products or enhancing product quality. Supporting 2 057 SMEs in 2008 alone, the programme provides a financing ceiling of USD 400 000 for two years of strategic tasks or USD 200 000 over one year for general tasks. Finally, the SMBA operates *Incubation Centre Promotion*, a programme that aims to encourage spin-offs from universities and research institutes. In 2007, this programme was able to create 269 incubation centres throughout Korea, housing around 4 000 tenant firms at a cost of approximately USD 15 million.

Kibo Technology Fund

In creating the *Kibo Technology Fund*, the Korean government's intention was to facilitate the supply of funds for the development of new technologies and to contribute to national economic development by establishing and developing a technology guarantee system. The Kibo Technology Fund achieves these aims through the provision of services such as a technology guarantee scheme, technology appraisal, technologically innovative business certification, and business support.

SMEs often encounter problems when applying for loans from banks. The stringent lending criteria often exclude them from financing and thus prevent innovative technologies from being developed. In this situation, an SME can apply to Kibo for a technology guarantee – that is to say, Kibo will step in on the part of the SME to provide a guarantee for the loan based on an appraisal of the borrower's creditworthiness. Having provided more than USD 100 billion as of 2008, this programme has been indeed very popular with SMEs.

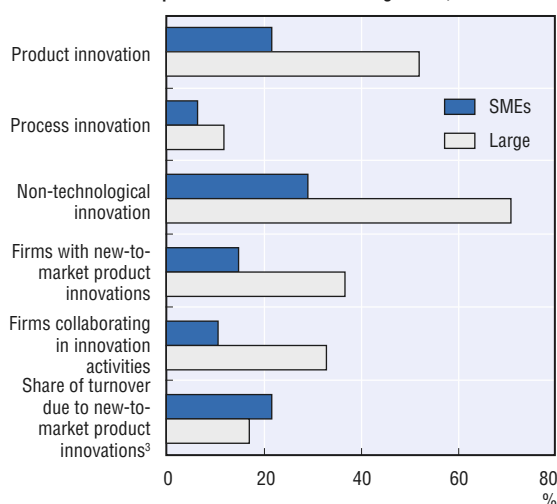
Kibo also provides an objective and fair evaluation of SMEs' intangible technologies by operating 53 technology appraisal centres nationwide. These centres have numerous specialists, internally and externally, across many industries and by 2008 more than 180 888 evaluations had been made.

Korea

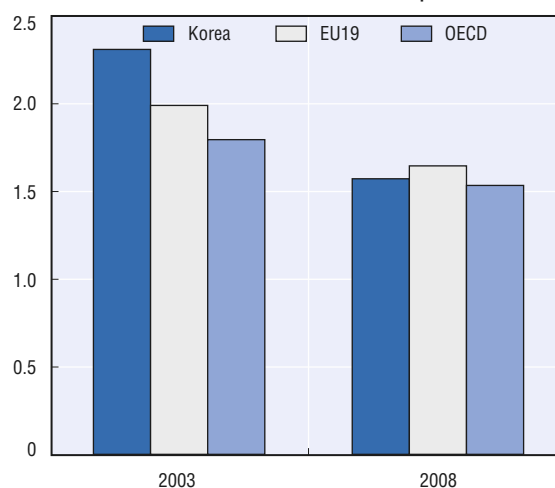
A. Structural indicators on enterprise population, 2006

	Number of establishments			Total employment				Value added (%)		
	Industry	Services	Total	Industry		Services	Total	Industry	Services	Total
				No. engaged	%					
Micro ¹	59 223	49.4		377 100	12.9			5.4		
Small	51 674	43.1		1 020 169	34.9			19.9		
Medium	7 621	6.4		6 800 83	23.2			20.2		
SMEs	118 518	98.9		2 077 352	71.0			45.5		
Large	1 280	1.1		848 603	29.0			54.5		

B. Innovation performance of SMEs and large firms, 2002-04²




C. Administrative burdens on start-ups⁴



Notes: 1. For manufacturing, data only reflect enterprises with 5 or more persons engaged. 2. As % of all firms within size class.

3. As % of total turnover. 4. Index scale of 0-6 from least to most restrictive.

Source: Table A: OECD, Structural and Demographic Business Statistics. Chart B: National Innovation Survey. Chart C: OECD, Product Market Regulation Database.

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Luxembourg

National Credit and Investment Society

The *National Credit and Investment Society* (SNCI) is a state-owned bank that specialises in financing medium- and long-term projects undertaken by Luxembourg-based companies. With resources standing at EUR 580 million in 2005, the Society provides financing through equipment loans, medium- and long-term loans, innovation loans, financing of foreign investments, equity loans and participating interests in small companies. The SNCI usually co-finances projects at an average rate of 25% of costs for fixed assets of industrial projects or up to 75% of costs incurred by first-time young craftsmen, traders, hoteliers and restaurant owners.

The National Credit and Investment Society also provides start-up loans of between EUR 5 000 and EUR 250 000 to new firms upon presentation of a business plan and reciprocal funding from the beneficiary of at least 15%. The loan has a duration period of ten years; however, if over 50% is invested in fixed assets, the period can be extended to up to fourteen years. The first repayment is required after five years and is thereafter paid quarterly with an interest rate determined at the start of the loan and adjusted upward only 1.5% until maturity.

Created in 1998, the *Luxembourg Society of Capital Development for SMEs Ltd* (CD-PME) provides funding to SMEs in Luxembourg so as to allow them to realise innovative projects. The Society is made up of EUR 2.5 million in paid-in capital, 50% contributed by the SNCI, with five commercial Luxembourg-based banks contributing the remaining 50%. The CD-PME grants equity loans and, in exceptional cases, takes participating interest in SMEs in Luxembourg with the aim of reinforcing their equity bases and overall strength. Any financing granted has a limited duration (maximum of ten years) and cannot exceed either 50% of the firm's total financing need or EUR 250 000.

Luxinnovation

Started in 1984, *Luxinnovation*, National Agency for Innovation and Research, is the first-stop-shop for research and innovation in Luxembourg. Luxinnovation is an Economic Interest Grouping (EIG) composed of six private and public-sector partners in Luxembourg. It can offer its entire range of services to all sectors (including SMEs) of the Luxembourg economy. These services include information and assistance on all forms of innovation and business start-ups. It also manages a number of pilot projects such as cluster programmes, and assists in the drawing up of business plans.

Luxinnovation operates numerous business networks, including the entrepreneurship network 1, 2, 3, Go, which helps link entrepreneurs together to encourage the dissemination of best practices; the *Business and Innovation Centres* network; and the *Business Angels* network.

Another programme undertaken by Luxinnovation is the *ECOSTART* enterprise and innovation centre. This centre is located in Foetz and is aimed at providing entrepreneurs with support at the idea and start-up phases. It also provides accommodation for both domestic and foreign businesses that find themselves at the development stage and are thinking of setting up in Luxembourg.

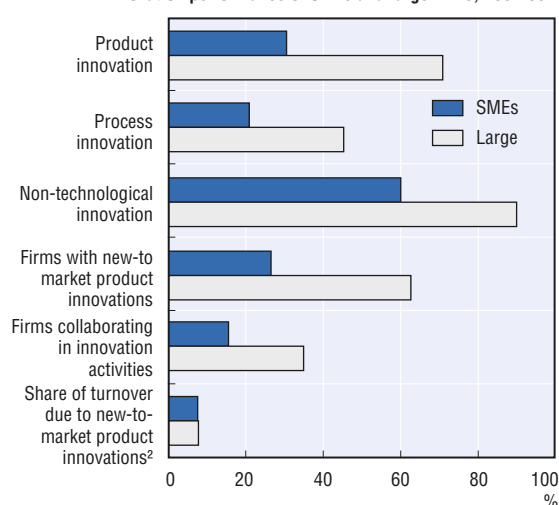
Finally, the *INNO-START* network assists in the creation of innovative enterprises by bringing the Ministry of the Economy and Foreign Trade, the Ministry of SME and Tourism, the Chamber of Commerce and the Chamber of Skilled Crafts together with entrepreneurs so as to accelerate the process of enterprise creation, and also to promote the creation of enterprises based on technological innovation.

Luxembourg

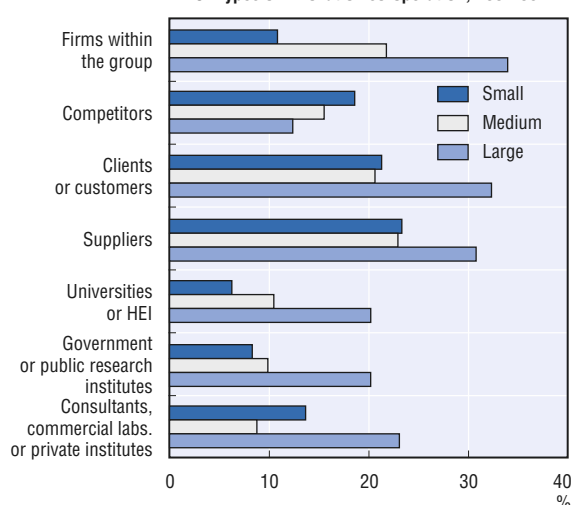
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		%	No. engaged	%	No. engaged		%	%	Industry
Micro	699	66.8	18 326	90.0	88.9	1 859	5.0	24 812	24.7	19.4	2.8	44.1	31.6
Small	226	21.6	1 667	8.2	8.8	4524	12.1	23 621	23.6	20.5	6.4	23.4	18.2
Medium	91	8.7	299	1.5	1.8	8 527	22.9	21 118	21.1	21.6	17.9	17.1	17.4
SMEs	1 016	97.1	20 292	99.7	99.6	14 910	40.0	69 551	69.4	61.4	27.1	84.7	67.2
Large	30	2.9	60	0.3	0.4	22 344	60.0	30 717	30.6	38.6	72.9	15.3	32.8

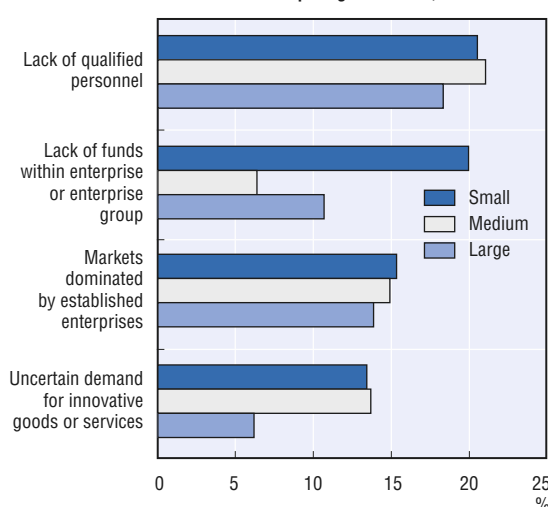
B. Innovation performance of SMEs and large firms, 2004-06¹



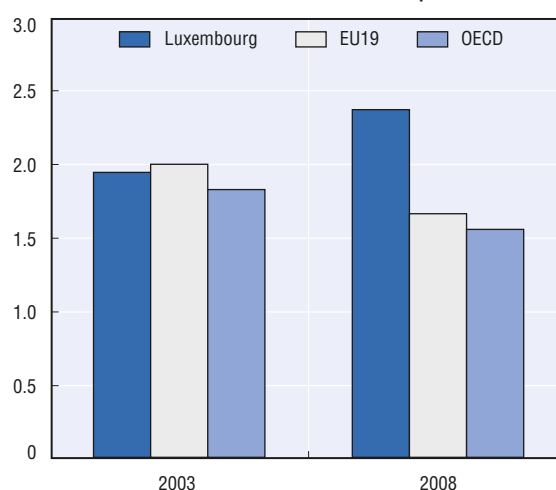
C. Types of innovation co-operation, 2004-06³



D. Factors hampering innovation, 2004-06³



E. Administrative burdens on start-ups⁴



Notes: 1. As % of all firms within size class. 2. As % of total turnover. 3. As % of innovating firms. 4. Index scale of 0-6 from least to most restrictive.

Sources: Table A: OECD, *Structural and Demographic Business Statistics*. Charts B, C and D: Eurostat, *Community Innovation Survey 2006*. Chart E: OECD, *Product Market Regulation Database*.

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Mexico

AVANCE

In 2003 Mexico started operating AVANCE, a programme aimed at identifying and exploiting business opportunities based on scientific and/or technological developments. This initiative supports the stages of the innovation process of firms and assists in the commercialisation of innovations, mainly from SMEs. The programme has three main delivery modes: the *Nuevos Negocios* (previously known as *Ultima milla*, or Last Mile), which provides resources to support the late stages of the innovation process; the *Entrepreneurs Fund*, which is managed in conjunction with NAFIN (Mexico's state development bank), and offers complementary resources in the form of risk capital; and the *Guarantee Fund*, which endorses firms so they can obtain commercial bank loans.

Between 2003 and 2007, the Last Mile programme supported 140 projects by almost USD 40 million; the Entrepreneurs Fund funded 23 firms by USD 10 million (currently, NAFIN is part of the board of directors and owns between 4% and 25% of the supported firms); and the Guarantee Fund gave five endorsements.

The Last Mile programme supported mainly information technology (IT) firms (36%), followed by advanced materials (13%) and design and manufacturing (10%). The Entrepreneurs Fund also supported mainly the creation of IT firms (35%) followed by electronics and telecommunication (25%). Both programmes mostly backed firms in Mexico City (50%), and the five most developed states of the country.

Despite its apparent modest results in terms of the resources awarded and the number of firms that have received benefits, there is some evidence that this programme has generated a number of indirect results of importance for the future of the innovation system in Mexico. First, it has increased the interest of investors in technologically innovative projects. Second, it has fostered the generation of technical capabilities for the identification and evaluation of innovative projects, which were nonexistent in Mexico until recent years. Third, it has promoted the creation of business angel and venture capital funds, which had been virtually absent in the country. Finally, it has favoured a culture of management of innovation in the National Council for Science and Technology (CONACYT) and other agencies.

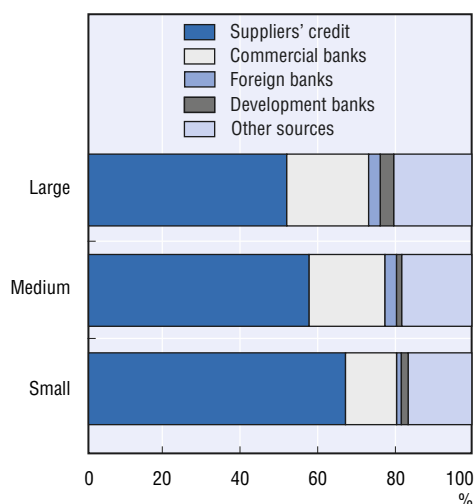
In 2008, AVANCE created six additional schemes: *Support for Patents*, to reimburse the cost of patenting; *Technology Packages*, to support higher education institutions and public research centres in the integration of technology packages that are feasible to license or commercialise; *Offices of Technology Transfer*, to boost the creation of such offices in higher education institutions and public research centres; *Business Schools*, to advance the entrepreneurship culture of the country through formal education; *Strategic Alliances and Innovation Networks for Competitiveness*, to support the collaboration of industry and academia for innovative projects; and the *Seed Capital Fund*, which supports the incubation of science and technology projects. The objective of the nine modalities is to cover all phases of the innovation process and thereby increase Mexico's competitiveness.

Mexico

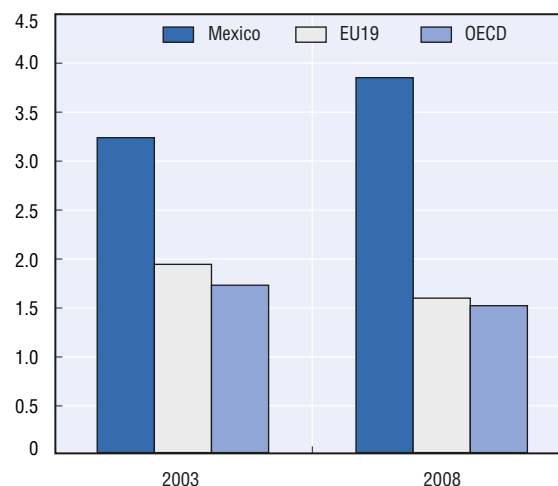
A. Structural indicators on enterprise population, 2003

	Number of establishments					Total employment				
	Industry		Services		Total	Industry		Services		Total
	No. firms	%	No. firms	%		%	No. engaged	%	No. engaged	
Micro	315 727	91.2	2 158 750	96.9	96.1	827 308	16.7	4 590 833	56.3	41.3
Small	20 243	5.8	59 449	2.7	3.1	581 012	11.7	1 252 350	15.3	14.0
Medium	7 479	2.2	8 954	0.4	0.6	1 050 070	21.2	1 177 965	14.4	17.0
SMEs	343 449	99.2	2 227 153	99.9	99.8	2 458 390	49.7	7 021 148	86.1	72.3
Large	2 699	0.8	1 336	0.1	0.2	2 492 992	50.3	1 137 702	13.9	27.7

B. Source of finance of SMEs and large firms, 2002-04




C. Administrative burdens on start-ups¹



1. Index scale of 0-6 from least to most restrictive.

Sources: Table A: OECD, *Structural and Demographic Business Statistics*. Chart B: OECD, *SMEs in Mexico: Issues and Policies*, 2007. Chart C: OECD, *Product Market Regulation Database*.

StatLink  <http://dx.doi.org/10.1787/813468327202>

The Netherlands

Innovation Voucher

A major programme considered very successful in the Netherlands is the so-called *Innovation Voucher* scheme. SMEs are provided with a voucher, which they can “cash in” with a technology or innovation provider of their choice. The scheme is intended to reduce the cultural barriers that SMEs and researchers/engineers in public research centres experience when undertaking a project. Through a very simple procedure, SMEs (in the manufacturing and services sectors) can apply for a voucher at the Innovation Agency any day of the year. As of 2009, two types of vouchers were available, small and large. Small vouchers are worth EUR 2 500 each and can be used by SMEs to buy services from public technology and innovation centres, for example for a feasibility study or for answering a specific technological problem. This stimulates SMEs to take the first step towards public research and technology institutes. Large vouchers are worth EUR 7 500. For these vouchers a mandatory self-contribution is required which must be, at a minimum, one-third of the total project costs. The government contributes a maximum of EUR 5 000. Entrepreneurs can receive a large voucher once a year (in addition to a small voucher). Large vouchers can be used for more complicated issues.

Over the first two years (2004-05) following the programme’s launch as a pilot, the vouchers available cashed in in only a few days. The main achievement was that the scheme reached a whole new target population among SMEs, who had never used any other policy instrument before. In addition, companies that had used the voucher continued working with the public research or technology centre after the initial contact.

TechnoPartner Programme

The *TechnoPartner Programme* is a package of policy instruments that promotes more and better technology-based start-ups (technostarters), through the creation of a better climate for entrepreneurs inside and outside universities. It is a generic and flexible programme, designed with the intention of streamlining and co-ordinating the existing high-tech starters policy in the Netherlands. The projects that receive funding are regionally based public-private partnerships consisting of (applied science) universities, incubators, innovation intermediaries, banks, companies and other actors.

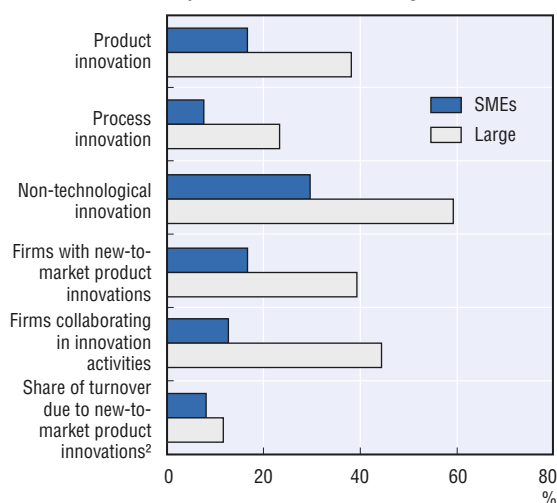
The TechnoPartner programme includes several action lines: the *TechnoPartner Seed* facility, which aims to promote and mobilise the Dutch venture capital market to the benefit of high-tech starters; *TechnoPartner Knowledge Exploitation Subsidy Arrangement (SKE)*, which includes a pre-seed facility for potential starters and a patent facility for knowledge institutes to professionalise their patent policies. With a *TechnoPartner Certificate*, high-tech starters can obtain a credit from a commercial bank more easily because TechnoPartner provides a guarantee. A third action line is the TechnoPartner platform, which provides information, coaching and expertise to high-tech entrepreneurs. A fourth is the *Business Angel Programme (BAP)*. Financing by informal investors (business angels) is important, for they also offer knowledge and experience. In addition to these operational action lines, the programme has an institutional pillar focused on improving the environment in which starters operate, particularly in the universities.

The Netherlands

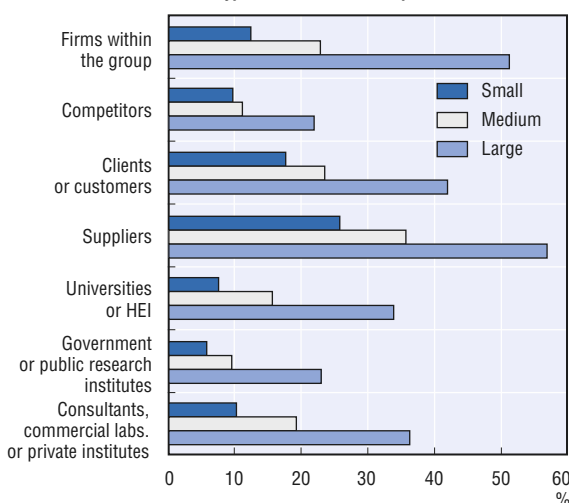
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		No. engaged	%	No. engaged	%		Industry	Services	Total
Micro	114 175	85.6	367 860	90.4	89.2	308 026	23.9	1 233 220	31.2	29.4	13.4	24.1	20.6
Small	15 385	11.5	32 915	8.1	8.9	327 063	25.4	814 006	20.6	21.8	21.3	22.4	22.0
Medium	3 195	2.4	5 210	1.3	1.6	299 585	23.2	601 275	15.2	17.2	24.3	20.3	21.6
SMEs	132 755	99.5	405 985	99.8	99.7	934 674	72.5	264 8501	66.9	68.3	59.0	66.8	64.2
Large	650	0.5	900	0.2	0.3	353 887	27.5	1 309 102	33.1	31.7	41.0	33.2	35.8

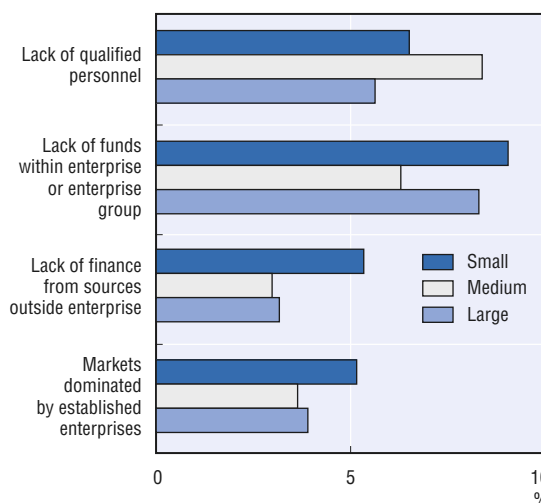
B. Innovation performance of SMEs and large firms, 2004-06¹



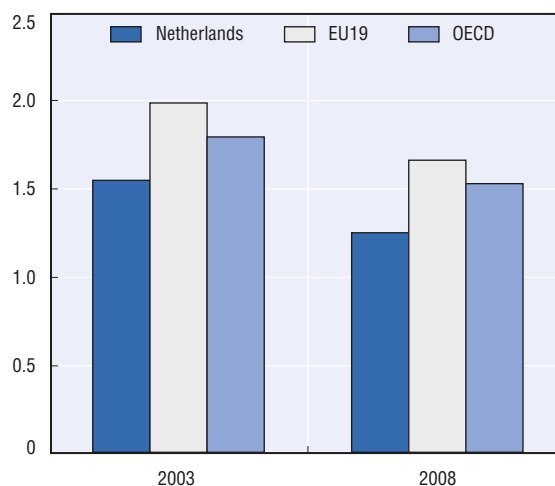
C. Types of innovation co-operation, 2004-06³



D. Factors hampering innovation, 2004-06³



E. Administrative burdens on start-ups⁴



Notes: 1. As % of all firms within size class. 2. As % of total turnover. 3. As % of innovating firms. 4. Index scale of 0-6 from least to most restrictive.

Source: Table A: OECD, *Structural and Demographic Business Statistics*. Charts B, C and D: Eurostat, *Community Innovation Survey 2006*. Chart E: OECD, *Product Market Regulation Database*.

StatLink <http://dx.doi.org/10.1787/813475131677>

New Zealand

TechNZ

TechNZ is a business investment programme designed to support companies and people undertaking research and development in projects that result in new products, processes and services. It is administered by the Foundation for Research, Science and Technology (FRST). Following an evaluation of the programme in 2008, TechNZ is now administered via two simplified and targeted grant schemes: the *Targeted Research and Development Funding Grant* and the *Capability Funding Grant*.

The Targeted Research and Development Funding Grant provides annual funding support of NZD 40 million for research-intensive firms with high growth potential. Funding is targeted at projects that significantly increase a firm's technological expertise. The level of a project's technical stretch is judged relative to the applicant company's current level of technical experience. Firms apply for support on an on-demand basis and funding is typically provided on a matched basis, i.e. 50% of eligible project costs.

The size of the grants provided by the programme varies from NZD 30 000 to over NZD 2 million per firm, with between 80 and 100 high-growth-potential firms receiving support. The companies can be at any stage of development – from early stage to mature – as long as they are potentially high growth. Grants are, however, targeted at areas of government priority.

The Capability Funding Grant provides NZD 10 million in annual funding for early-stage technology companies, to give them the tools they need to succeed in research and development; and to mature companies, to help them exploit emerging areas of science and technology. Examples include involving young scientists, technicians and engineers in research and development projects, engaging experts in R&D and commercialisation projects, and hosting master's degree and PhD students. A portion of the fund is administered by a network of regional partners.

Better by Design

The *Better by Design* initiative is built on the principle that design strategies and processes can be applied to businesses to improve their bottom line. This initiative helps New Zealand companies that are exporting and that have high-growth aspirations achieve increased growth and competitive advantage in international markets through better use of design, and offers a range of programmes, services and events.

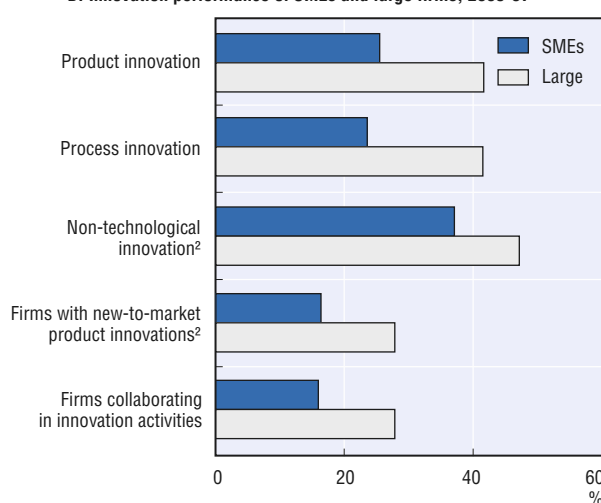
Better by Design operates out of New Zealand Trade and Enterprise, New Zealand's national economic development agency. Companies apply for the Design Integration Programme through business advisors who may meet with them prior to the beginning of the application process to determine whether Better by Design would be of benefit. Once selected, a strategic review of how design is used across the business is conducted. The six-stage programme uses private sector expertise to analyse a company's processes, products and culture, and develop a plan outlining new strategies, opportunities and potential projects; it then assists with implementation. Each company follows its own plan to implement best practice design and innovation, and to achieve productivity gains. Plans may include: revising a company's mission and long-term strategic plan; improving manufacturing processes and market distribution strategies; improving the structure of R&D and product development processes; reworking employee structures, to incorporate design-led positions and integration between functional teams; and developing new branding and communication strategies. Design Integration Funding is available to client companies that have completed the Design 360 assessment and planning process. Funding is provided up to a maximum of 50% of the costs of approved projects to cover the costs of external business advisors, design consultants and mentors, and external costs associated with prototyping.

New Zealand

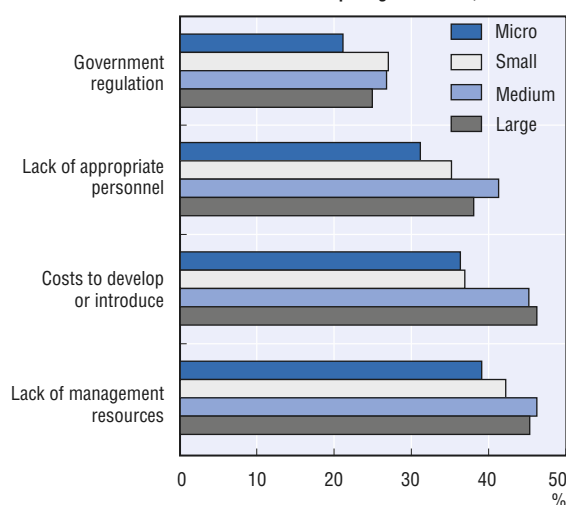
A. Structural indicators on enterprise population, 2008

	Number of enterprises					Number of employees				
	Industry		Services		Total	Industry		Services		Total
	%		%			%		%		
Micro	67 447	91.0	229 204	94.1	93.3	799 84	19.6	180 850	21.8	21.1
Small	5 635	7.6	12 429	5.1	5.7	108 610	26.7	229 440	27.6	27.3
Medium	585	0.8	1 053	0.4	0.5	39 940	9.8	73 040	8.8	9.1
SMEs	73 667	99.4	242 686	99.6	99.5	228 534	56.1	483 330	58.2	57.5
Large	468	0.6	968	0.4	0.5	178 730	43.9	346 900	41.8	42.5

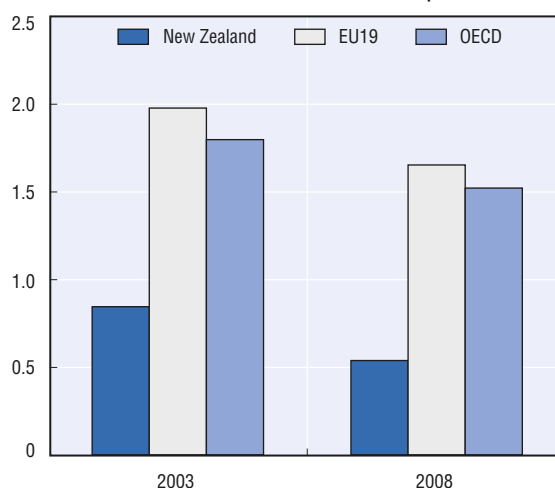
B. Innovation performance of SMEs and large firms, 2005-07¹



C. Factors hampering innovation, 2007³




D. Administrative burdens on start-ups⁴



Notes: 1. As % of all firms within size class. 2. 2004-06. 3. As % of firms co-operating in innovative activities. 4. Index scale of 0-6 from least to most restrictive.

Source: Table A: OECD, *Structural and Demographic Business Statistics*. Chart B: Own calculations based on Statistics New Zealand, *Innovation in New Zealand 2007*. Chart C: Statistics New Zealand, *Innovation in New Zealand 2007*. Chart D: OECD, *Product Market Regulation Database*.

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Norway

Commercialisation of R&D

The *Commercialisation of R&D (FORNY)* programme has been developed by the Research Council of Norway to commercialise research-based business ideas with market potential. In 2009, it had a budget of NOK 135 million (EUR 15.5 million) and offered four kinds of funding: for infrastructure activities; for commercialisation projects; for verification of technology; and for research scholarships enabling researchers to focus on commercialisation projects. In addition, FORNY has offered bonuses for successful completion of commercialisation projects. The funding can cover a maximum of 50% of costs related to the various activities.

The main target group of the programme is researchers working in universities, university colleges, research institutes and university hospitals. However, rather than addressing the researchers directly, the main approach of the programme is to work through the local technology transfer offices. Currently, 14 such offices are participating in the programme, and the funding is channelled mainly through them.

A recent evaluation concluded that despite positive additionality and successful targeting of high-technology commercialisation projects, the overall results of *Commercialisation of R&D* are fairly modest. So far very few of the start-ups have grown to be large, and the general growth rate seems to be poor compared to international cases. The evaluation has served as an important basis for developing a new programme for commercialisation of research-based knowledge. The current programme will be terminated in 2010, and the new programme employing a different approach is planned to start in 2011.

Public and Industrial Research and Development Contracts

Public and Industrial Research and Development Contracts were designed to help widen the product spectre and technical competence of Norwegian firms, thereby contributing to Norwegian industry's competitiveness. These contracts provide financial support to innovative projects, and are of two types. Public R&D contracts are between a public authority acting as contractor and one or more companies that are suppliers. Industrial R&D contracts are agreements between two companies aimed at developing a product, process, method or service needed by one of the companies (the customer).

In the case of industrial R&D contracts, the programme stimulates co-operation between a demand client firm and one or more supplier firms. For the supplier firm the advantage in such co-operation lies in the access to larger markets and networks, as well as a solid reference. For the client firm, advantages include access to special competences and lower development costs.

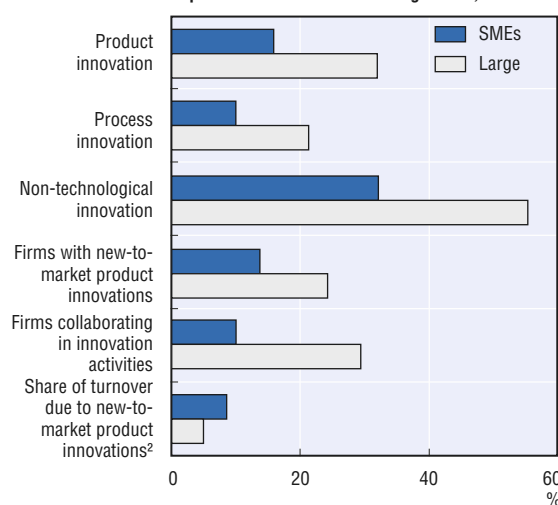
The government considers the programme very successful, and the budget has been expanded significantly over the past couple of years. An evaluation in 2007 had positive conclusions: the programme support is perceived as very important for innovation projects, with an estimated additionality of close to 70% – i.e. that percentage of projects that would not have been accomplished without this support. Moreover, the majority of the firms are in industries that develop and transfer knowledge, which play important roles in supplier networks.

Norway

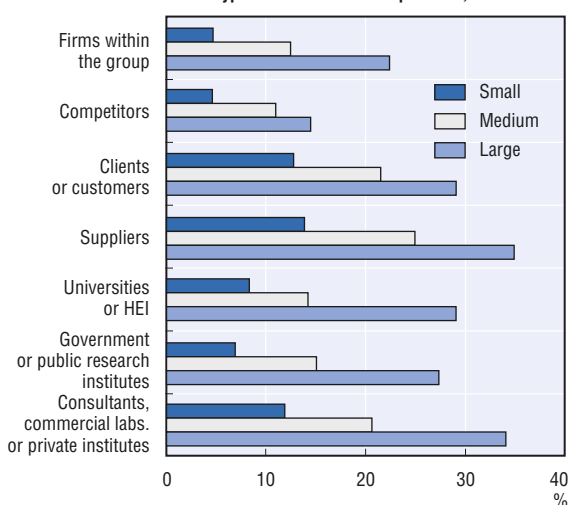
A. Structural indicators on enterprise population, 2006

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		%	No. engaged	%	No. engaged		%	%	Industry
Micro	53 852	88.5	172 554	92.6	91.6	92 572	19.8	259 157	30.1	26.5	27.0	33.5	29.8
Small	5 757	9.5	11 990	6.4	7.2	115 377	24.6	216 507	25.2	25.0	11.7	20.9	15.7
Medium	1 055	1.7	1 421	0.8	1.0	102 828	21.9	140 230	16.3	18.3	21.4	15.6	18.9
SMEs	60 664	99.7	185 965	99.8	99.8	310 777	66.3	615 894	71.6	69.7	60.2	70.0	64.5
Large	213	0.3	307	0.2	0.2	157 904	33.7	244 519	28.4	30.3	39.8	30.0	35.5

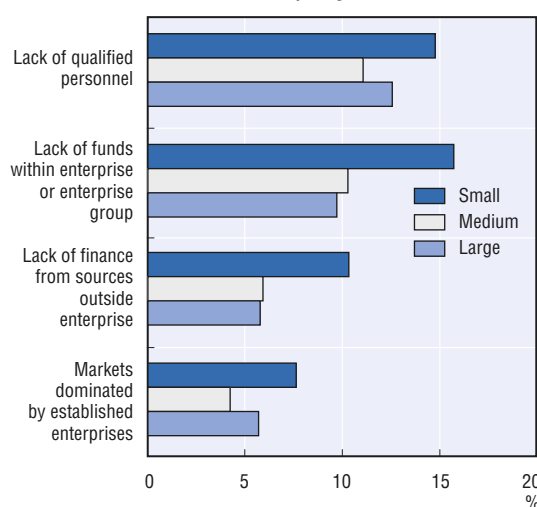
B. Innovation performance of SMEs and large firms, 2004-06¹



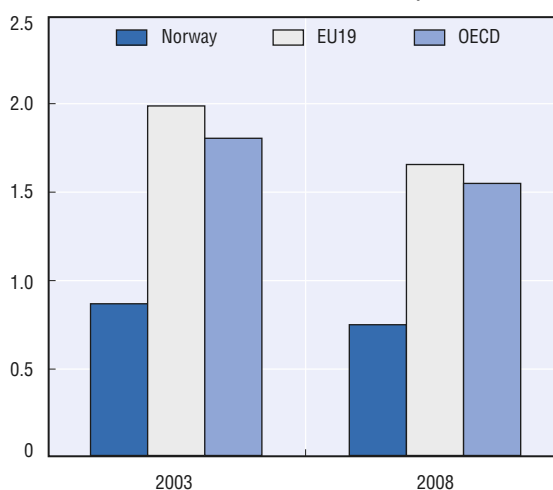
C. Types of innovation co-operation, 2004-06³



D. Factors hampering innovation, 2004-06³



E. Administrative burdens on start-ups⁴



Notes: 1. As % of all firms within size class. 2. As % of total turnover. 3. As % of innovating firms. 4. Index scale of 0-6 from least to most restrictive.

Sources: Table A: OECD, *Structural and Demographic Business Statistics*. Charts B, C and D: Eurostat, *Community Innovation Survey 2006*. Chart E: OECD, *Product Market Regulation Database*.

StatLink <http://dx.doi.org/10.1787/813517714027>

Poland

The *Innovative Economy Operational Programme 2007-2013* is the main vehicle in Poland for pursuing the objectives of the Lisbon Strategy. It provides the practical framework for allocating and distributing EUR 8.25 billion of EU structural funds over the seven-year period, some 95% of which is earmarked for Lisbon objectives. The programme is managed by the Ministry for Regional Development; co-financing from the Polish government brings the total to EUR 9.71 billion, amounting to nearly 0.5% of GDP per annum. It is hoped that another EUR 2.42 billion will be raised from other sources.

The purpose of the Innovative Economy Operational Programme is to improve the coherence of policies toward innovation that fall within the competence of the Ministries of Economy, Science, Tourism and Informatisation. In particular, it aims to adapt the activities of the science sector to the needs of enterprises – especially SMEs – and to create a better interface between the science and business sectors in order to more effectively transfer advances in science to the wider economy.

The science base of the economy – both its R&D and its supporting infrastructure – will receive more than a quarter of the total funding. Measures to strengthen the commercialisation of new ideas will receive around half of the total, and most of the remainder will be used to strengthen the role of information and communications technologies in Poland. Much of this funding will benefit enterprises and SMEs who will have preference in the allocation of around EUR 3.65 billion. All projects and programmes undertaken as part of the Innovative Economy Operational Programme are expected to be subject to formal evaluation.

Strengthening the Protection of Intellectual and Industrial Property Rights Programme

This initiative is an inter-agency programme co-ordinated by the Ministry of Culture and National Heritage; it involves the Patent Office, the Ministry of Finance and the Ministry of Interior and Administration. Its main purposes are to strengthen the fight against IPR infringement by training staff in the main services charged with enforcing IPR, and to increase international co-operation in such enforcement. It has also worked to increase people's awareness of the IPR system, both those with an interest in using it and those responsible for enforcing it.

The programme involves technical assistance and the purchase of IT equipment. But its essential ingredient is the engagement of the Polish Patent Office in direct training activities. While the programme is mainly intended for officials, these training activities have also been targeted at a wider audience, including SME representatives, patent attorneys, researchers and inventors. Unusually, this programme has no formal budget of its own. Due to the wide range of activities that the programme involves, individual initiatives are financed by the institutions and ministries undertaking them from their own budgets. Overall it appears to be relatively inexpensive while serving an important educational function that would unlikely emerge from market processes alone.

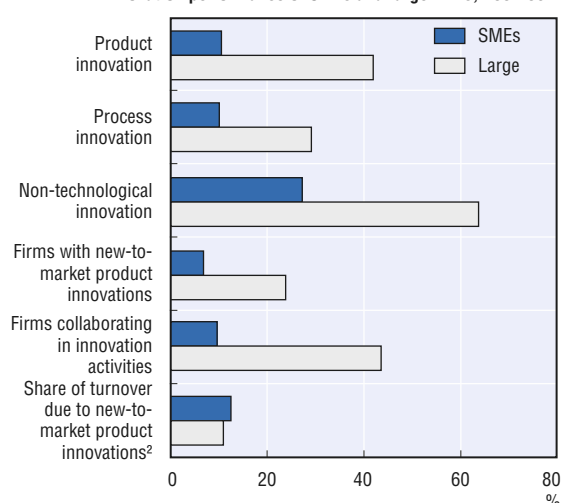
By the end of 2007 the Patent Office had organised two national conferences and 16 workshops, each in a different region, focused on the issue "Industrial Property in Business Activity". On the basis of the results of these workshops and conferences, the programme has been regarded as a success. More than 1 000 people participated in these events and provided favourable assessments, averaging 4.56 on a scale of 1 to 5. Many of them indicated that the seminars were highly informative with regard to the importance of protecting IPRs. It is expected that the number of applications filed for patents and trademarks in the future will be higher as a result of these activities.

Poland

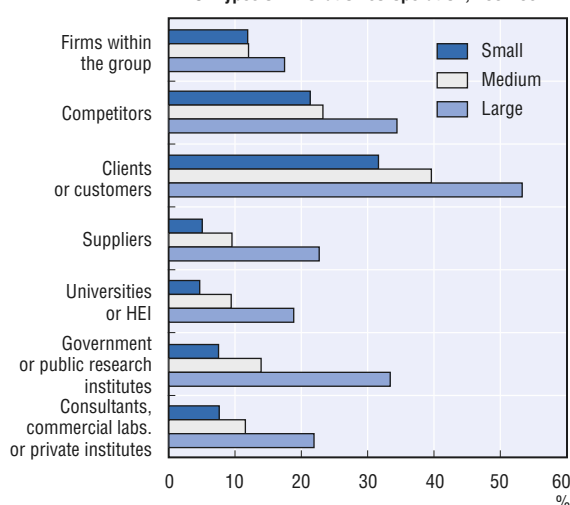
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		%	No. engaged	%	No. engaged		%	%	Industry
Micro	376 230	92.5	1 048 190	97.3	96.0	905 309	23.3	2 220 284	50.9	37.9	10.7	32.8	21.3
Small	19 604	4.8	22 298	2.1	2.8	461 343	11.9	479 401	11.0	11.4	8.9	14.4	11.5
Medium	9 049	2.2	5 726	0.5	1.0	978 275	25.2	573 800	13.2	18.8	23.2	19.0	21.2
SMEs	404 883	99.5	1 076 214	99.9	99.8	2 344 927	60.3	3 273 485	75.0	68.1	42.8	66.2	54.0
Large	2 053	0.5	1 071	0.1	0.2	1 541 163	39.7	1 088 840	25.0	31.9	57.2	33.8	46.0

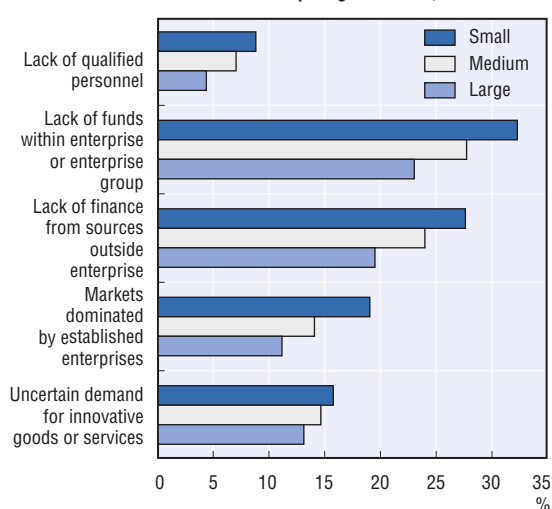
B. Innovation performance of SMEs and large firms, 2004-06¹



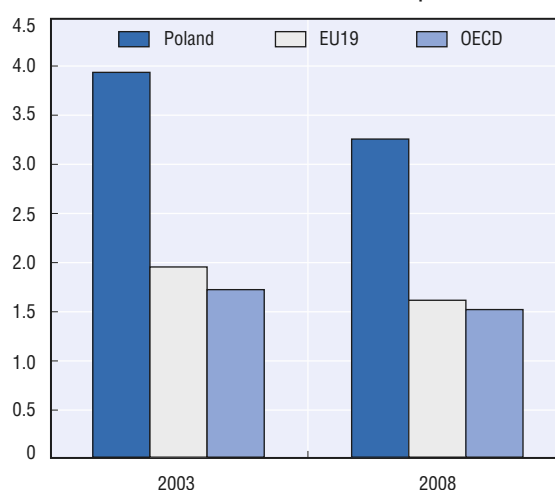
C. Types of innovation co-operation, 2004-06³



D. Factors hampering innovation, 2004-06³



E. Administrative burdens on start-ups⁴



Notes: 1. As % of all firms within size class. 2. As % of total turnover. 3. As % of innovating firms. 4. Index scale of 0-6 from least to most restrictive.

Sources: Table A: OECD, *Structural and Demographic Business Statistics*. Charts B, C and D: Eurostat, *Community Innovation Survey 2006*. Chart E: OECD, *Product Market Regulation Database*.

StatLink <http://dx.doi.org/10.1787/813521857686>

Portugal

INOFIN

Improved access to financing for entrepreneurs and SMEs is a priority implemented through the INOFIN programme, which in turn incorporates three programmes. *FINICIA*, launched in the second half of 2006, provides a network of regional platforms that brings together the demand and supply of venture capital, seeks to encourage innovation and entrepreneurship, and contributes to facilitating technology transfer. The demand side includes universities, incubators, development agencies and other regional partners, while the supply side comprises venture capital companies. *FINCRESCE*, also launched in the second half of 2006, provides solutions to optimise financing conditions for companies pursuing innovative growth strategies. Finally, *FINTRANS*, launched in June 2009, aims at raising the competitiveness of Portuguese SMEs by encouraging business re-sizing and transfer, thereby allowing Portuguese SMEs to attain the right size to compete globally while also providing conditions to facilitate business success.

Implementation of these programmes is carried out by the Small and Medium-sized Enterprises and Innovation Support Institute (IAPMEI). This institute acts under the authority of the Portuguese Ministry for Economy, Innovation and Development and aims at supporting the enhancement of SMEs' capabilities, fostering SME investment, and co-ordinating financial instruments.

COMPETE

The National Strategic Reference Framework (NSRF) 2007-2013, co-financed by EU Structural Funds, includes a National Programme on Competitiveness Factors (*COMPETE*), which is the key operational programme dealing with innovation policy. *COMPETE* includes the Incentive Schemes (IS) to support company investments that lead to innovation in technological and non-technological areas: *IS Innovation*, *IS R&TD* and *IS Qualification and Internationalisation of SMEs*. The latter two gave rise to two new initiatives, the R&TD and Innovation Vouchers, launched in May 2008. These initiatives aim at supporting companies in their efforts to raise their technical, technological and innovation capacities, both in relation to the production of new products and services and at the organisational, strategic or market innovation level. Accordingly, SME projects that involve the contracting of qualified scientific and technological entities to provide technical or technological services can receive financing of up to EUR 25 000 (non-refundable incentive).

COMPETE also includes the *Collective Efficiency Strategies (EEC)*, an important tool for the development of competitiveness and technology poles (PCT) and clusters. The objective is to promote co-operation and networking among enterprises (including SMEs) and between enterprises and relevant support institutions (namely R&TD, higher education and vocational training institutions) who are involved in the development of the sector and region.

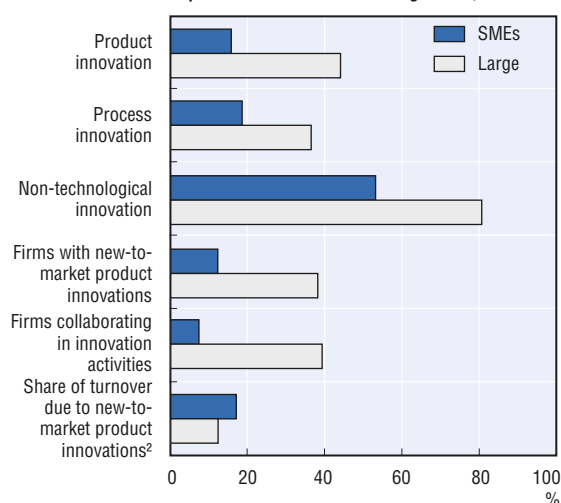
Collective Efficiency Strategies' formal recognition allows the submission of investment projects and respective action programmes, thereby facilitating access to instruments available within the National Strategic Reference Framework and co-financing of partnerships' co-ordination and management structure. Until October 2009, the approved Collective Efficiency Strategies (11 competitiveness and technology poles and 8 clusters) foresee an eligible investment of around EUR 2 000 million, of which around one-quarter goes to anchor projects involving over 500 actors. There is a national office in charge of *COMPETE*'s management. The Small and Medium-sized Enterprises and Innovation Support Institute also plays a major role as funding agency and manager of support schemes to promote innovation in companies under the National Strategic Reference Framework.

Portugal

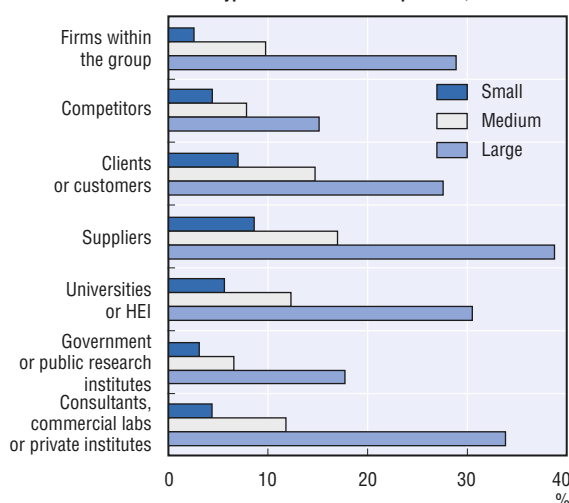
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		%	No. engaged	%	No. engaged		%	%	Industry
Micro	194 120	88.5	625 593	96.6	94.5	395 591	29.7	993 417	49.9	41.8	16.2	29.6	24.2
Small	21 409	9.8	19 285	3.0	4.7	411 860	30.9	351 517	17.6	23.0	25.3	22.8	23.8
Medium	3 453	1.6	2 335	0.4	0.7	321 859	24.1	223 298	11.2	16.4	28.7	17.5	22.0
SMEs	218 982	99.8	647 213	99.9	99.9	1 129 310	84.7	1 568 232	78.7	81.1	70.1	69.9	70.0
Large	401	0.2	438	0.1	0.1	203 622	15.3	423 563	21.3	18.9	29.9	30.1	30.0

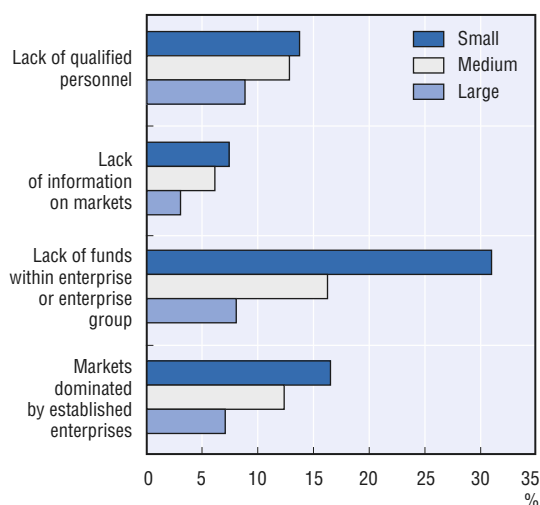
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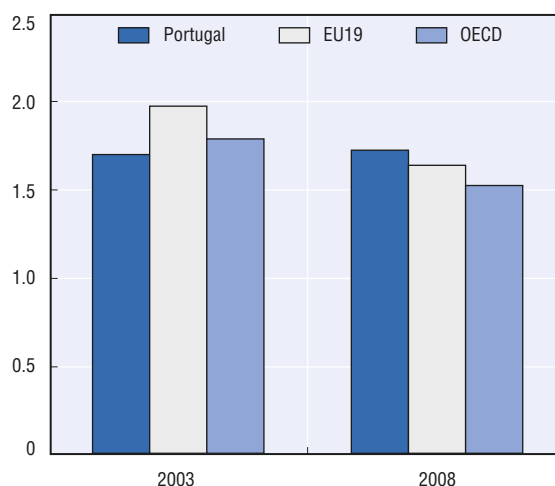
C. Types of innovation co-operation, 2004-06³



D. Factors hampering innovation, 2004-06⁴




E. Administrative burdens on start-ups⁴



Notes: 1. As % of all firms within size class. 2. As % of total turnover. 3. As % of innovating firms. 4. Index scale of 0-6 from least to most restrictive.

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StatLink  <http://dx.doi.org/10.1787/813540502857>

Slovak Republic

National Agency for Development of SMEs (NADSME)

A joint initiative of the European Union and the government of the Slovak Republic, the *National Agency for Development of SMEs* was founded in 1993 to improve the competitiveness of Slovak SMEs in the EU Common Market. In 1997 the agency became a professional association of legal entities, including the Ministry of Economy of the Slovak Republic, the Slovak Association of Entrepreneurs and the Slovak Association of Crafts.

NADSME now operates a number of schemes that aim to stimulate growth in SMEs, to increase SME competitiveness, to foster the internationalisation of SMEs, and finally to increase SMEs' access to funding sources.

One of these schemes is the Seed Capital Company. Founded in 1994, the company was created to help increase the amount of venture capital investment for SMEs in the Slovak economy. The company looks for young, innovative firms with medium-term growth potential and invests in these firms so as to accelerate their development and help them attain their goals sooner. The services provided by the Seed Capital Company include the provision of share capital, follow-up financing, guaranteed and non-guaranteed loans, subordinate and convertible loans, arrangement of syndicate financing and firm merger and marketing advice.

The company administers a number of funds, including the Start-up Capital Fund, begun in 1994; the Regional Start-up Capital Fund, which provides financial support to SMEs in the regions of Banská Bystrica, Košice, and Prešov; and the Microcredit Fund, used to finance entrepreneurs in selected districts of the Bratislava and Trnava regions. To the year 2006, the Seed Capital Company had received requests from SMEs totalling SKK 9.1 billion.

The Slovak Guarantee and Development Bank (SZRB)

Concentrating on business support for SMEs, the Slovak Guarantee and Development Bank has been extending bank guarantees for SMEs since its creation in 1991. In 2002, it was transformed into a joint stock company, 100% owned by the Ministry of Finance of the Slovak Republic. Today, the SZRB is involved in numerous auxiliary activities, including financing projects of the Structural and Cohesion Funds, acting as an intermediary contact between investors and businesses, and introducing a loan programme for female entrepreneurs. The European Investment Bank earmarked EUR 50 million for the Slovak Guarantee and Development Bank in 2009.

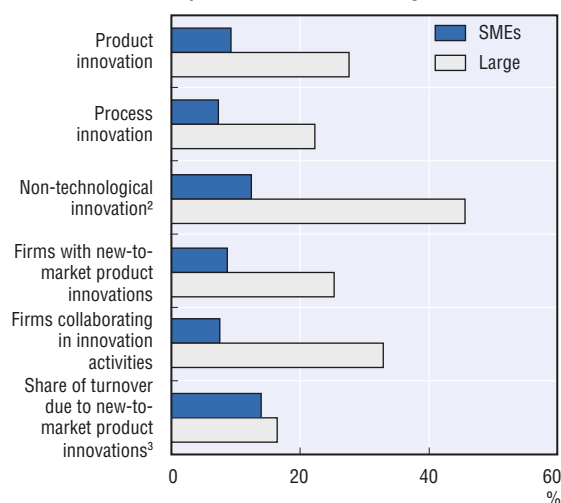
In addition, the SZRB has been providing a series of loan programmes since the end of 2005, one of which is specifically for SMEs. Indirect loans are distributed by selected commercial banks and direct loans are provisioned by the Slovak Guarantee and Development Bank itself. There are a total of three indirect loan and eleven direct loan programmes for SMEs. Over 2005 alone, these schemes collectively provided 773 loans to SMEs totalling over SKK 3.8 billion.

Slovak Republic

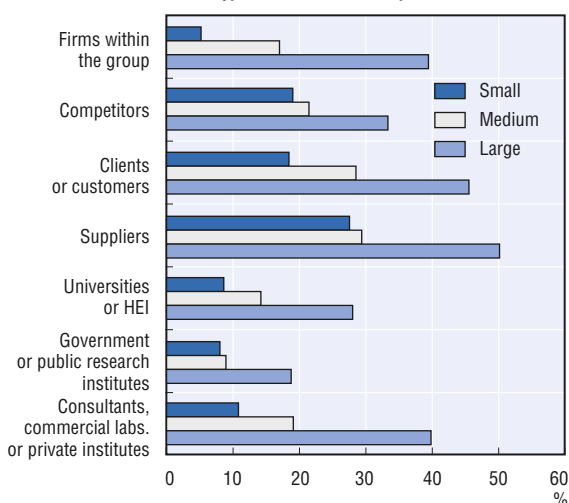
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		No. engaged	%	No. engaged	%		Industry	Services	Total
Micro	7 584	54.5	34 697	79.0	73.1	34 050	6.3	111 907	24.6	14.6	4.4	27.0	14.2
Small	4 643	33.4	8 318	18.9	22.4	82 726	15.2	115 193	25.3	19.8	10.5	26.3	17.4
Medium	13 10	9.4	734	1.7	3.5	139 979	25.7	75 079	16.5	21.5	18.2	15.8	17.2
SMEs	13 537	97.4	43 749	99.7	99.1	256 755	47.2	302 179	66.5	56.0	33.1	69.2	48.8
Large	367	2.6	152	0.3	0.9	287 485	52.8	152 367	33.5	44.0	66.9	30.8	51.2

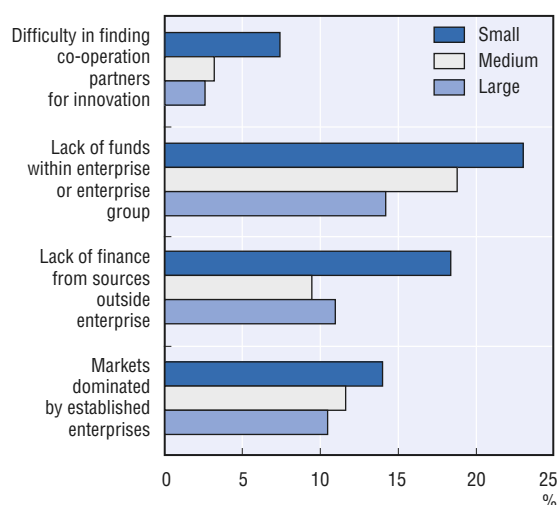
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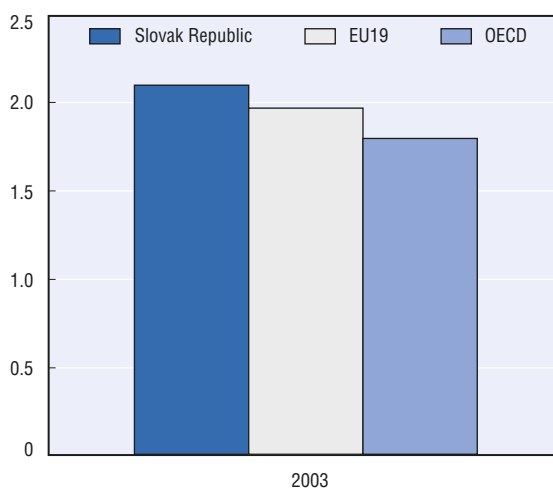
C. Types of innovation co-operation, 2004-06⁴



D. Factors hampering innovation, 2004-06⁴



E. Administrative burdens on start-ups⁵



Notes: 1. As % of all firms within size class. 2. 2002-04. 3. As % of total turnover. 4. As % of innovating firms. 5. Index scale of 0-6 from least to most restrictive.

Source: Table A: OECD, *Structural and Demographic Business Statistics*. Chart B: Eurostat, *Community Innovation Survey 2004 and 2006*. Charts C and D: *Community Innovation Survey 2006*. Chart E: OECD, *Product Market Regulation Database*.

StatLink  <http://dx.doi.org/10.1787/813544660727>

Spain

Inno-Empresa

The *Inno-Empresa* programme 2007-13 replaced the previous SME Consolidation and Competitiveness Plan 2000-06 and was included in 2006 as part of both the Spanish National Reform programme and the Entrepreneurship Programme. *Inno-Empresa* is budgeted with EUR 75 million per year; the main sources of financing are the Spanish Ministry of Industry, Tourism and Trade (EUR 500 million), the Autonomous Communities (EUR 125 million) and the European Regional Development Fund (EUR 110 million).

The specific objective of the programme is to back innovative and growth-oriented small businesses in three main areas: organisational innovation and advanced management, technological innovation and quality, and joint innovation projects. Potential beneficiaries are both SMEs and intermediary organisations that support the process of innovation in small businesses.

Projects can be of either regional or trans-regional nature. In the first case, they are managed directly by the regions (i.e. Autonomous Communities), while in the second case they are supervised by the Directorate General for SME Policy, a management centre attached to the national Ministry of Industry, Tourism and Trade.

Between 2007 and 2008, the programme received over 18 000 applications. 7 000 projects were approved and approximately 15 000 SMEs benefited from them, with EUR 163 million worth of subsidies and EUR 400 million in leveraged investments.

NEOTEC

NEOTEC is a programme that aims to encourage the creation and consolidation of new technology-based firms in Spain. It is managed by the Centre for Development of Industrial Technology (CDTI), a public corporation within the national Ministry of Science and Innovation that since 2009 has been in charge of managing business enterprises' R&D funds.

NEOTEC is intended to help new technology-based firms throughout the entire business life cycle. So for instance, firms aged less than two years can apply for no-interest seed-capital loans up to a ceiling of EUR 350 000 (EUR 600 000 in the biotech sector). The ceiling goes up to EUR 1 million in the case of firms aged between two and six years. The value of the loan cannot exceed 70% of the overall project budget and firms need to start paying back the loan once they achieve a positive cash flow – that is to say, 20% of the cash flow per year until the loan is fully repaid. NEOTEC also seeks to establish a link between technology-based firms and the venture capital market by facilitating loans to risk-capital societies interested in sharing the risk with the firms. In this case, the investment cannot exceed EUR 500 000 per company.

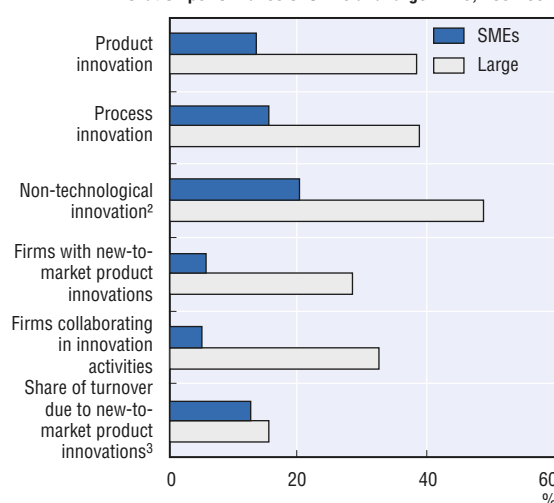
From 2002 to 2007, NEOTEC approved 257 projects, for which EUR 171 million were invested and EUR 81 million committed.

Spain

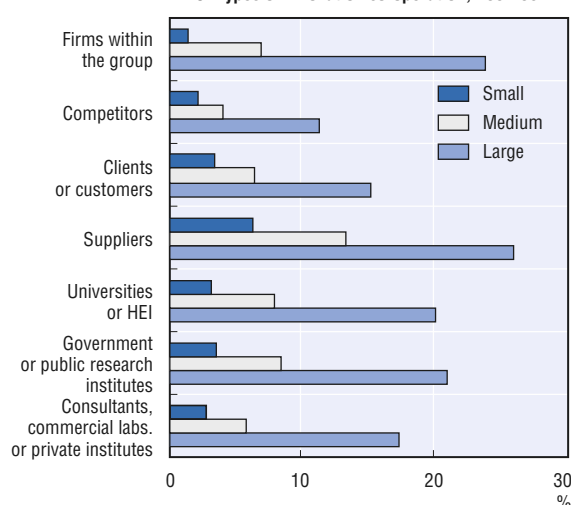
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		%	No. engaged	%	No. engaged		%	%	Industry
Micro	587 972	85.8	1 923 591	94.9	92.6	1 636 784	29.5	3 819 307	43.8	38.3	18.9	34.6	27.5
Small	84 145	12.3	91 376	4.5	6.5	1 795 950	32.4	1 699 824	19.5	24.5	25.8	20.3	22.7
Medium	11 662	1.7	10 346	0.5	0.8	1 108 508	20.0	1 007 237	11.5	14.8	21.4	14.8	17.7
SMEs	683 779	99.8	2 025 313	99.9	99.9	4 541 242	82.0	6 526 368	74.8	77.6	66.1	69.6	68.0
Large	1 449	0.2	1 856	0.1	0.1	997 967	18.0	2 195 153	25.2	22.4	33.9	30.4	32.0

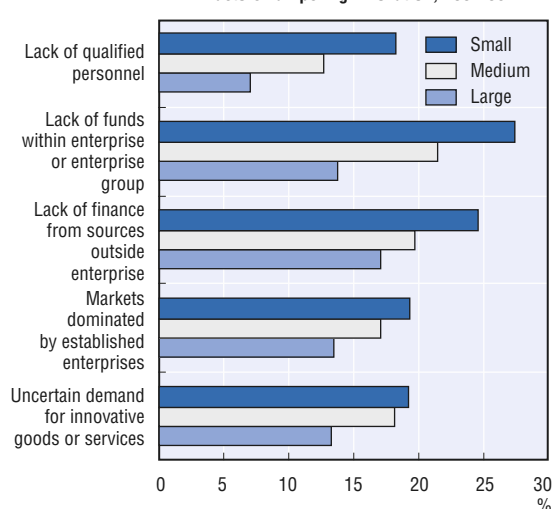
B. Innovation performance of SMEs and large firms, 2004-06¹



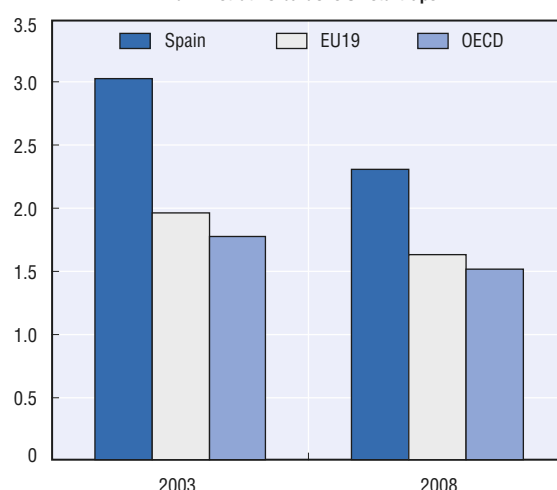
C. Types of innovation co-operation, 2004-06⁴



D. Factors hampering innovation, 2004-06⁴



E. Administrative burdens on start-ups⁵



Notes: 1. As % of all firms within size class. 2. 2002-04. 3. As % of total turnover. 4. As % of innovating firms. 5. Index scale of 0-6 from least to most restrictive.

Source: Table A: OECD, *Structural and Demographic Business Statistics*. Chart B: Eurostat, *Community Innovation Survey 2004 and 2006*. Charts C and D: *Community Innovation Survey 2006*. Chart E: OECD, *Product Market Regulation Database*.

StatLink <http://dx.doi.org/10.1787/813612045268>

Sweden

National policy addressing innovative entrepreneurship and/or innovation activities of SMEs is based on mix of direct support programmes, run by different governmental agencies. The three most important agencies are: Tillväxtverket, which includes ALMI – Sweden’s SME and Entrepreneurship Agency; VINNOVA (Swedish Governmental Agency for Innovation Systems); and Innovationsbron (InnovationBridge).

The newly established Swedish Agency for Economic and Regional Growth – Tillväxtverket – supports entrepreneurship and SMEs. Part of this support is furnished by ALMI, which provides information and financing (with a budget of approximately SEK 150 million, of which SEK 40 million is earmarked for innovative SMEs).

VINNOVA’s responsibility covers innovations linked to research and development. Its tasks are to fund the needs-driven research required by a competitive business and industrial sector and a thriving economy, and to strengthen the networks that are necessary for this work. VINNOVA has a total budget of almost SEK 2 000 million, out of which approximately 10% is for programmes addressing SMEs.

A third important government agency addressing innovative entrepreneurship is the Innovationsbron. The main task is to increase the commercialisation of research results and ideas. This is done partly by assisting Swedish incubators (SEK 50 million) and providing seed financing for innovative new firms. The Innovationsbron has an annual budget of SEK 225 million.

Sweden has a long history of large (private) R&D investments and successful innovations, while the entrepreneurial climate and activities are very limited. Combining innovative and entrepreneurial activities remains a major challenge for Sweden.

Research&Grow

The government has assigned VINNOVA the implementation of a programme that will strengthen and stimulate R&D in SMEs. In 2005, VINNOVA therefore launched the programme *Forska&Vax* (Research&Grow) that focuses on R&D in SMEs. For 2009 the call has a budget of SEK 120 million.

The Research&Grow programme is designed to increase innovation in SMEs with limited R&D activities. SMEs in all industrial sectors can apply for funding to start or strengthen their R&D. The programme offers support for either pre-studies or needs analysis (maximum SEK 500 000/SEK 100 000) or for accomplishing research projects (maximum SEK 5 million), most often in collaboration with other actors such as higher education institutions. For research projects the SME is supposed to contribute an equal sum itself. Efforts have been made to have a simple proposal procedure, as well as very quick evaluations. From 2006 to 2008 there were seven calls, resulting in almost 2 200 proposals from SMEs; of these, 360 projects were approved (total sum SEK 276 million); 81% for research projects and 19% for pre-studies/needs analysis.

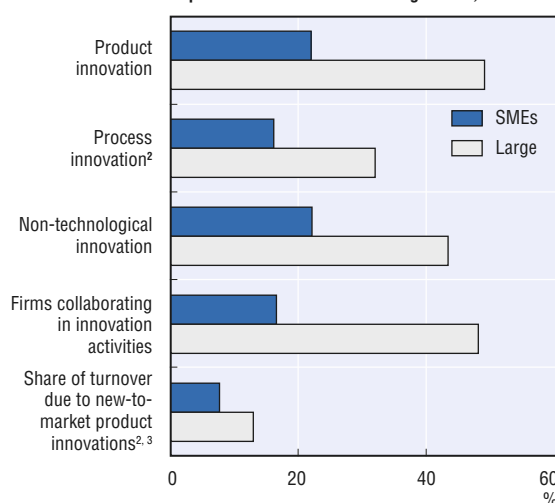
The programme was evaluated in 2009. The assessment was based on the proposal submitted by the SMEs and two questionnaires (one at the time of approval, one when the project is completed). The results show: 89% of the firms have established new research collaboration (67% of these have established collaboration with higher education institutes and research institutes); new employees have been recruited in 76% of the projects (of these, 79% are employees with at least a master’s degree in engineering); over 90% are planning the market introduction of a new product developed in the project; over 80% of the companies have started new additional projects; and almost 50% of the firms have applied for patents.

Sweden

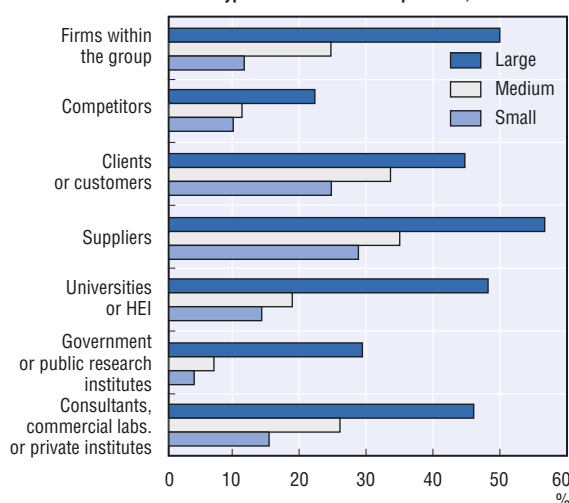
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		No. engaged	%	No. engaged	%		Industry	Services	Total
Micro	123 984	90.8	403 634	95.1	94.1	202 034	17.6	500 492	29.0	24.4	10.9	27.9	20.3
Small	9 924	7.3	17 416	4.1	4.9	222 595	19.4	381 035	22.0	21.0	14.7	21.0	18.2
Medium	2 145	1.6	2 716	0.6	0.9	233 511	20.4	291 240	16.9	18.3	18.8	17.4	18.1
SMEs	136 053	99.6	423 766	99.9	99.8	658 140	57.5	1 172 767	67.9	63.7	44.4	66.4	56.5
Large	510	0.4	502	0.1	0.2	487 400	42.5	555 529	32.1	36.3	55.6	33.6	43.5

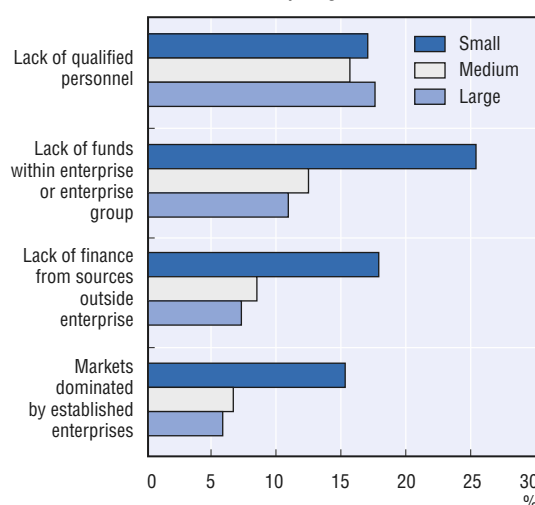
B. Innovation performance of SMEs and large firms, 2004-06¹



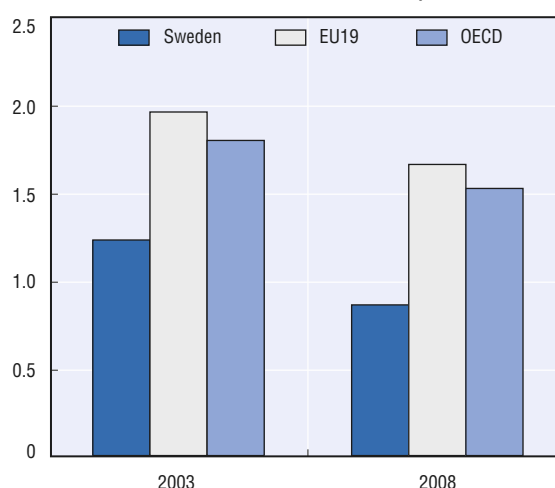
C. Types of innovation co-operation, 2002-04⁴



D. Factors hampering innovation, 2004-06⁵



E. Administrative burdens on start-ups⁵



Notes: 1. As % of all firms within size class. 2. 2002-04. 3. As % of total turnover. 4. As % of innovating firms. 5. Index scale of 0-6 from least to most restrictive.

Sources: Table A: OECD, *Structural and Demographic Business Statistics*. Chart B: Eurostat, *Community Innovation Survey 2004 and 2006*. Chart C: Eurostat, *Community Innovation Survey 2004*. Chart D: Eurostat, *Community Innovation Survey 2006*. Chart E: OECD, *Product Market Regulation Database*.

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Switzerland

The CTI (Swiss Federal Innovation Promotion Agency) is the most important innovation promotion government agency in Switzerland. Among its main tasks is the promotion of entrepreneurship in the Swiss economy. The most important entrepreneurship programmes are the *CTI Start-up* programme and *Venturelab*. The overall budget for the entrepreneurship promotion programme of the CTI amounts to about CHF 11 million in 2008; CHF 3.7 million of this amount is used for funding *Venturelab* and about CHF 7.3 million for the *Start-up* programme.

Start-up

The goal of the CTI *Start-up* measure is to increase the number of start-ups significantly, particularly in high-tech industries. Furthermore, the measure intends to help entrepreneurs manage the early stage of firm development successfully. Concrete measures include the provision of coaches that teach entrepreneurs essential skills such as drawing up a business plan, granting access to networking events, and certification of promising start-ups with the CTI *Start-up* label. By 2008, 194 firms received the label; 169 “label firms” are still active. Label firms created around 2 800 jobs and could generate risk capital of around CHF 120 million.

The *Start-up* programme was evaluated in 2006. It was found that firms with the CTI *Start-up* label have a greater chance of survival than comparable firms not promoted by CTI. Further, according to selected firm variables (profit, turnover, employment growth, third-party funding and profit turnover ratio), labelled firms are performing better than non-labelled firms. According to a number of other success factors the picture is mixed. Labelled firms are doing better in fund raising, and are more advanced in product diversification, IPR, marketing and sales. Labelled firms are also better in networking, and their competences in finance, strategy and organisation are favourable as well. In contrast, non-labelled firms are performing better than label firms with respect to product characteristics, customer orientation, competitive position, employee satisfaction, and internal process organisation.

Venturelab

Venturelab provides customised education tools to promote innovative young entrepreneurs and to inspire students for entrepreneurship. Services for students include semester courses to orient the students for entrepreneurship and workshops where important tools for prospective entrepreneurs are taught. For existing start-ups, *Venturelab* gives five-day intensive courses and advisory services. Finally, *Venturelab* offers entrepreneurs the possibility to participate in a networking workshop in Boston.

The initiative focuses on the best projects, accompanying them with professional consulting that pays more attention to practice than to theoretical concepts. It is organised at a regional level. During the past five years more than 10 200 students and start-up firms attended *Venturelab* courses (2 600 in 2008). Four per cent of the participants attended courses on *Venture Training*, 11% participated in the *Venture Plan* module, 15% attended courses on *Venture Challenge* and 70% courses on *Venture Ideas*. *Venturelab* organised 237 courses (modules) and 1 390 workshops between 2004 and 2008.

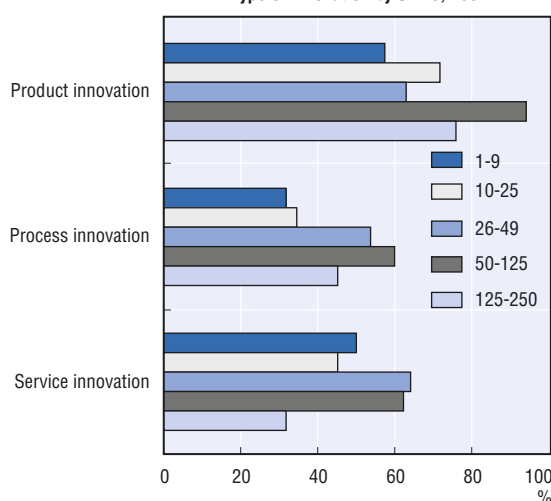
An internal evaluation, finalised in November 2007, stated that a need for the initiative exists and affirmed the utility of the measure. It was found that 90% of the participants considered the seminars suitable for achieving the programme goals. Furthermore, 80% of users interviewed corroborated that the offerings were of value.

Switzerland

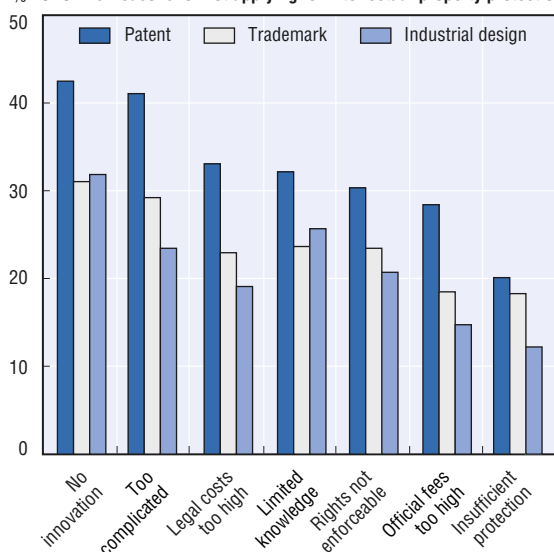
A. Structural indicators on enterprise population

	Number of enterprises, 2005					Total employment, 2001				
	Industry		Services		Total	Industry		Services		Total
	No. firms	%	No. firms	%		No. engaged	%	No. engaged	%	
Micro	57 569	95.1	160 019	98.6	97.7	201 510	19.4	547 436	36.3	29.4
Small	n.a.		n.a.			262 811	25.3	315 385	20.9	22.7
Medium	2 496	4.1	1 984	1.2	2.0	283 559	27.3	213 938	14.2	19.5
SMEs	n.a.		n.a.			747 880	72.0	1 076 759	71.4	71.6
Large	453	0.7	301	0.2	0.3	291 440	28.0	431 876	28.6	28.4

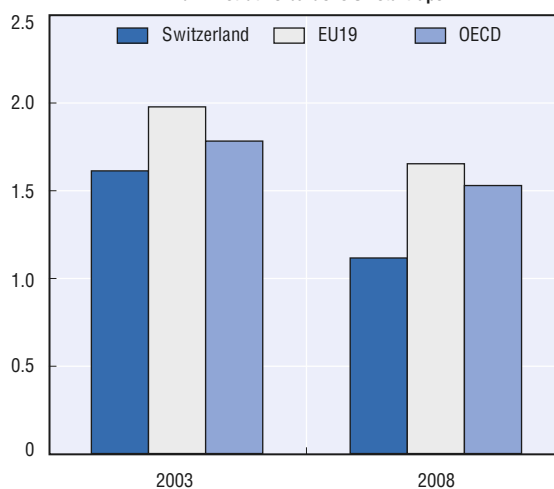
B. Type of innovation by SMEs, 2007¹



C. SMEs' reasons for not applying for intellectual property protection¹




D. Administrative burdens on start-ups²



Notes: 1. As % of innovating firms. 2. Index scale of 0-6 from least to most restrictive.

Sources: Table A: OECD, *Structural and Demographic Business Statistics*. Charts B and C: Swiss Federal Institute of Intellectual Property, 2007. Chart D: OECD, *Product Market Regulation Database*.

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Turkey

Young Entrepreneur Development Programme

The *Young Entrepreneur Development Programme* was designed to help increase awareness of entrepreneurship, stimulate start-up of new technology-based firms among university students and graduates, and create new jobs. It has been run together with universities since 1998. During a 66-hour course, students are assisted with developing their business ideas and business plans.

Financial support is provided to programme participants under the *New Entrepreneur Support* once they complete their business plans successfully and decide to create their start-ups. Start-up costs are financed up to EUR 2 000. Fixed investment costs are also financed through grants and soft loans. Another policy measure for promoting technology-based entrepreneurship began in 2008 under the *R&D Support Law No. 5746*. According to the Law, the programme is implemented by all public administrations with an R&D budget. Up to EUR 50 000 is provided per beneficiary.

Support Programme for R&D and Technological Innovation

The pioneering programme in the field of innovative entrepreneurship/SME innovation is the *Support Programme for R&D and Technological Innovation* of KOSGEB, the Small and Medium Sized Industry Development Organisation. The programme aims to support R&D and innovation activities of SMEs and promotes the creation of technology-based companies in KOSGEB incubators (called *Technology Development Centres – TEKMERs* – and *Virtual Technology Incubators – DTIs*). Initiated in 1991, the programme provides a mixture of grants and a soft loan to entrepreneurs/SMEs having new technological ideas and innovations, so as to improve these ideas by developing prototypes, start production and market products at the national and international levels. TEKMERs are established in co-operation with the technical universities and industrial chambers. As of 2009, there are 20 TEKMERs and 14 DTIs throughout the country.

The programme has been the major tool for start-up technology-based enterprises in Turkey and for improving university-industry co-operation. Approximately 37% of the tenants of KOSGEB TEKMERs are new companies. Some 1 800 projects have been provided with incubation and other technology supports, and of those 312 have received patents as of the end of October 2009. For example, 70% of the tenants of METU-KOSGEB TEKMER [the first TEKMER created by KOSGEB together with the Middle East Technical University (METU) in Ankara] are new companies and 69% of these companies are university spin-offs. This TEKMER hosted 161 enterprises between 1992 and 2009, and its success rate has been 82%.

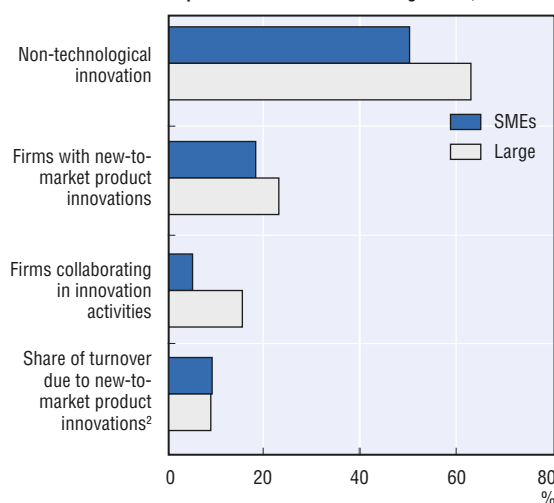
The *Industrial Thesis Supporting Programme (SAN-TEZ)* was launched in 2006 by the Ministry of Industry and Trade in order to increase the innovative and R&D capacity of Turkish Industry, strengthen university-industry collaboration, commercialise academic knowledge, and develop the R&D and technological culture of SMEs. Seventy-five per cent of the budget of a SAN-TEZ project is provided by the Ministry of Industry and Trade as a grant, and the rest of the budget is covered by the company that will commercialise the output of the project. Between 2006 and 2009, 206 eligible projects were funded among 519 project proposals from 65 universities.

Turkey

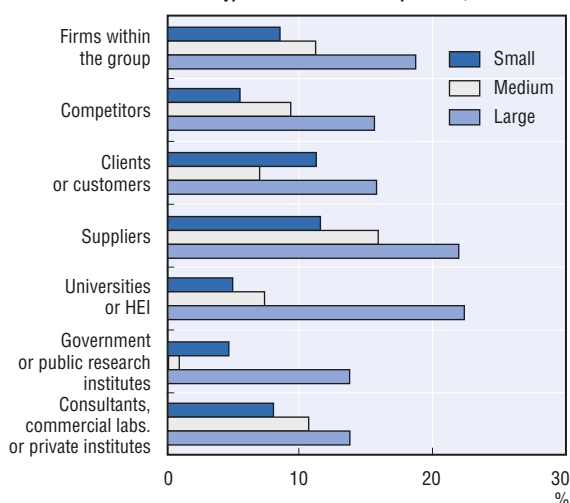
A. Structural indicators on enterprise population, 2006

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		%	No. engaged	%	No. engaged		%	%	Industry
Micro	383 577	93.8	1 889 647	99.1	98.1	1 113 081	32.5	3 512 942	75.9	57.4	12.2	44.4	28.2
Small	16 149	3.9	12 190	0.6	1.2	521 934	15.2	314 797	6.8	10.4	11.1	11.5	11.3
Medium	7 795	1.9	4 362	0.2	0.5	799 763	23.3	286 359	6.2	13.5	21.7	13.2	17.5
SMEs	407 521	99.6	1 906 199	100.0	99.9	2 434 778	71.1	4 114 098	88.9	81.3	45.0	69.1	57.0
Large	1 537	0.4	938	0.0	0.1	991 465	28.9	514 680	11.1	18.7	55.0	30.9	43.0

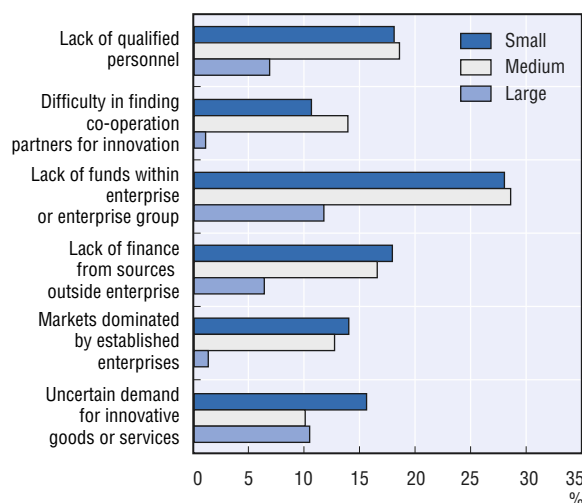
B. Innovation performance of SMEs and large firms, 2004-06¹



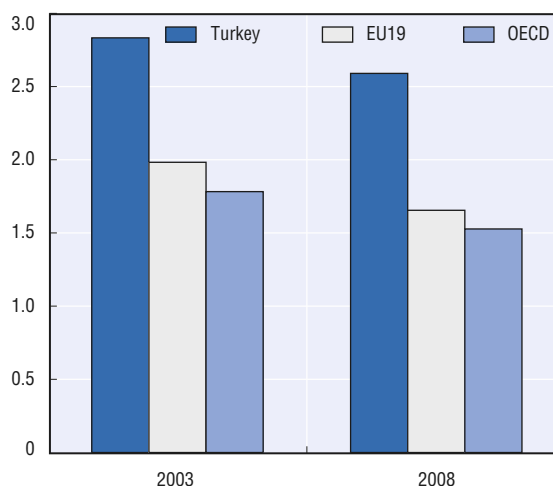
C. Types of innovation co-operation, 2004-06³



D. Factors hampering innovation, 2004-06³



E. Administrative burdens on start-ups⁴



Notes: 1. As % of all firms within size class. 2. As % of total turnover. 3. As % of innovating firms. 4. Index scale of 0-6 from least to most restrictive.

Sources: Table A: OECD, *Structural and Demographic Business Statistics*. Charts B, C and D: Eurostat, *Community Innovation Survey 2006*. Chart E: OECD, *Product Market Regulation Database*.

StatLink  <http://dx.doi.org/10.1787/813835033115>

United Kingdom

The United Kingdom is the only country that has documented, twice, the scale of public funding for SMEs. The first, in 2002, showed that, including the provision of tax relief, total public funding was approximately GBP 8 billion. Of this, GBP 2.3 million was the result of small firms paying the lower 20% rate of corporation tax. A later estimate by the National Audit Office provided a lower figure by excluding the taxation component, but found that all expenditure on training had been omitted from the initial estimate.

Recent years have seen significant shifts in both the orientation and organisation of SME and innovation policy in the United Kingdom. 2009 saw the creation of the Department for Business, Innovation and Skills (BIS), which for the first time brought responsibility for UK universities and economic development into the same department. At a more operational level both enterprise and innovation policy are now increasingly being regionalised, with the Regional Development Agencies in England and agencies within the Devolved Territories (Scotland, Wales and Northern Ireland) taking increased responsibility. Apart from regionalisation, two key policy agendas have dominated the medium term: the *Better Regulation Initiative*, which aims to reduce the “red tape” faced by UK firms; and the *Business Support Simplification Process*, which aims to consolidate existing support mechanisms (at both national and regional level) into a series of 30 core “products” that will share a common brand.

Advisory and capability support for SMEs continues to be offered through the *Business Links* service in England (*Business Gateway* in Scotland and *Business Eye* in Wales). This service, now operated by the Regional Development Agencies, is steadily being amalgamated with public support for training to provide a single combined service. Business Links support for firms is divided into a baseline information service and more intensive support for firms with significant growth potential. Evaluation evidence points to the greater value of this more intensive support with positive medium-term growth and productivity effects.

Access to finance also represented a hotly debated issue in the United Kingdom during the global crisis. The long-established *Small Firms Loan Guarantee Scheme* was last formally evaluated by the *Graham Review* in 2004. The Review found that, because of high default rates of around 30%, the actual cost of the UK Loan Guarantee Scheme to the taxpayer was GBP 60 million. In 2008 the programme has been scaled up considerably in combination with taking major banks into public ownership. Also, the creation of Regional Venture Capital programmes has addressed the problem of lack of risk capital, particularly in more peripheral areas. These programmes have yet to be rigorously evaluated.

Institutional support for innovation has also been strengthened in the United Kingdom in recent years with the establishment of the national *Technology Strategy Board*. The Board has a general remit to support applied R&D and innovation in the country and is investing heavily to promote collaborative projects. Key themes in the Board’s investments relate to energy technologies, biotechnology, and projects focused on the low carbon economy.

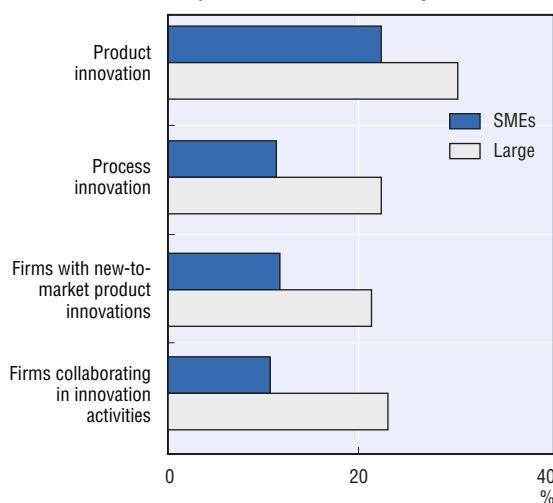
Support for innovation activity is also increasingly being provided by the Regional Development Agencies, which now all have regional innovation strategies. A number of innovation-related products are also included in the range of “core” business support products, including *innovation voucher schemes* and a range of measures to support increased commercialisation of university research. The measures include the long-standing *Knowledge Transfer Programme*, which places recent graduates with a business for two years as part of a university-industry collaborative R&D programme. Evaluation evidence over many years stresses the value of this programme to firms.

United Kingdom

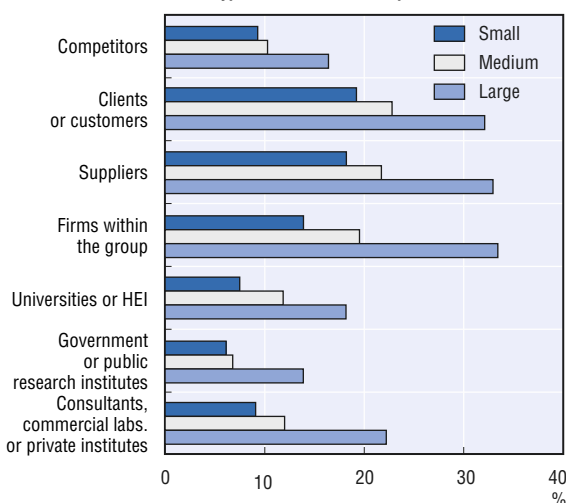
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%	%	No. engaged	%	No. engaged	%	%	Industry	Services	Total
Micro	332 909	85.0	1 135 703	88.8	87.9	884 252	18.8	3 014 077	22.5	21.5	13.1	21.3	18.4
Small	45 889	11.7	122 555	9.6	10.1	934 303	19.8	2 218 333	16.5	17.4	14.8	16.2	15.7
Medium	10 428	2.7	17 005	1.3	1.6	1 058 301	22.4	1 698 133	12.7	15.2	19.4	15.5	16.9
SMEs	389 226	99.4	1 275 263	99.7	99.6	2 876 856	61.0	6 930 543	51.6	54.1	47.3	53.0	51.0
Large	2 206	0.6	3 877	0.3	0.4	1 837 980	39.0	6 491 513	48.4	45.9	52.7	47.0	49.0

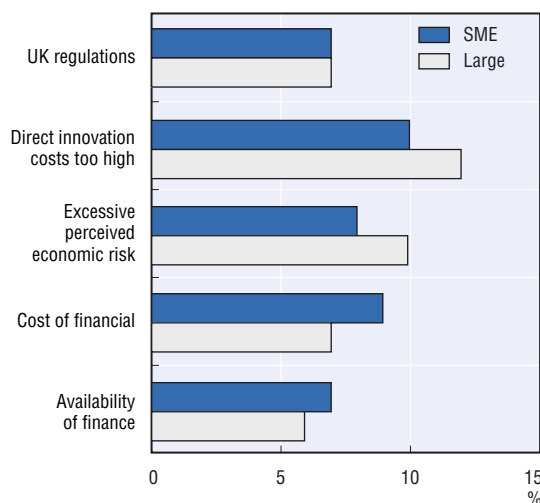
B. Innovation performance of SMEs and large firms, 2007¹



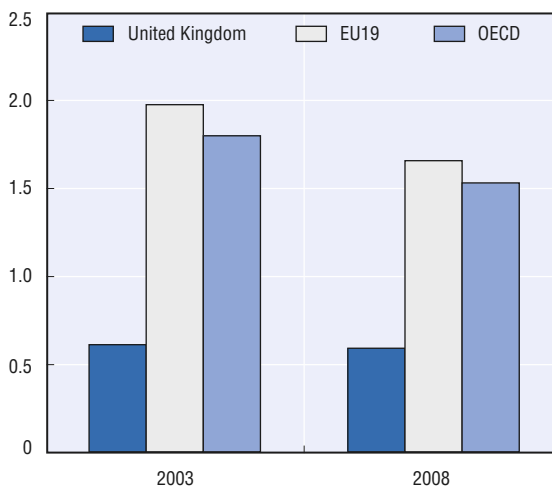
C. Types of innovation co-operation, 2004-06²



D. Factors hampering innovation, 2007³




E. Administrative burdens on start-ups³



Notes: 1. As % of panel respondents. 2. As % of innovating firms. 3. Index scale of 0-6 from least to most restrictive.

Sources: Table A: OECD, *Structural and Demographic Business Statistics*. Chart B: Office for National Statistics, *UK Innovation Survey 2007*; Eurostat, *Community Innovation Survey 2006*. Chart C: Eurostat, *Community Innovation Survey 2006*. Chart D: Office for National Statistics, *UK Innovation Survey 2007*. Chart E: OECD, *Product Market Regulation Database*.

StatLink  <http://dx.doi.org/10.1787/813847876385>

United States

Small Business Innovation Research (SBIR)

The *Small Business Innovation Research (SBIR)* programme is a double-gated innovation programme providing competition-based awards to small private sector companies of about USD 100 000+ for proof of principle, and later awards of about USD 750 000 to develop prototypes. Created in 1982 through the Small Business Innovation Development Act, the SBIR programme offers about USD 2.5 billion a year in awards. At the same time, the programme provides government agencies with new, cost-effective, technical and scientific solutions to meet their diverse mission needs. SBIR has evolved to become a highly distributed programme, flexibly administered by eleven different government agencies.

In a recent USD 5 million assessment of the programme, the US National Academies found that the SBIR programme encourages new entrepreneurship needed to bring innovative ideas from the laboratory to the market by providing scarce pre-venture capital funding on a competitive basis. Further, by creating new information about the feasibility and commercial potential of technologies held by small innovative firms, SBIR awards aid investors in identifying firms with promising technologies. The awards thus appear to have a “certification” function.

Technology Innovation Programme (TIP)

The *Technology Innovation Programme (TIP)* at the US National Institute of Standards and Technology (NIST) was established in 2007 to assist U.S. businesses and institutions of higher education – or other organisations, such as national laboratories and non-profit research institutions – to support, promote, and accelerate innovation in the United States through high-risk, high-reward research in areas of critical national need. TIP succeeds the *Advanced Technology Programme (ATP)*, which was founded in 1989. Like the previous programme, TIP also subjects funding proposals to rigorous vetting by both technical and business experts, and there is a requirement for matching funds from the firms themselves. TIP funds cover project costs only and require that at least half of the yearly total project costs are shared. As the National Academies assessment of the Advanced Technology Programme noted, this cost-share feature serves as a constant reality check and ensures public funds are used effectively.

Under the Technology Innovation Programme, universities now can lead a joint venture when teamed up with at least one small or medium-sized for-profit company, or may participate as a member within a joint venture led by a small or medium-sized company. Universities may also participate as a contractor within any TIP award. Funding is available for single company projects of up to USD 3 million over a maximum of three years, as well as for joint venture projects for up to USD 9 million over a maximum of five years.

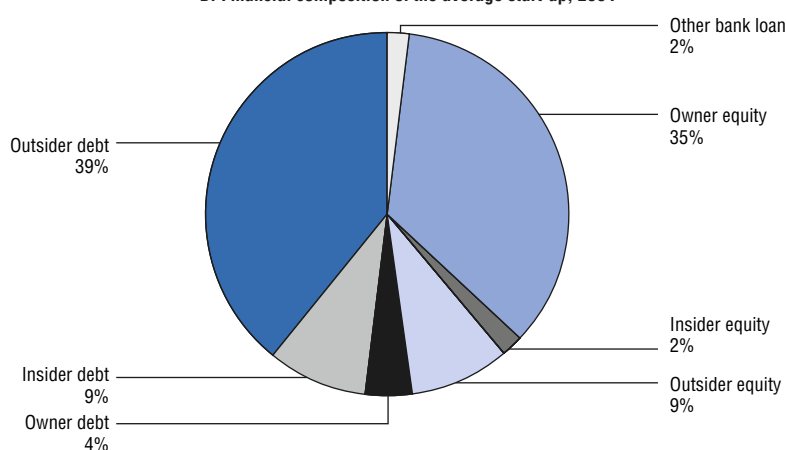
Along with the Small Business Innovation Research programme, TIP is designed to help bring high-risk, enabling and innovative civilian technologies to market. The two programmes complement each other. The larger award sums offered by TIP – with its focus on next-stage commercialisation – as well as the synergies it creates between small and large firms, help to advance the commercialisation of successful prototypes funded by the SBIR programme. Both programmes are highly competitive, making awards to only about 15-20% of all applicants; limited in time and amount, i.e. unsuccessful firms are dropped with funds recommitted to other, more promising prospects; and industry-led, as they require firms to take ownership through risk and cost sharing.

United States

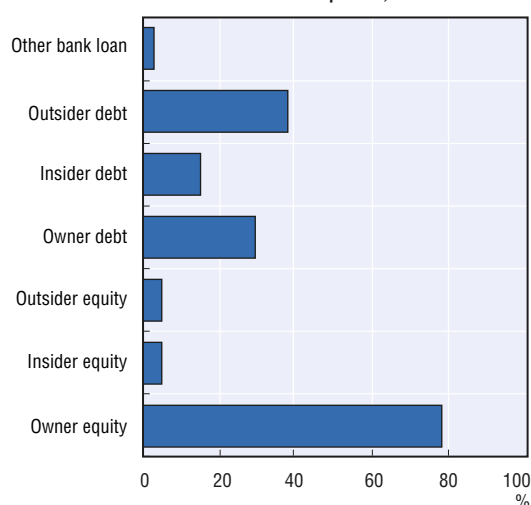
A. Structural indicators on enterprise population

	Number of enterprises, 2005					Number of employees, 2004				
	Industry		Services		Total	Industry		Services		Total
	No. firms	%	No. firms	%		%	%	%	%	
Micro	852 946	74.7	2 489 243	78.3	77.4	1 392 813	20.6	1 137 356	7.1	11.1
Small	247 273	21.7	596 613	18.8	19.5	2 724 431	40.4	4 760 930	29.6	32.8
Medium	25 756	2.3	60 052	1.9	2.0	1 061 930	15.7	2 142 635	13.3	14.0
SMEs	1 125 975	98.7	3 145 908	99.0	98.9	5 179 174	76.7	8 040 921	50.0	57.9
Large	15 211	1.3	32 854	1.0	1.1	1 571 038	23.3	8 042 114	50.0	42.1

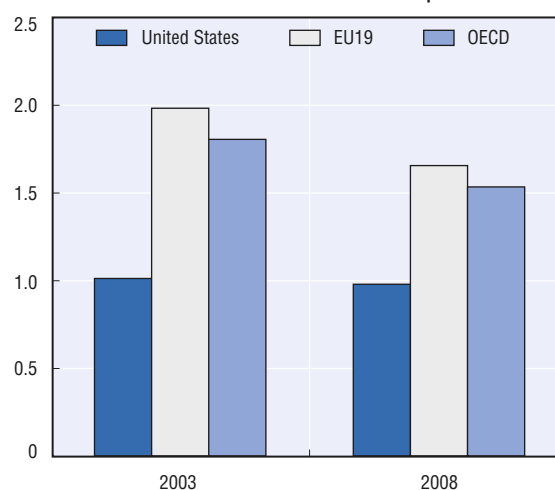
B. Financial composition of the average start-up, 2004¹



C. Source of finance for start-up firms, 2004²




D. Administrative burdens on start-ups³



Notes: 1. Average level of financial investment by that source; includes all start-up firms. 2. Expressed as a proportion of the total start-up firms with new financial injections. 3. Index scale of 0-6 from least to most restrictive.

Source: Table A: OECD, *Structural and Demographic Business Statistics*. Figures B and C: The Kauffman Foundation, *The Kauffman Firm Survey Microdata*, 2004. Figure D: OECD, *Indicators of Product Market Regulation*.

StatLink  <http://dx.doi.org/10.1787/813848007340>

Brazil

Brazilian innovation policy is based on two pillars, namely the Industrial, Technological and External Trade Policy (PITCE) and a range of sectoral funds to support strategic R&D. Regarding the Private Sector and more particularly SMEs, two concrete mechanisms have been created: the *Innovation Law* (Act 10973/2004), and the *Goodwill Law* (Act 11196/2005). These mechanisms provide financial as well as technical and managerial support to innovative enterprises. They focus on different lines of action, including: strategic partnership between universities or technological institutes and enterprises; technology-based entrepreneurship; incubators and technological parks; hiring of academic researchers by the private sector.

The *Innovation Law* supports all kind of activities involved in an innovative process. It even allows the federal government to participate as a minority shareholder in innovative enterprises operating in high-priority sectors. In addition, the *Goodwill Law* provides a wide range of fiscal incentives or subventions for investments and hiring in R&D activities.

The policy has had a high impact on R&D investments within the private sector. Brazil registered an increase from BRL 1.5 billion undertaken by 130 enterprises in 2006 to BRL 4.8 billion undertaken by 291 enterprises in 2007. In these two years, fiscal benefits amounted to over BRL 1 billion to investors.

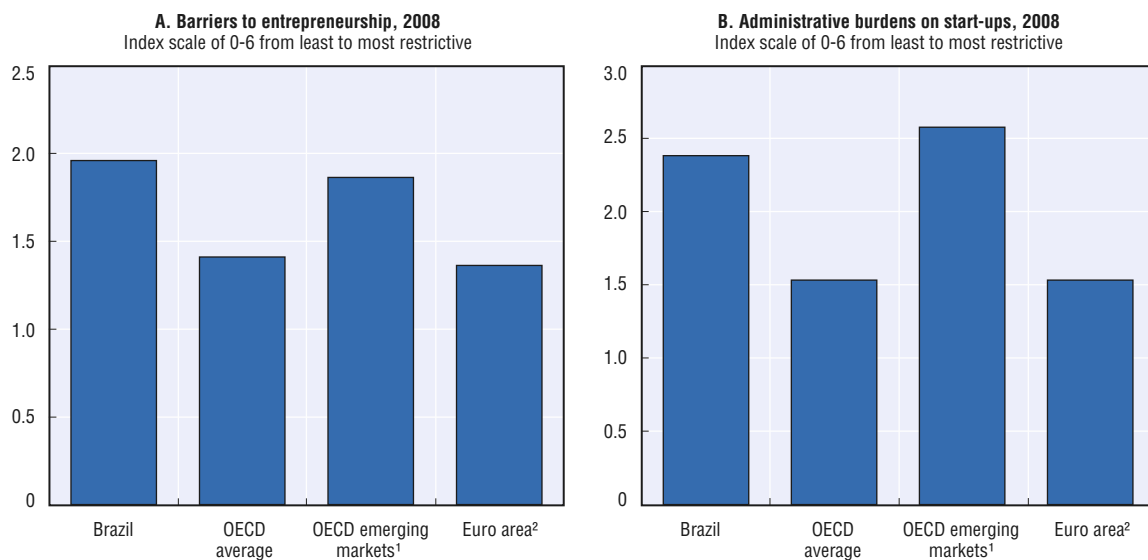
A third complementary mechanism, the *Pro-Innova* programme, was created in 2008 in order to raise awareness among entrepreneurs about the legal tools, facilities, and mechanisms available to support innovative initiatives.

Juro Zero Programme (ZERO Interest Rate Program)

The *Juro Zero Programme* was created in 2006 by FINEP (the Brazilian Innovation Agency) and addresses MSMEs (micro small and medium sized enterprises) trying to implement any managerial, commercial or technical innovation in their products, services or processes. It consists of offering loans, ranging from BRL 100 000 to BRL 900 000, to be reimbursed without any interest in 100 instalments. Any item related to technical innovation and to new investments stated in the business plan of the enterprise is eligible to be financed by this programme.

In order to cut red tape, FINEP created a network of Strategic Partners all over the country. Those partners, duly trained by FINEP, are in charge of pre-qualifying projects and presenting them to FINEP. One interesting feature of the programme is the mechanism FINEP devised in order to cope with risk management. Each funding operation is covered by the following guarantees against default: 20% – personal liability of the partners of the company getting the loan; 30% – a reserve fund comprising 3% of each loan operation (which will ultimately be cashed in by the company at the end of the contract); and 50% – a credit guarantee fund composed of resources pooled by FINEP's local agents. Since the beginning of operations, the programme has supported 61 projects and invested a total amount of over BRL 34.5 million. It is now being operated by local agents in nine states of the country.

Brazil




Notes:

1. Czech Republic, Hungary, Korea, Mexico, Poland, Slovak Republic, Turkey.

2. Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain.

Source: OECD, *Indicators of Product Market Regulation*.

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Chile

As a part of the government strategy to promote economic growth, a National Innovation for Competitiveness Council (CNIC) was established in 2005. This was further strengthened in 2006, when a new pro-innovation law was passed, whereby mining companies are charged a royalty which is intended to feed an Innovation and Competitiveness Fund. This fund supports numerous programmes, including the promotion of entrepreneurship and innovation among private companies. In order to specifically target SMEs, the government launched in 2007 an ambitious entrepreneurship agenda, Chile *Emprende Contigo* (Chile undertakes with you). It contains 21 specific measures, which are divided into five areas: institutional development to create an environment favourable to SMEs; funding; entrepreneurship; innovation and training; and support to indebted entrepreneurs. The total resources committed for the period 2007-2010 amounts to USD 620 million.

Two important innovation and entrepreneurship programmes are specifically targeted to SMEs. One is *Innova Chile*, hosted by the *Production Promotion Corporation* (CORFO). Although it supports an ample range of enterprises, a significant share of its resources is given to SMEs. The second one is *Chile Emprende*, which supports micro and small enterprises. This is hosted by a CORFO's subsidiary, the *Technical Co-operation Service* (SERCOTEC).

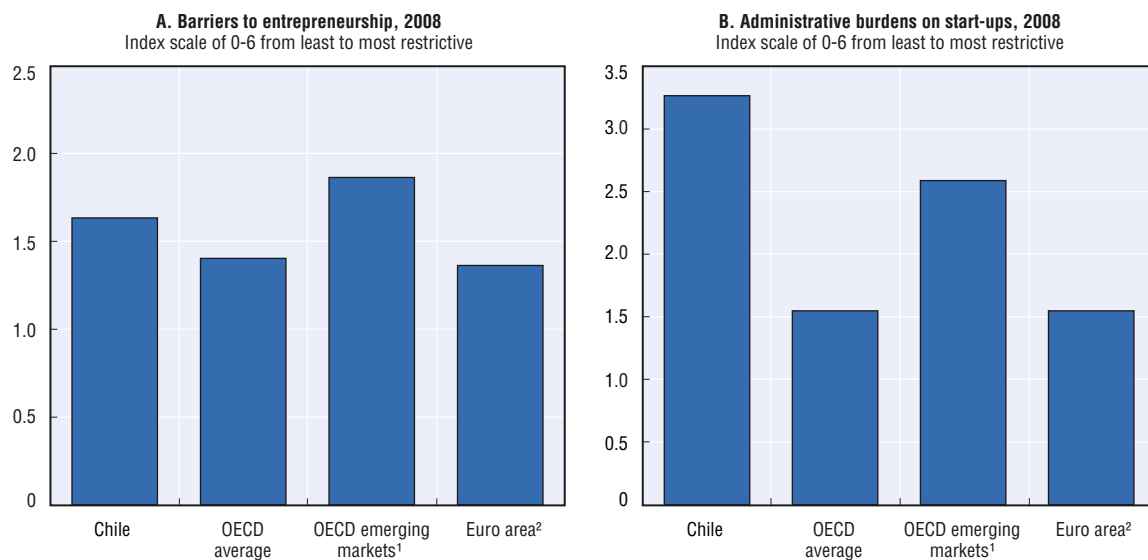
Innova Chile

Beneficiaries can be assigned up to 50% of a project's cost in the context of four complementary lines of action or strategic products. The first one is the *Pre-competitive and Public Interest Innovation* line. This supports universities and research centres in developing pro-innovation research at an early stage. It covers new service development, product innovation, improvement of locally entrepreneurial skills, and the facilitation of access to new international markets. The second one is the *Entrepreneurial Innovation*. This assists existing enterprises in their effort to develop innovative projects through individual entrepreneurial innovation, technological consortia, business platforms and innovation management. The third line is *Innovative Entrepreneurship*, which supports potential businesses. Specific products are the provision of seed capital, support to business incubators and spin-off projects, technology promotion organisations and development of professional training centres. Finally, *Innova Chile* sponsors the *diffusion and transfer of technology*. This is done through technological nodes, specialised consultancy, and the promotion of good management practices among SMEs.

Chile Emprende

Chile Emprende is targeted to existing micro and small enterprises in order to promote public-private partnership, entrepreneurial association and improvement of managerial practices. The programme is strongly committed to promoting equity among individuals and across the territory as it conceives economic dynamics in the context of territorial identities, social capital and competitive environments. The programme favours training in innovation in the context of regional development plans, provides consultancy services to micro and small enterprises, supports the attendance of small entrepreneurs at meetings and internships, and provides funding to the evaluation and certification of labour skills. The execution of specific projects is made through consultancy firms and technical training organisations.

Chile




Notes:

1. Czech Republic, Hungary, Korea, Mexico, Poland, Slovak Republic, Turkey.

2. Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain.

Sources: OECD, *Indicators of Product Market Regulation*.

StatLink  <http://dx.doi.org/10.1787/812782022743>

China

The Torch Programme

The Torch Programme was established in 1988 by the Chinese central government and is administered by the Ministry of Science and Technology. One of the main activities of The Torch Programme is to certify high-tech projects, products or companies and provide them with financial and policy support. By the end of 2005, 13 222 industrial projects had been certified and supported by the programme. In 2005, government at all levels only accounted for 1.2% of the project funding, bank loans accounted for 22%, and enterprises' own capital accounted for the majority of project funding, i.e. 74.5%.

The programme's other main activities are to co-ordinate and promote the development of the high-technology development zones, university science parks, incubators and software parks across China. At the national level alone, by 2008 53 high-technology development zones, 62 university science parks, about 200 business incubators and 35 software parks had been developed through governmental support. In the period 1992-2005, the revenue, industrial value added and profit of the enterprises operating in the 53 development zones grew at an average annual rate of 47.0%, 30.5% and 38.2%, respectively. In 2005, 41 990 enterprises operated in the 53 development zones, employing over 5.2 million employees. The industrial value added generated in these development zones accounted for 8.95 % of the total value added of the whole country. Foreign direct investment (FDI) in the zones reached USD 61.88 billion in 2005, accounting for 10% of FDI to China in the same period.

The Torch Programme played an indispensable role in promoting entrepreneurship and start-up companies through its administrative arm and the university science parks and incubators. From 1991 to 2002, the number of the incubators at the regional and national level combined increased from 43 to 436. Likewise, the number of tenant companies hosted in these incubators ballooned from 500 in 1991 to 23 373 in 2002, while the graduated tenants soared from 190 in 1994 to 6 927 in 2002.

Innovation Fund for Technology-Based Firms

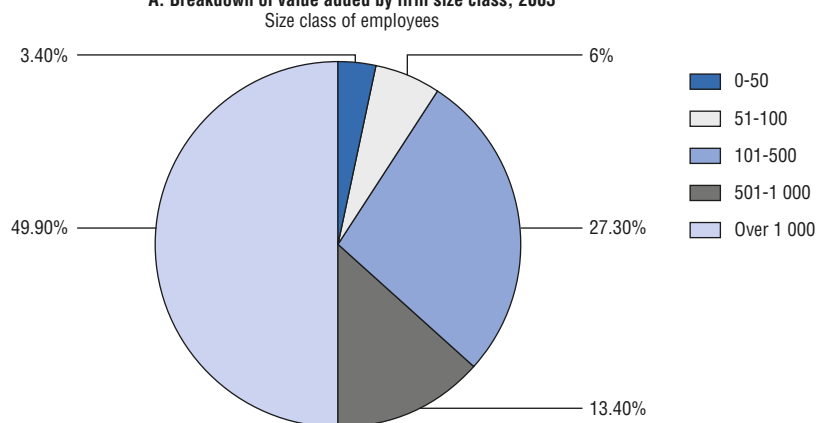
The *Innovation Fund for Technology-Based Firms* was established by the Chinese central government in 1999. The objective of the Fund is to support the development of newly established technology-based small and medium firms. The financial support provided by the Fund includes subsidies to interest of loan and grants. From 2006, the Fund also started to subsidise the public intermediary organisations that provide technological service to SMEs. In 2006, the budget of the Fund was USD 110 million. The Fund received a total of 6 399 applications in 2006.

An evaluation of the 2 632 projects funded during 1999-2006 showed that the financing from the Fund (central government), the local governments, bank loans and enterprises' own capital accounted for 7%, 3%, 28% and 62%, respectively, of the capital raised by these enterprises. The firms achieved fast growth in terms of employment, sales revenues and export after being funded.

By the end of 2006, 145 provincial governments and municipal governments across China had set up their own funds to support innovation of SMEs. The total budget of these funds amounted to CNY 2.6 billion, up 55% from the 2005 budget. In total, more than 500 organisations at the provincial and local level are engaged in managing these innovation funds.

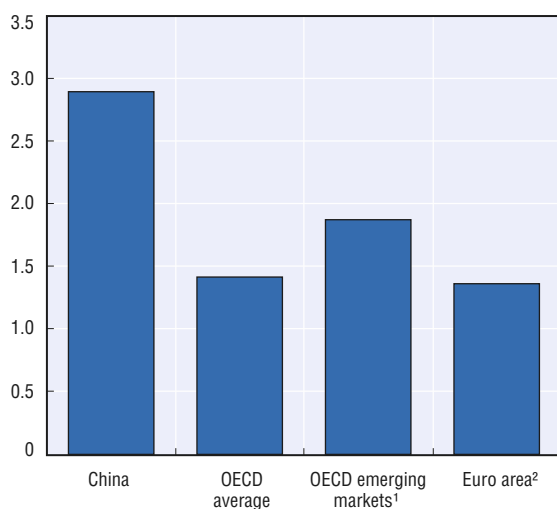
China

A. Breakdown of value added by firm size class, 2003



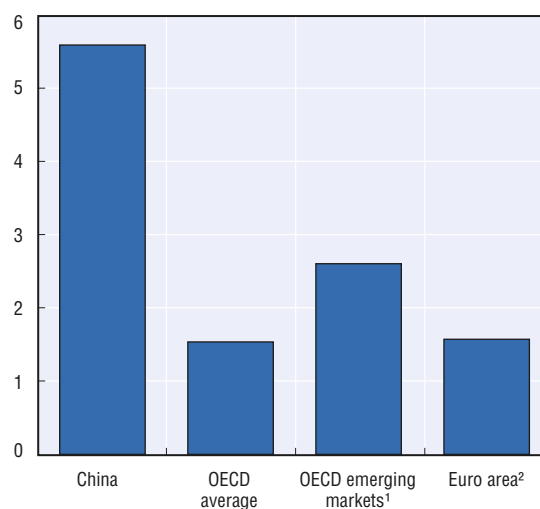
B. Barriers to entrepreneurship, 2008

Index scale of 0-6 from least to most restrictive



C. Administrative burdens on start-ups, 2008

Index scale of 0-6 from least to most restrictive




Notes:

1. Czech Republic, Hungary, Korea, Mexico, Poland, Slovak Republic, Turkey.

2. Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain.

Sources: Chart A. OECD Economic Surveys: China, 2005, based on National Statistics Bureau. Chart B and C: OECD, Indicators of Product Market Regulation.

StatLink  <http://dx.doi.org/10.1787/812783644886>

Estonia

It is only since 2004, and the influx of funding via the European Union's Structural Fund programmes, that a set of co-ordinated policy measures favouring innovation and entrepreneurship has been launched in Estonia. Innovative, growth-oriented companies can now receive higher support grants/loans from Enterprise Estonia, export marketing support, and/or guarantees for export-oriented companies from KredEx (the Credit and Export Guarantee Fund founded in 2001 to improve the financing of enterprises in Estonia).

Additionally, in 2006 the Estonian Development Fund was launched to intervene as a co-investor with private equity funds in favour of high-growth and export-oriented companies in Estonia. The first investments were made by the Fund in the spring of 2008.

Estonian policy has given a great deal of attention to entrepreneurship awareness raising among key stakeholders, including entrepreneurs themselves, the general public, policy makers and even school children. A programme of innovation awareness has also been developed by Enterprise Estonia; launched during the 2004-06 period, it will continue over 2007-13.

The "Year of Innovation" project ran throughout 2009 with a range of activities favouring the creation of new innovative products or services. It was launched by the Estonian Ministry of Economic Affairs and Communication on the basis of the Innovation Awareness programme.

Technology Investment

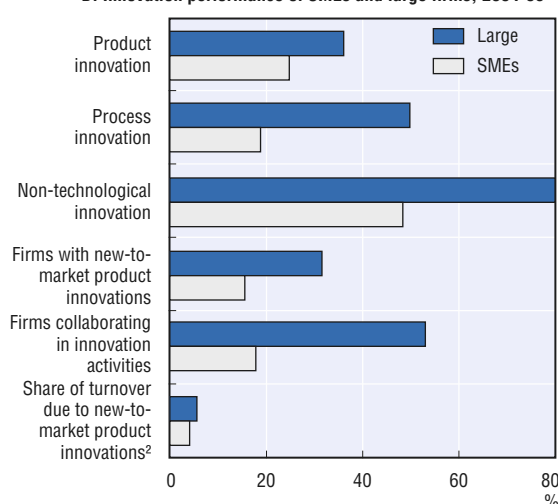
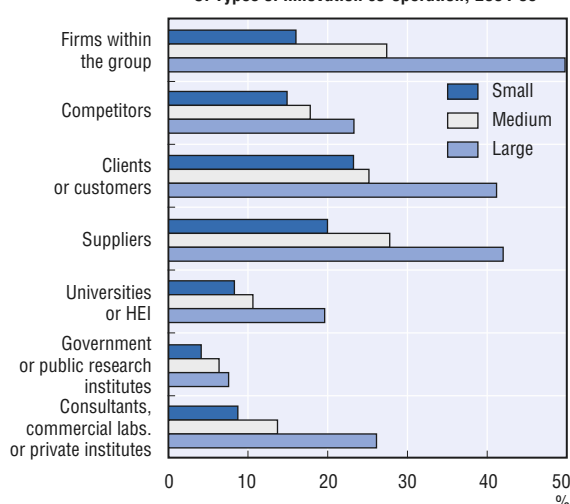
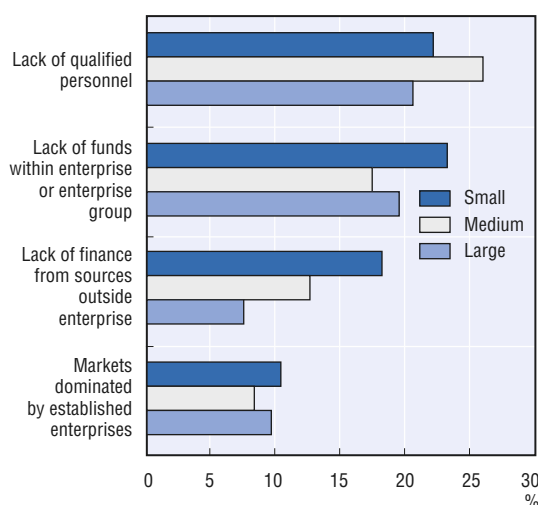
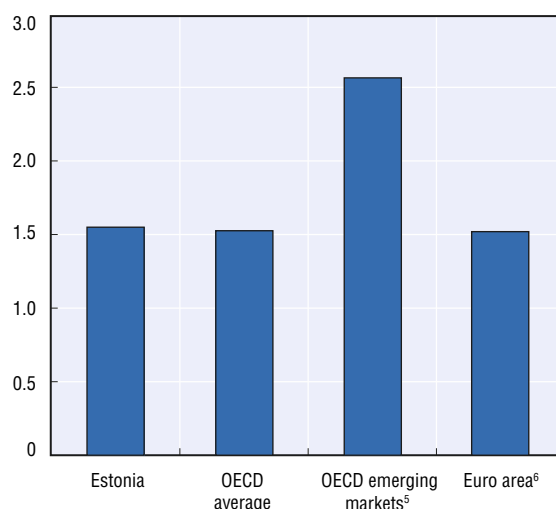
The *Technology Investment* programme supports (up to 40% of co-financing for SMEs, 20% for large companies) the acquisition of both tangible assets and the intangible assets that are required to bring these acquired tangible assets into use. This is the first time such support has been given in Estonia and, in addition to the measures developing export and knowledge and skills, this is expected to strengthen companies in the long run. The programme was launched in 2008 and has a budget of EUR 37 million over the EU budget period of 2007-13. Encouragingly, business demand surpassed the programme budget almost threefold.

Over 2004-05, the Estonian government has established five competence centres that have fostered long-term, programme-based R&D and innovation planning by both business and academia. The centres were created as private entities on the basis of a three-year research programme. Two of the centres are active in foodstuffs, two in medicine, three in ICT and electronics, and one in nanotechnology. The programmes tackle low research and innovation capabilities and encourage Estonian industry to become technologically more competitive. Financing of the competence centres by Enterprise Estonia was not as stable as expected during the first years of the programme. However, in June 2009, EUR 83 million in additional funds were made available by Enterprise Estonia to invest in eight competence centres (the five original and three new centres) until 2013.

Estonia

A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		No. engaged	%	No. engaged	%		Industry	Services	Total
Micro	9 059	71.5	31 433	88.7	84.2	31 415	15.8	77 504	32.4	24.8	10.3	28.7	20.5
Small	2 820	22.3	3 403	9.6	12.9	57 506	28.9	64 160	26.8	27.8	24.5	28.3	26.6
Medium	696	5.5	527	1.5	2.5	66 100	33.2	49 771	20.8	26.4	38.9	24.2	30.8
SMEs	12 575	99.3	35 363	99.8	99.7	155 021	77.9	191 435	79.9	79.0	73.8	81.1	77.8
Large	93	0.7	71	0.2	0.3	43 862	22.1	48 073	20.1	21.0	26.2	18.9	22.2

B. Innovation performance of SMEs and large firms, 2004-06¹

C. Types of innovation co-operation, 2004-06³

D. Factors hampering innovation, 2004-06⁴

E. Administrative burdens on start-ups, 2008⁴


Notes: 1. As % of all firms within size class. 2. As % of total turnover. 3. As % of innovating firms. 4. Index scale of 0-6 from least to most restrictive. 5. Czech Republic, Hungary, Korea, Mexico, Poland, Slovak Republic, Turkey. 6. Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain.

Sources: Table A: OECD, *Structural and Demographic Business Statistics*. Charts B, C and D: Eurostat, *Community Innovation Survey 2006*. E: OECD, *Indicators of Product Market Regulation*.

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India

The Science and Technology Policy of 2003 was a landmark initiative in that it ended India's historic emphasis on highly protective strategy for domestic technology development. Instead, a bolder approach to international co-operation to meet national developmental imperatives has emerged as the norm for public policy. The development of a robust legal framework conducive to the establishment of a high-quality technology environment reflects the strength of the role of government and rule of law in India's innovation and entrepreneurship.

Information Technology (IT)

The development of the IT industry in India is greatly lauded by decision makers and researchers alike. Much of this development is correctly attributed to the entrepreneurial private sector, which initially bypassed limitations in the Indian market to explore the global market with considerable success. Less is known about the value of the legal framework to both protect and support innovation and entrepreneurship in this sector.

In 1998 the Indian Parliament passed legislation by way of an Electronic Commerce Act, which was followed in the year 2000 by the Information Technology Act; combined, they provided legal recognition to transactions carried out by electronic data interchange. Several other actions, including the establishment of Cyber Laws, the setting up of the Cyber Regulations Appellate Tribunal, and the Standardisation, Quality and Testing Certification Directorate, served to create a supportive legal infrastructure.

Biotechnology

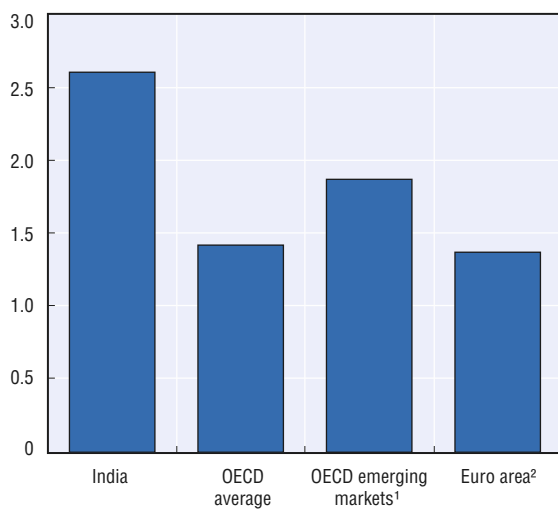
The National Biotechnology Board was established as long ago as 1982; this was followed in 1986 by the formation of the Department of Biotechnology under the Ministry of Science and Technology. 1986 also saw passage of the Environment Protection Act, which was supplanted by the Manufacture, Use, Import, Export, and Storage of Hazardous Micro-Organisms, Genetically Engineered Organisms or Cells Rules in 1989. Several other guidelines followed in 1994 and 1998. Then in 2000 a Review Committee on Genetic Manipulation was set up to deal with genetically manipulated organisms. Crucially, the Department of Biotechnology put together ethical policies on the human genome, genetic research, and services overseeing basic research activities, education and legal aspects relating to genetics and genomics. These policies were dovetailed with UNESCO's Universal Declaration on the Human Genome and Human Rights of 1997. More recently, in 2007 a National Biotechnology Development Strategy was approved by the government of India to lay stronger foundations for innovation in the sector. A National Biotechnology Regulatory Authority was announced, which would provide a one-stop-shop for biosafety clearance of genetically modified products and services.

Technopreneur Promotion Programme

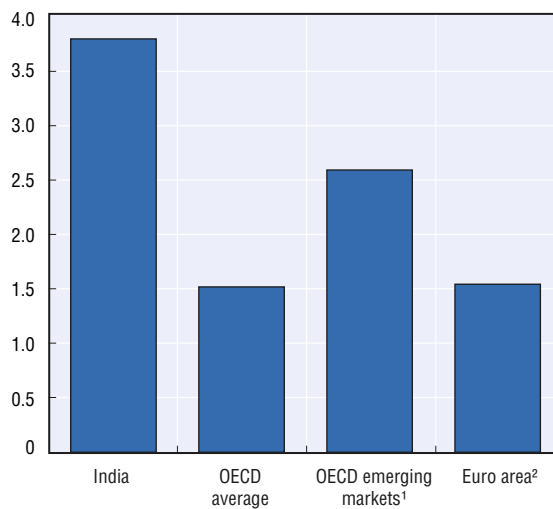
Another major public policy initiative for funding innovation is the *Technopreneur Promotion Programme* (TePP) at the Department for Scientific and Industrial Research. The programme involves 20 outreach centres being set up to facilitate support infrastructure across the country for key technologies such as ICT, biotechnology and nanotechnology.

India

A. Barriers to entrepreneurship, India 2007 and OECD 2008
Index scale of 0-6 from least to most restrictive



B. Administrative burdens on start-ups, India 2007 and OECD 2008
Index scale of 0-6 from least to most restrictive




Notes:

1. Czech Republic, Hungary, Korea, Mexico, Poland, Slovak Republic, Turkey.

2. Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain.

Sources: OECD, *Indicators of Product Market Regulation*.

StatLink  <http://dx.doi.org/10.1787/813210106531>

Indonesia

Access to financing is a problem faced by entrepreneurs of micro, small, and medium-sized enterprises (MSMEs) in Indonesia. The national policy to address this problem is to provide direct financial support to entrepreneurs and start-up SMEs. Two developments are worth noting: state-owned enterprises' (SOEs) obligation to support SMEs, and a revolving fund programme (*Iptekda*) for empowering new entrepreneurs and start-up SMEs.

Law No. 9/2003 obliges SOEs to allocate up to 5% of their net profit to support development of SMEs and co-operatives. The main activities supported include: i) provision of soft loans to non-bankable SMEs (that lack or have insufficient collaterals, or do not have a credit history) through a partnership programme, up to a maximum 60% of the total cost of the investment; ii) the provision of grants to assist SMEs' capacity-building activities in such areas as production and processing, marketing, and technical skill improvement through mentoring programmes, up to a maximum of 40% of the total cost of the investment. The former scheme is directly managed by state-owned enterprises or SOE-affiliated entities, while the latter is managed through third parties or foundations. Both programmes have contributed to enhancing the resilience of Indonesia's SMEs, faced with the economic crisis of 1998 and the financial crises of 2009.

The *Iptekda* programme, launched in 1998, was initially aimed at mitigating the impact of monetary crises. It provides financial assistance (revolving fund), technology, and mentoring to SMEs on a competitive basis. With this scheme, selected SMEs in various regions can have access to technological innovation, and the government assigned three national R&D institutions to implement the programme. From 1998 to 2006, LIPI (Indonesian Institute of Sciences) has launched 389 projects with a total investment of IDR 54.46 million (USD 5.4 million); 5 200 SMEs are involved over 28 provinces.

There are two key elements in this overall policy. First, SMEs that are eligible to receive support from the SOEs' programme are those that have potential to grow further (measured by factors such as market potential, management experience, or expected returns on investment) and those that cannot yet meet bank requirements. Secondly, *Iptekda* has successfully assisted non-bankable SMEs in financing and acquiring skill sets they cannot obtain through conventional avenues.

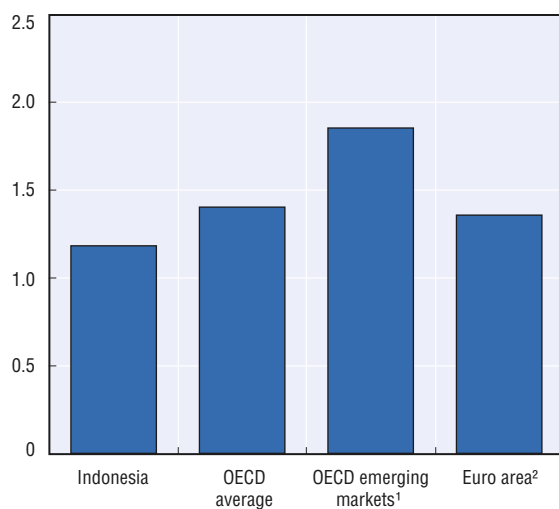
Innovation Centre for Micro, Small and Medium Enterprises

The *Innovation Centre for Micro, Small and Medium Enterprises* is a pioneering national institution that implements the policy of promoting *technopreneurship* and strengthening the competitiveness of MSMEs. The Centre was created in 2008 with a strong legal foundation through presidential and Co-ordinating Ministry for Economy decrees. It acts as an institutional hub in synergising policies and programmes, and supports the joint work of different government institutions towards the development of innovative technology-based MSMEs.

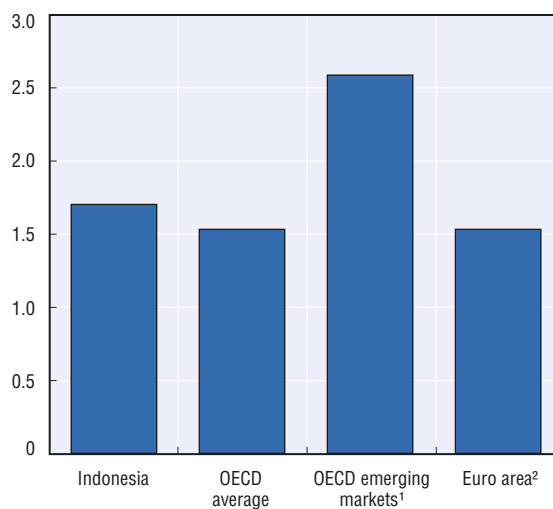
The Innovation Centre implements its programmes by collaborating with intermediary institutions, i.e. universities and research institutions, IPR centres, and businesses. These intermediary institutions provide integrated services in the areas of technology, human resource capacity building, business network development, and the facilitation of access to finance/market. The Innovation Centre has created synergies through complementary supports to MSMEs and strengthened three industry clusters (linked to creative, essential oil, and seaweed-based industries) as pilot projects. Importantly, policy makers from different institutions have started synergising their policies and programmes as a result of sharing ideas in the meetings regularly facilitated by the Innovation Centre.

Indonesia

A. Barriers to entrepreneurship, Indonesia 2007 and OECD 2008
Index scale of 0-6 from least to most restrictive



B. Administrative burdens on start-ups, Indonesia 2007 and OECD 2008
Index scale of 0-6 from least to most restrictive



Notes:

1. Czech Republic, Hungary, Korea, Mexico, Poland, Slovak Republic, Turkey.

2. Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain.

Sources: OECD, *Indicators of Product Market Regulation*.

StatLink  <http://dx.doi.org/10.1787/813210634131>

Israel

Incubator programme

The main Israeli programme promoting innovative entrepreneurship is the *Incubator* programme, set up in 1991. The programme, managed by the Centre of Incubators for Technological Initiative, currently includes 26 such incubators, 22 of which have been privatised. The annual budget for 2008 was about USD 45 million. Overall, since the first companies graduated from the system in 1993, 61% secured follow-on funding and 40% are active to this day. Since the programme started, the private sector has invested over USD 2.5 billion in incubator graduates.

Potential entrepreneurs first have to be accepted by the incubator and then apply for funding to the Office of the Chief Scientist (OCS) in the Ministry of Industry, Trade and Labor, which runs the incubator programme. The OCS screening process includes on-site visits by specialists who determine whether the proposed project is innovative in global markets; whether it shows sound commercial potential; and whether the entrepreneurs have the skills needed to develop the project. The OCS Incubators Committee awards grants of up to USD 500 000 over two years, or up to USD 750 000 over three years for biotechnology companies. The OCS provides 85% of the funding, with the rest coming from the incubator management company. The OCS does not intervene in the equity arrangements between the entrepreneur and the incubator, but the entrepreneur is entitled to at least 30% of equity in the company.

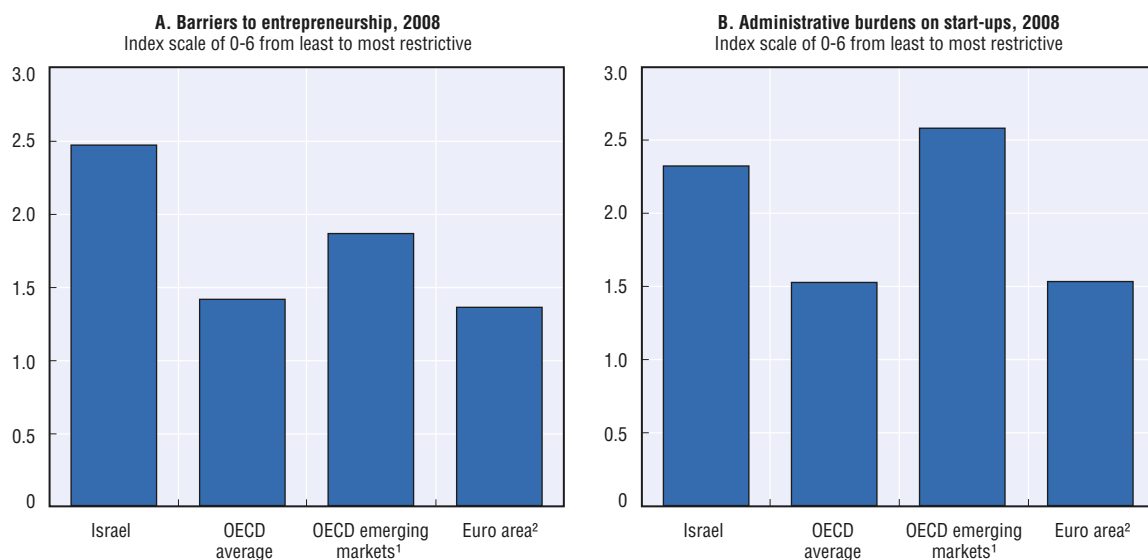
Yozma programme

The most successful and original programme in Israel's relatively long history of innovation policy was the *Yozma* programme, which virtually established the thriving Israeli venture capital industry. The lessons from *Yozma* are being studied closely now as the government plans direct involvement in a new biotechnology venture capital fund, the first government policy involving direct intervention in the private equity market for innovation since the 1990s.

Established with a budget of USD 100 million in 1993, *Yozma* made ten investments in USD 20-25 million venture capital funds, and 15 direct investments in technology start-ups. *Yozma* contributed towards 40% of the ten funds' total investment while the rest came from foreign investors, creating a total of USD 210 million for investment in start-ups. To minimise and spread risk, the new funds syndicated many of their investments to a far larger extent than funds would consider today. In addition, *Yozma* offered the foreign investors in these small funds insurance of 80% of their risk as well as the option of buying out the government's share within five years. In eight of the ten new venture capital funds both general and limited partners exercised this option, and nine of the 15 companies that enjoyed direct *Yozma* investment either went public or were acquired. *Yozma* was privatised in 1997.

Yozma is a case in point of a bold policy implemented to overcome a market failure. The conditions that made success possible were the very high levels of skills and entrepreneurial drive among new Israeli companies, and fortuitous timing – the global ICT market was beginning to take off, but still had very low entry barriers in terms of company size and financial capability. Likewise, NASDAQ was receptive to very small Israeli firms, which allowed the fledgling Israeli venture capitalists to make companies public at a size that would be impossible today.

Israel




Notes: For technical reasons, these figures use Israel's official statistics, which include data relating to the Golan, Heights, East Jerusalem and Israeli settlements in the West Bank.

1. Czech Republic, Hungary, Korea, Mexico, Poland, Slovak Republic, Turkey.

2. Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain.

Sources: OECD, PMR Database; OECD Economic Surveys: Israel 2009.

StatLink  <http://dx.doi.org/10.1787/813271727207>

Russian Federation

Since mid-1990s the Russian government has taken initiatives to stimulate innovative activities of SMEs and innovative entrepreneurship. Presently, Russia does not yet have a comprehensive policy on innovative entrepreneurship and SME development, but nevertheless several policy initiatives are being realised, among which: commercialisation support, venture financing, and infrastructure development. As concerns support to commercialisation, the bulk of government funds is distributed through two organisations: the Foundation for the Assistance to Small Innovation Enterprises; and the Russian Corporation of Nanotechnologies (RUSNANO).

Foundation for the Assistance of Small Innovation Enterprises

The Foundation for the Assistance to Small Innovation Enterprises was organised by the federal government in 1994. Annually, 1.5% of federal budget funds provided for public research are allocated to this Foundation. In 2009 the sum totalled about USD 85 million. The main activity of the Foundation is the support of the commercialisation process through direct financing to small innovative enterprises. Part of this financial support is given to small firms to help develop a product, protect intellectual property rights, or organise pilot production and begin commercialisation. Another portion of finance is given to companies that have already commenced commercial production of an innovative product and are interested in further product development. The Foundation may also grant financing to partly compensate bank loan interest rates or leasing payments; to conduct R&D necessary for using licences obtained from Russian universities and research institutions; or to carry out innovative projects realised with the support of Russian universities. The Foundation has invited about 4 000 Russian scientists in various spheres to work as experts. By the beginning of 2009, 16 500 projects had been presented to the Foundation, and of these over 5 500 were accepted. Enterprises supported by the Foundation commercialised around 3 500 patented inventions. In the future the Foundation is planning to finance earlier-stage company R&D and to develop co-operation with venture capital funds.

RUSNANO

RUSNANO was organised by the federal government in 2007, and USD 5.3 billion were allocated for its activities. The corporation finances (on a repayable basis) selected projects in the sphere of nanotechnologies and related industries at a stage close to market entry. Moreover, RUSNANO participates in financing of infrastructure projects for innovative entrepreneurship.

Venture Funds

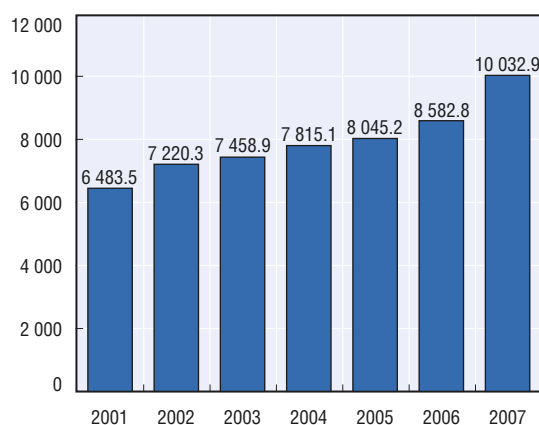
In 2006 the Ministry for Economic Development launched a programme for regional venture funds in 19 Russian regions. The regional and federal budgets for these funds amount to USD 150 million, in equal proportion. These are closed-end investment funds in high-risk ventures on condition that private investors match the sums. Overall capitalisation of venture funds in Russian regions totals about USD 300 million. Meanwhile the *Russian Venture Company* (RVC) was also established in 2006 and financed by the federal budget; its current capitalisation is about USD 900 million. RVC plays the role of the Federal Fund of venture fund (fund-of-funds model), stimulating venture investment and financial support of the high-tech sector.

Russian Federation

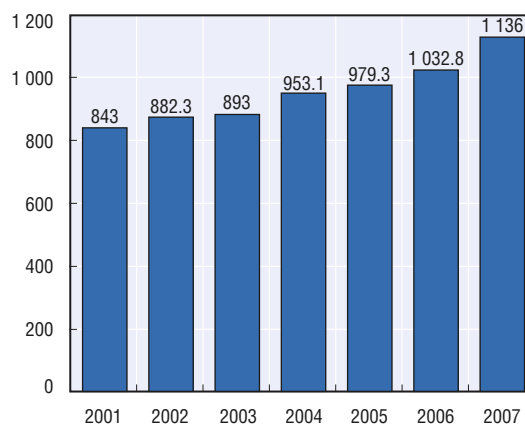
A. Definition of SMEs

Size	Employees	Annual turnover
Micro	1-15	Up to 1.7 million euro
Small	16-100	Up to 11.6 million euro
Medium	101-250	Up to 27 million euro

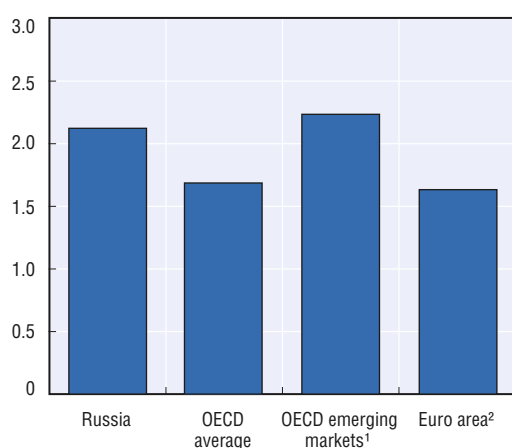
B. Growth in the number of SMEs, 2001-2007
Thousands



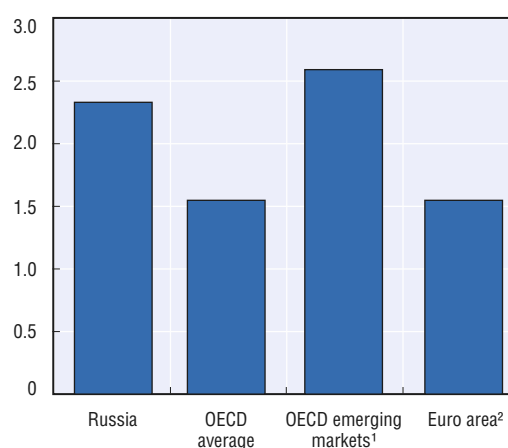
C. Growth in the number of employees in SMEs, 2001-2007
Thousands of people



D. Barriers to entrepreneurship, 2008
Index scale of 0-6 from least to most restrictive



E. Administrative burdens on start-ups, 2008
Index scale of 0-6 from least to most restrictive




Notes:

1. Czech Republic, Hungary, Korea, Mexico, Poland, Slovak Republic, Turkey.

2. Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain.

Sources: Table A: Department of State Regulation in the Economy of the Russian Federation. Charts B and C: Ministry of Economic Development and Trade of the Russian Federation. Chart D and E: OECD, *Indicators of Product Market Regulation*.

StatLink  <http://dx.doi.org/10.1787/813544222346>

Slovenia

The Ministry of Higher Education, Science and Technology (MHEST) and the Ministry of the Economy (ME) have been supporting R&D and innovation activities in SMEs through co-financing R&D projects, innovative research investments, research infrastructure, participation in international research networks, and innovation vouchers. In 2009, the measure to co-finance R&D projects was redesigned in terms of its focus, conditions for application and budget. Its goal is to stimulate the investment of micro and small enterprises in R&D, new technologies, products and processes. The wider aim is to increase the technological level, value added and competitiveness of SMEs. The R&D activity can be carried out within the enterprise, or in co-operation with other enterprises and/or public R&D institutions.

Because Slovenia is a relatively small country, openness is a key factor for its future success. ME and MHEST are thus strongly focusing on supporting international industrial co-operation. MHEST is involved in several European programmes, such as Era-Net, Eureka and Eurostars. The main goal of this co-operation is supporting and encouraging SMEs in their search for knowledge and development of new or improved products, processes and services. In the context of international co-operation incentives ME measures aim to help innovative companies enter international markets. Co-operation in these initiatives is active and continuous.

The Slovenian Technology Agency (TIA) has been recognised as the implementing agency in the area of innovation and technology development programmes of the MHEST, ME and the Ministry of Defence. TIA's 2009 programme includes promoting and supporting technological platforms (a minimum of ten), promoting the further involvement of Slovenian enterprises in defence R&D, development and investment projects, support to strategic R&D projects in the business sector, strengthening the national innovation system, funding the Programme for the Young Researchers from the business sector, and participation in various international projects.

The overall operational budget of TIA for the year 2009 is EUR 1.66 million. For the programmes to be co-ordinated and carried out by TIA, the Ministry of Higher Education, Science and Technology, Ministry of Economy and Ministry of Defence are participating by contributing through their own resources. Several of the programmes are co-financed by the *European Regional Development Fund* (ERDF). The total amount of financial resources available for 2009 was thus planned initially at EUR 88.9 million, with the largest share of money going to development and investment projects and support of strategic R&D projects. The latter was to be the single largest TIA programme, with more than EUR 109 million for the period 2009-12.

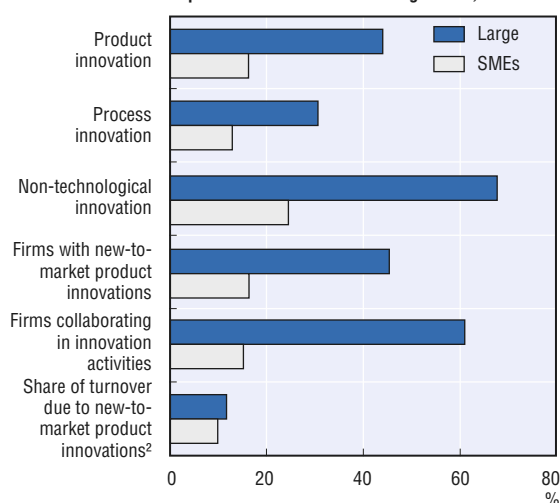
Several measures have been introduced over the past few years for the development of human resources; these focus on improvement of research experts in the business sector. Besides the traditional programmes to support young researchers and young researchers from the business sector, the Public Agency of the Republic of Slovenia for Entrepreneurship and Foreign Investments (PAEFI) has two main programmes: the mobility scheme – new measures to support the mobility of researchers to and within business sector (EUR 4 million); and co-financing interdisciplinary development teams (EUR 10 million). Other smaller programmes focus on the entrepreneurial education of different target groups.

Slovenia

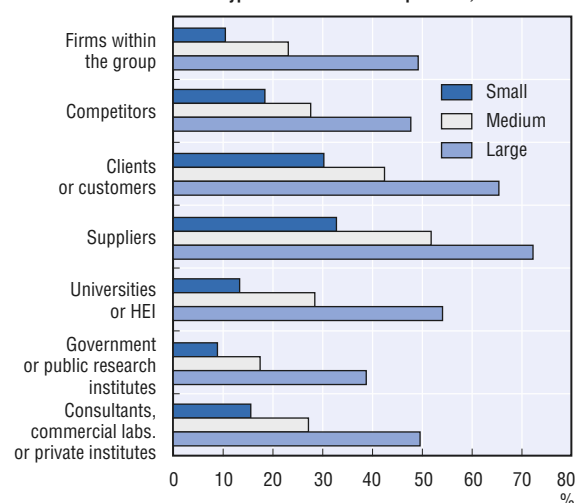
A. Structural indicators on enterprise population, 2007

	Number of enterprises					Total employment					Value added (factor costs)		
	Industry		Services		Total	Industry		Services		Total	(%)		
	No. firms	%	No. firms	%		No. engaged	%	No. engaged	%		Industry	Services	Total
Micro	31 384	89.6	61 114	94.4	92.7	63 600	19.8	111 149	38.6	28.7	14.1	31.4	22.6
Small	2 714	7.7	3 097	4.8	5.8	54 629	17.0	57 332	19.9	18.4	16.2	24.1	20.1
Medium	756	2.2	464	0.7	1.2	81 029	25.3	44 052	15.3	20.6	24.5	17.7	21.1
SMEs	34 854	99.5	64 675	99.9	99.7	199 258	62.2	212 533	73.9	67.7	54.7	73.2	63.8
Large	180	0.5	77	0.1	0.3	121 194	37.8	75 137	26.1	32.3	45.3	26.8	36.2

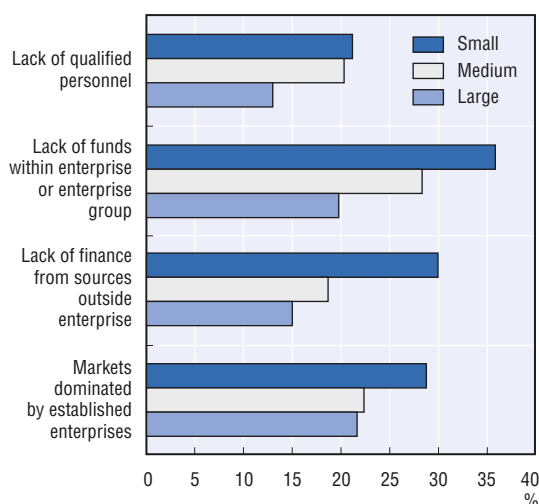
B. Innovation performance of SMEs and large firms, 2004-06¹



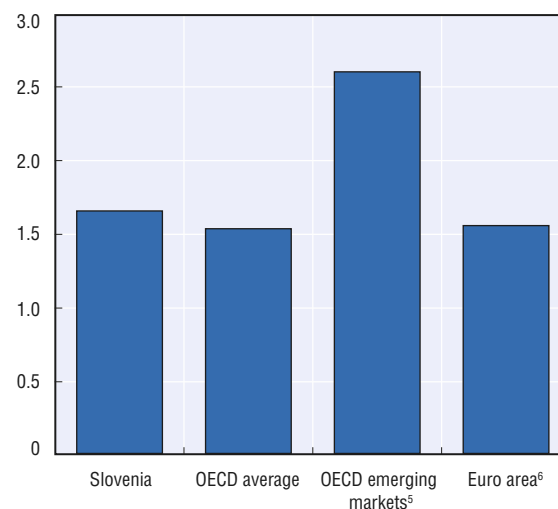
C. Types of innovation co-operation, 2004-06³



D. Factors hampering innovation, 2002-04⁴




E. Administrative burdens on start-ups, 2008⁴



Notes: 1. As % of all firms within size class. 2. As % of total turnover. 3. As % of innovating firms. 4. Index scale of 0-6 from least to most restrictive. 5. Czech Republic, Hungary, Korea, Mexico, Poland, Slovak Republic, Turkey. 6. Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain.

Sources: Table A: OECD, *Structural and Demographic Business Statistics*. Chart B and C: Eurostat, *Community Innovation Survey 2006*. Chart D: Eurostat, *Community Innovation Survey 2004*. Chart E: OECD, *Indicators of Product Market Regulation*.

StatLink  <http://dx.doi.org/10.1787/813553877374>

South Africa

The promotion and support of micro, small and medium enterprises (MSMEs) is an important policy issue in South Africa. The Department of Trade and Industry (DTI) has various strategies and programmes aimed at MSME growth and development, as well as R&D and innovation. The *OECD Review of Innovation Policy in South Africa (2007)* has, however, identified a gap in the current innovation policy in terms of comprehensive and operational support to MSMEs.

Support Programme for Industrial Innovation

One of the main programmes supporting R&D and innovation in MSMEs is the *Support Programme for Industrial Innovation (SPII)*. The programme was founded in 1993 and is run by the Industrial Development Corporation (IDC) on behalf of DTI. Its funding has evolved over the years to specifically focus on MSMEs' development and empowerment. The programme is designed to provide financial support to projects that develop innovative products and/or processes. It focuses specifically on the concluding phase of basic research to produce a pre-production prototype, and also assists enterprises in the commercialisation of products and/or processes. The Support Programme for Industrial Innovation also provides managerial and technical support to enterprises in order to facilitate innovative MSME development. The product process development and the matching schemes of this programme are aimed at providing grant assistance. Funding to MSMEs amounted to ZAR 44 million (USD 6.2 million) in the 2007/08 financial year.

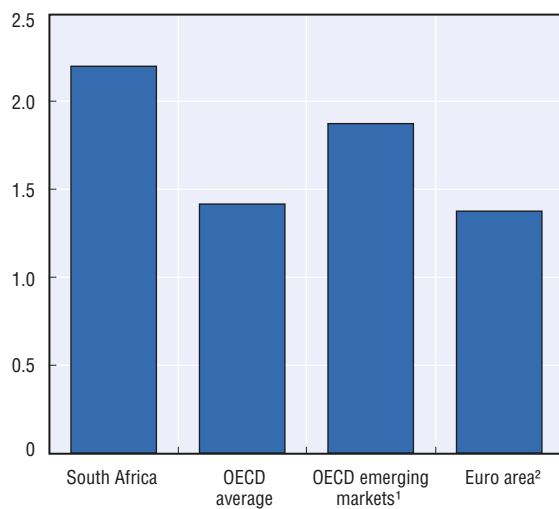
Technology and Human Resources for Industry Programme

The *Technology and Human Resources for Industry Programme (THRIP)* is managed by the National Research Foundation (NRF) on behalf of the Department of Trade and Industry. Firms and the Technology and Human Resources for Industry Programme invest jointly in research projects where project leaders are on the academic staff of South African higher education institutions. The programme aims to enable local industry to respond to technology needs, to produce a flow of skilled human resources, to enhance educational experience, and to foster collaboration among industry, HEIs and science, engineering and technology institutions. Graduates from the programme often end up employed in the industry they worked with, as a result of the working relationships developed during the programme.

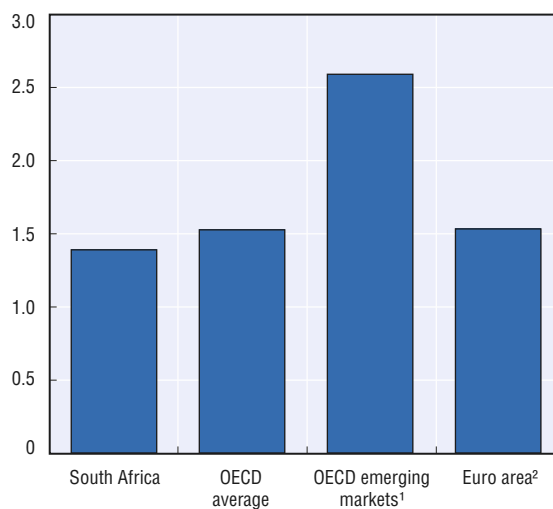
The first allocations of programme funds were made in 1994. Even though it is a pioneering programme in the South African context, one that addresses an essential demand in industry, initially it was not aimed at MSMEs. It has, however, evolved to respond to changing priorities. Concerted efforts have been made to facilitate the entry of new MSMEs, and one of the programme's current priorities is to promote technological know-how within the MSMEs sector. The programme has a specific mechanism for facilitating transfer of technological skills between industry and research institutions; the majority of these transfers of expertise and student placements occurred with MSMEs partners in 2007/08. The programme does not fund MSMEs directly; funding is released to HEIs and science, engineering and technology institutions. During 2007/08, 265 MSMEs participated in projects as industry partners (66.8% of all participating firms) and investment by MSMEs increased significantly: from ZAR 21.3 million (2006/07) to ZAR 75.8 million (USD 10.8 million) in 2007/08.

South Africa

A. Barriers to entrepreneurship, South Africa 2007 and OECD 2008
Index scale of 0-6 from least to most restrictive



B. Administrative burdens on start-ups, South Africa 2007 and OECD 2008
Index scale of 0-6 from least to most restrictive




Notes:

1. Czech Republic, Hungary, Korea, Mexico, Poland, Slovak Republic, Turkey.

2. Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain.

Sources: OECD, *Indicators of Product Market Regulation*.

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ANNEX 2.A1

Notes on the Country Data

The structural data on businesses presented in the chapter follow the International Standard Industrial Classification (ISIC) Rev. 3, based on the following nomenclature:

- A. Agriculture, hunting and forestry
- B. Fishing
- C. Mining and quarrying
- D. Manufacturing
- E. Electricity, gas and water supply
- F. Construction
- G. Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods
- H. Hotels and restaurants
- I. Transport, storage and communications
- J. Financial intermediation
- K. Real estate, renting and business activities
- L. Public administration and defence; compulsory social security
- M. Education
- N. Health and social work
- O. Other community, social and personal service activities
- P. Private households with employed persons (ISIC Rev. 3) or Activities of households (NACE)
- Q. Extra-territorial organisations and bodies.

Most data presented refer to the non-financial business economy, i.e. ISIC Rev. 3/NACE Sections C to I and K and is subdivided into Industry (Sections C, D, E and F) and Services (Sections G, H, I and K). Totals refer to Industry and Services, although it is not always possible to obtain totals. The following text gives details on the completeness of the data for each country.

Australia: In Table A, for Number of enterprises, Total employment and Value added, Industry includes ISIC Rev.3 categories C, D, E, and F. Services includes ISIC Rev. 3 categories G, H, I and K.

Austria: In Table A, for Number of enterprises, Industry includes NACE categories C, D, E and F and Services includes categories G, H, I and K. For Total employment and Value added, Industry includes NACE categories D, E, and F. Services includes categories G, H, I and K.

Belgium: In Table A, for Number of enterprises, Total employment and Value added, Industry includes NACE categories D, E, and F. Services includes NACE categories G, H, I and K.

Canada: In Table A, for Number of business establishments, Industry includes NAICS 2002 categories 21, 22, 23 and 31-33 while Services includes NAICS 2002 categories 42, 44-45, 48-49, 53, 54, 56 and 72. For total employment, Industry includes NAICS 2002 categories 21, 22, 23 and 31-33 while Services includes NAICS 2002 categories 42, 44-45, 48-49, 53, 56 and 72.

Czech Republic: In Table A, for Number of enterprises, Total employment and Value added, Industry includes NACE categories C, D, E and F and Services includes categories G, H, I and K.

Denmark: In Table A, for Number of enterprises, Industry includes NACE categories C, D, E and F and Services includes categories G, H, I and K. For Total employment Industry and Value added includes NACE categories D, E, and F. Services includes categories G, H, I and K.

Estonia: In Table A, for Number of enterprises, Industry includes NACE categories C, D, E and F and Services includes categories G, H, I and K. For Total employment and Value added, Industry includes NACE categories D, E and F while Services includes G, H, I and K.

Finland: In Table A, for Number of enterprises, Industry includes NACE categories C, D, E and F and Services includes categories G, H, I and K. For Total employment and Value added, Industry includes NACE categories D, E, and F. Services includes categories G, H, I and K.

France: In Table A, for Number of enterprises, Industry includes NACE categories D, E and F and Services includes categories G, H, I and K. For Total employment and Value added, Industry includes NACE categories C, D, E, and F. Services includes categories G, H, I and K.

Germany: In Table A, for Number of enterprises, Total employment, Industry includes NACE categories C, D, E, and F. Services includes NACE categories G, H, I and K. For Value added, Industry includes NACE categories C, D and F. Services includes categories G, H, I and K.

Greece: In Table A, for Number of enterprises, Total employment and Value added, Industry includes NACE categories D and E. Services includes NACE categories G, H, I and K.

Hungary: In Table A, for Number of enterprises and Total employment, Industry includes NACE categories D, E and F. Services includes NACE categories G, H, I and K. For Value added, Industry includes NACE categories D, E and F. Services includes categories H, I and K.

Iceland: In Table A, for Number of enterprises, Industry includes NACE categories C, D, E and F. Services includes NACE categories G, H, I and K.

Ireland: In Table A, for Number of enterprises, Total employment and Value added, Industry includes NACE categories C and D. Services includes NACE categories G, H, I and K.

Italy: In Table A, for Number of enterprises, Total employment and Value added, Industry includes NACE categories C, D, E, and F. Services includes NACE categories G, H, I and K.

Japan: In Table A, for all variables, Industry includes ISIC Rev. 3 category D. Services is not available.

Korea: In Table A, for Number of establishments, Total employment and Value added, Industry includes ISIC Rev. 3 categories C and D. Services is not available.

Luxembourg: In Table A, for Number of enterprises, Industry includes NACE categories C, D and E and Services includes categories G, H, I and K. For Total employment and for Value added, Industry includes NACE category D and Services includes categories G and K.

Mexico: In Table A, for Number of establishments and Total employment, Industry includes NACE categories D and F. Services includes NACE categories G, H and K.

Netherlands: In Table A, for Number of enterprises, Industry includes NACE categories C, D, E and F. For Total employment it includes NACE categories D, E and F. For Value added it includes categories D and F. Services includes NACE categories G, H, I and K.

New Zealand: In Table A, for Number of enterprises and Number of employees, Industry includes ISIC Rev. 3 categories C, D, E, and F. Services includes ISIC Rev. 3 categories G, H, I and K.

Norway: In Table A, for Number of enterprises, Total employment and Value added, Industry includes ISIC Rev. 3 categories C, D, E, and F. Services includes ISIC Rev. 3 categories G, H, I and K.

Poland: In Table A, for Number of enterprises, Total employment and Value added, Industry includes NACE categories C, D, E, and F. Services includes NACE categories G, H, I and K.

Portugal: In Table A, for Number of enterprises, Industry includes NACE categories C, D, E and F. For Total employment and Value added it includes NACE categories D and F. Services includes NACE categories G, H, I and K.

Slovak Republic: In Table A, for Number of enterprises, Total employment and Value added, Industry includes ISIC Rev. 3 categories C, D, E, and F. Services includes NACE categories G, I and K.

Slovenia: In Table A, for Number of enterprises, Industry includes NACE categories C, D, E and F and Services includes categories G, H, I and K. For Total Employment and Value added, Industry includes NACE categories D and F while Services includes G, H, I and K.

Spain: In Table A, for Number of enterprises, Total employment and Value added, Industry includes NACE categories C, D, E, and F. Services includes NACE categories G, H, I and K.

Sweden: In Table A, for Number of enterprises, Total employment and Value added, Industry includes NACE categories C, D, E, and F. Services includes NACE categories G, H, I and K.

Switzerland: In Table A, for Number of enterprises and Total employment, Industry includes ISIC Rev. 3 categories C, D, E, and F. Services includes ISIC Rev. 3 categories G, H, I and K.

Turkey: In Table A, for Number of enterprises and Value added, Industry includes NACE categories C, D, E, and F and Services includes NACE categories G, H, I and K. For Total employment NACE categories C, D and F and Services includes NACE categories G, H and I.

United Kingdom: In Table A, for Number of enterprises, Total employment and Value added, Industry includes NACE categories C, D, E, and F. Services includes NACE categories G, H, I and K.

United States: In Table A, for Number of enterprises, Industry includes ISIC Rev. 3 categories C, D, E, and F. Services includes ISIC Rev. 3 categories G, H, I and K. For number of employees, Industry includes ISIC Rev. 3 categories C, E, and F. Services includes ISIC Rev. 3 categories H and K.

Chapter 3

Knowledge Flows

Knowledge affects the market entry, market success and innovation potential of a firm. The contribution of knowledge to entrepreneurship is best understood through a systemic approach to innovation, which differs from the linear approach by taking innovation as a process that does not occur solely within corporate boundaries, but instead requires a web of relationships among firms, research organisations and governments. Knowledge flows are the quintessence of an innovation system, strengthening the performance of local SMEs and underpinning the overall efficiency and vitality of the system. A vast empirical literature shows that knowledge spillovers decay with distance and therefore lie behind the process of localised industrial agglomeration in knowledge- and technology-intensive sectors. However, in a time of globalisation, local innovation systems should not be insulated from global sources of knowledge. Cross-border alliances, FDI embedding and attraction of overseas skilled workers are three of the main channels through which global knowledge flows can revitalise local innovation systems.

Introduction

This chapter examines the contribution of knowledge, especially knowledge flows, to the success of new and small firms and to the vitality of innovation systems. It espouses a systemic approach to innovation, here seen as a process that does not occur solely within the physical boundaries of a firm, but also benefits from external linkages among firms and between firms and research organisations. The chapter proceeds as follows. The first section is a literature review on how prior knowledge affects market entry, market success and the innovation potential of a firm. The following section introduces the concept of the “innovation system” that inspires the chapter. This concept is also corroborated by evidence on the concentration of firms in knowledge- and technology-intensive activities in both manufacturing and services. The following sections make the argument that knowledge flows underpin the industrial agglomeration process and the vitality of an innovation system, especially in knowledge-intensive sectors. Conclusions and policy recommendations are then offered.

How knowledge affects entrepreneurship

Studies investigating the determinants of the entrepreneurial process have traditionally focused on either personal traits or external constraints. Another strand of the entrepreneurship literature, however, looks at the role of knowledge in facilitating business entry and performance. Taking the first strand – personal traits – self-achievement, risk-taking and self-confidence have been among the most common features seen as prominent in the character of an entrepreneur (McClelland, 1961). Part of the economic literature has also stressed the importance of social factors for choosing an entrepreneurial career. For instance, Djankov *et al.* (2007) find that many entrepreneurs have family members and/or friends who are also entrepreneurs, thereby underscoring the importance of social networks. Adragna and Lusardi (2008), on the other hand, single out gender and age as the key determinants of entrepreneurship; whereas Lazear (2005) finds that a variegated educational and occupational background increases the likelihood of becoming an entrepreneur (*i.e.* the jacks-of-all-trades theory).

As to external constraints – the second strand of the literature – heavy labour market regulations and market entry requirements are traditionally deemed to discourage entrepreneurship, as does contract enforcement. Liquidity constraints and credit rationing undermine entrepreneurship, pushing wealthy people towards an entrepreneurial career and deterring those without the necessary financial resources (Evans and Jovanovic, 1989).

The thread between the two strands of personal profiles and external constraints is the implicit assumption of a condition of market equilibrium, in which “entrepreneurial opportunities” either do not exist or are distributed randomly across the population (Shane and Venkataraman, 2000). If so, opportunities will have the same value for everyone and the answer to who will become entrepreneurs will ultimately depend on external factors or inherent personal characteristics. But for entrepreneurship to happen the values that

economic agents give to opportunities must necessarily be different. Were everyone to assign the same value to an entrepreneurial opportunity, any and all would try to harness it, which would diminish the entrepreneurial profit to the point where present costs outweigh expected returns. One can only conclude, then, that different beliefs about existing opportunities underpin the very entrepreneurial process.

What make entrepreneurial opportunities different across the population are different degrees of knowledge, which is where the third strand comes in. The information that individuals dispose of will vary with regard to market inefficiencies, new technologies or new combinations of existing resources, each of which is a source of entrepreneurial opportunity (Drucker, 1985). Entrepreneurship can therefore be regarded as a process that finds new relationships between inputs and outputs by dealing with missing or incomplete information. Knowledge, mainly prior knowledge, plays a crucial role in coping with scattered information and is a key determinant of market entry and market success. Post-entry learning about one's own efficiency also matters (Jovanovic, 1989), but there is a knowledge barrier in every industry which makes a certain degree of previous knowledge necessary to receive, process and synthesise the available information (Cohen and Levinthal, 1990). Entrepreneurs have a stock of knowledge that will influence the industry they enter, as well as the probability of survival and success in that industry.

Company and university spin-offs are prominent examples of the role of knowledge in the entrepreneurial process. Company spin-offs harness both technological and market knowledge accrued in the parent company to launch their business. Indeed, even when company spin-offs enter new market segments different from those of the parent company, they tend to introduce innovations originally developed in the latter (Christensen, 1993). On the other hand, university spin-offs are synonymous with knowledge-based organisations, although they may lack the market knowledge to understand the commercialisation potential of an invention and to market a new product. Spin-offs are not the only type of new firms taking advantage of prior knowledge: traditional start-ups also very often exploit knowledge accrued in previous experience as customers or suppliers to enter downstream or upstream industries (Hippel, 1988).

In a nutshell, business formation occurs when new opportunities caused by inefficiencies or the emergence of new technologies matches the prior knowledge of individuals, which may originate from educational background as well as past work or market experience. Past entrepreneurial experience is particularly relevant, because it provides an understanding of customer needs and market functioning – as proved by the frequency of the multi-venture process, *i.e.* the creation of more than one firm by the same entrepreneur throughout his/her life (Ronstadt, 1988).

Prior knowledge is a determinant not only of market entry (*i.e.* business formation), but also of business success and innovation. Spin-offs and start-ups with relevant pre-entry experience appear to survive longer than other entrants (Klepper, 2002). A historical example is given by the television set industry, whose market shares were soon taken up by companies that already operated in the related radio industry (Klepper and Simons, 2000). Similarly, but from a different perspective, Djankovic *et al.* (2007) find that while networks and an entrepreneurial family milieu have an impact on the choice to become an entrepreneur, post-entry performance is primarily affected by individual smartness and the family's level of education. With regard to innovation potential, Cantner, Goethner and Meder (2007) find that pre-entry technical knowledge

overshadows pre-entry market knowledge in determining the ability of a firm to be innovative.

The systemic approach to innovation

Knowledge is crucial for entrepreneurship and triggers the business innovation process. SMEs though, tend not to innovate alone but rather in collaboration with other organisations, including enterprises (*e.g.* suppliers and customers), universities, research organisations, etc. They may also need to interact and co-operate with national and sub-national governments, which play an important role in the design of innovation policies and in the distribution of innovation funds.

These networks and linkages are especially important for new and small firms, which are faced with a number of barriers to innovation, including limitations in funding, management resources, technological competence and time to invest in a long-term strategy. Lacking the assets and resources to invest in formal R&D, SMEs draw more intensively than large companies on public funding and co-operation with other public and private entities to undertake innovation activities. For instance, empirical evidence indicates that SMEs particularly benefit from knowledge spillovers arising from business-to-business networks (Winters and Stam, 2007) and from public research organisations (Acs, Audretsch and Feldman, 1994). The attitude and behaviour of firms with regard to innovation is affected not only by relationships with the external environment (firms, suppliers, research institutes, etc.), but also by the norms, routines, rules and laws that characterise the location where the firm operates. This has two main implications: i) institutions play a crucial role in innovation systems; and ii) innovation systems have an inherent geographical dimension.¹

An innovation system can therefore be considered the ensemble of actors, relationships and institutions that affect the process of innovation in a determined area. Asheim and Gertler (2005) define it as “the institutional infrastructure supporting innovation within the production structure of a specific place”. The main consequence of a systemic approach to innovation is that the entrepreneurship and innovation performance of a locality, region or country will not only depend on the endogenous capacities of the firms but also on their relationships with other firms and external organisations. Indeed, recent analysis by the OECD shows that co-operation is strongly correlated with innovation expenditure (OECD, 2009a), which points to a potential virtuous cycle effect between innovation through external linkages and innovation through internal investments in R&D.

The innovation system approach significantly departs from an approach merely based on market failures. In the latter, policy is commanded by a set of failures (imperfect appropriability, information asymmetries, uncertainty, etc.) that affect the production of knowledge and require either public protection (*i.e.* the IPR system) or public subsidisation (*e.g.* R&D grants or subsidies). In the systemic approach, on the other hand, innovation policy is not only driven by market failures but also by possible systemic failures. To some extent, market failures prevent the production of knowledge, whereas systemic failures hamper its circulation and diffusion. The most typical example of systemic failure is “technology lock-ins”, which occur when an innovation system that is highly competent in one specific technology remains trapped in a determined path and unable to invest in new and possibly more productive technologies. Another instance consists in “learning failures”, which take place when local firms have not developed enough absorptive

capacity to codify and implement new knowledge into their business operations. Poor connections among the actors of the innovation system are a third example. Useful linkages among complementary activities could be missing or underdeveloped due to lack of information about the activities of the different actors or the limited rationality of the actors themselves. Similarly, the lack of a specific institution (*e.g.* a technology intermediary organisation) could negatively impact on the level and quality of interactions among the rest of the organisations in the system (Malerba and Cusmano, 2001).

A set of activities is expected to be important in an innovation system; Box 3.1, based on Edquist (2005), provides a first attempt of synthesis from current analysis.

Box 3.1. **Main activities in an innovation system**

1. Provision of research and development (R&D) creating new knowledge, especially basic and pre-competitive knowledge.
2. Competence building, including provision of education and training, creation of human capital, production and reproduction of skills, etc.
3. Articulation of demand-driven quality requirements.
4. Creation and change of organisations needed for the development of new fields of innovation, including support to create new firms and “intrapreneurship” to diversify existing firms, creating new research organisations, policy agencies, etc.
5. Networking through markets and other mechanisms, including interactive learning among different organisations involved in the innovation process (*e.g.* customer-supplier relations, industry-university collaborative research, technology networks linking university faculty to exploitation partners, etc.).
6. Creation and change of institutions that influence innovation actors and processes by providing incentives or obstacles to innovation (*e.g.* IPR laws, R&D subsidies, environment regulations, etc.).
7. Incubation activities that provide facilities, business services and administrative support to new innovative efforts.
8. Finance, both debt- and equity-based, that can facilitate the process of innovation, as well as other activities aimed at the commercialisation of knowledge (*e.g.* technology licensing).
9. Provision of technology-oriented consultancy services (*e.g.* technology transfer, university-based technology centres assessing commercialisation opportunities, etc.).

Source: Based on Edquist, 2005.

As mentioned above, innovation systems have a strong spatial dimension. While the initial focus was mainly on national innovation systems (Lundvall, 1992; Nelson, 1993; OECD, 1997) – and national innovation systems are still the subject of considerable attention from academics and policy makers – globalisation has also cast light on the importance of both the global and local levels. The actors in an innovation system are not insulated within national boundaries, but increasingly collaborate with foreign companies and organisations. At the same time, a national approach does not allow for the significant regional differences that exist in innovation performance. Knowledge institutions and research infrastructures are hardly homogenous within the same country, which makes innovation a geographically concentrated phenomenon. Recent analysis by the OECD

(2007b) shows, for instance, that ten leading regions in Europe account for more than one-third of all patents and that the level of patenting is strongly correlated with GDP per capita, with students in higher education and with employment in high-tech industries. The following section provides evidence about the geographical concentration of industries in which knowledge and technology are important inputs.

The geographical clustering of knowledge-intensive activities

Activities can cluster for different reasons, such as availability of intermediate suppliers and skilled labour, good quality of infrastructure and other facilities, proximity to natural resources that are key to the production process, a better match between employers and employees or buyers and suppliers, etc. It is argued here that in knowledge-driven sectors, such as those falling under the broad categories of high-tech manufacturing (HTM) and knowledge-intensive service activities (KISA),² local knowledge flows are among the main drivers of industrial agglomeration. Testing this assumption would require analysis of the extent to which agglomerations are determined by local knowledge flows using proxies such as joint patent applications from scientists belonging to different local institutions or the share of university R&D funded by local private sources. That goes beyond the scope of this chapter but other studies show that the efficiency of local innovation systems is related, *inter alia*, to indicators of knowledge flows such as the level of external funding for university research, the presence of intermediary technology organisations, and the correspondence between the technological fields of local public and private sector R&D (Fritsch and Slavtchev, 2007). Literature also shows that innovative activity tends to cluster more in sectors making greater use of new economic knowledge (Audretsch and Feldman, 1996) and that inventors more often cite patents from the same region (Jaffe, Trajtenberg and Henderson, 1993). These findings underline the importance of knowledge-driven clustering in knowledge-intensive industries. They are also reflected in the results of a recent OECD study of seven internationally-reputed clusters including Grenoble in France and Medicon Valley in Scandinavia. The success of these clusters in entrepreneurship and innovation has in large part stemmed from strong local knowledge generation, diffusion and absorption capacities in the form of leading universities and research organisations, strong concentrations of skilled human resources in the key cluster industries and strong networks (Potter and Miranda, 2009).

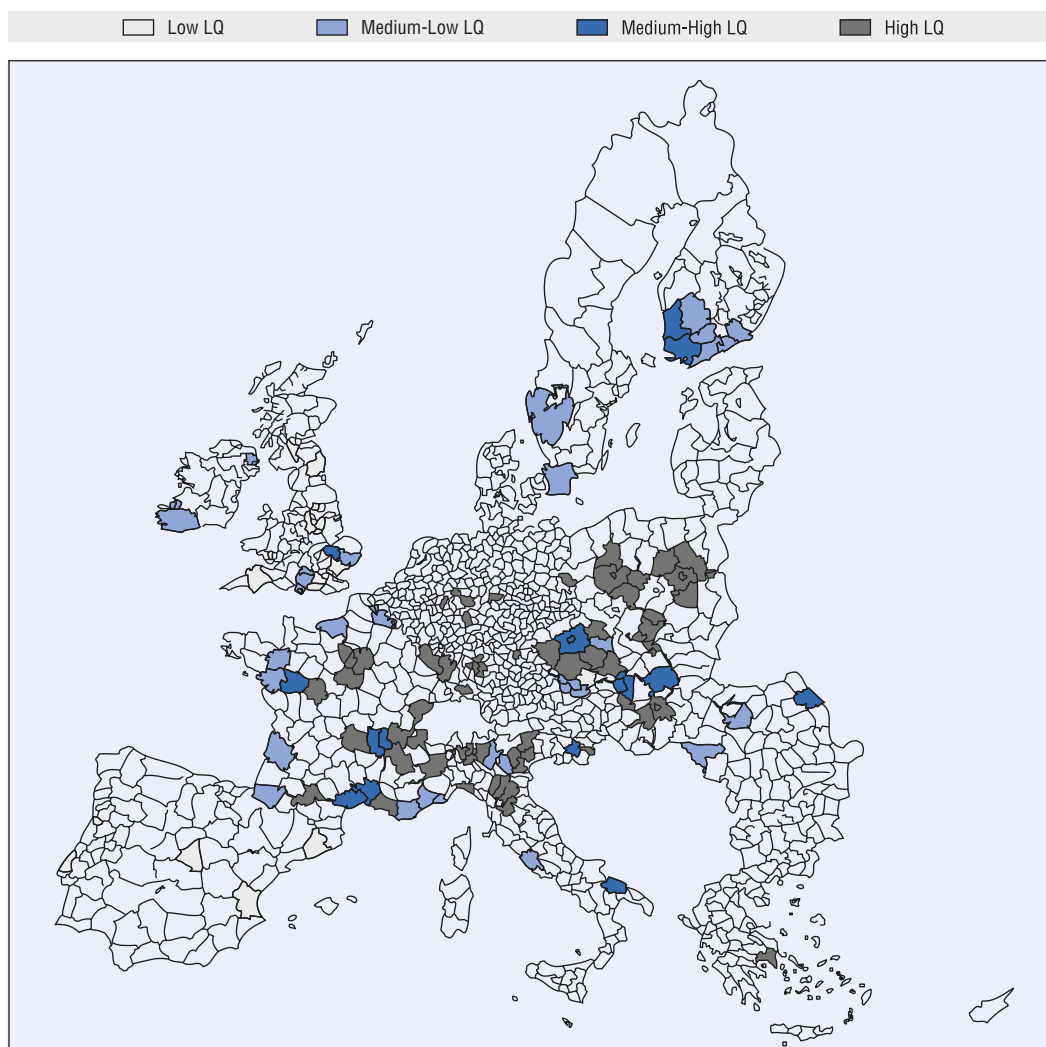
Given the limits of official data sources for local-level analysis, we turn to firm-level information from the commercial ORBIS database on the location, nature and performance of local innovation clusters. The ORBIS database provides insights about the spatial pattern of business demography and performance and is based on a highly disaggregated territorial breakdown that is not easily available from national statistical offices. The use of ORBIS location information (based on company zip code or municipality of residence) and business demographic information (based on the company year of incorporation and persistence in time as an active company) has enabled development of the maps of local innovation clusters presented below. Selected clusters are then compared using data on business demography and business performance. These findings represent some of the first outputs of an OECD project to map clusters and compare their performance based on indicators of their entrepreneurship vitality. However, they remain preliminary and exploratory and caution is advised in their interpretation given possible location, structural and selection biases in the original data source.³

European Union

The first two maps show the agglomeration of HTM and KISA firms in part of the European Union. The indicator used in the analysis is the location quotient (LQ), which is a basic statistical measure indicating the geographical concentration of a particular activity in a particular locality as compared to a reference economy (EU27 in this case). The territorial level of analysis is OECD Territorial Level 3 or Eurostat NUTS Level III, i.e. micro-regions. In particular, the following countries have been taken into consideration: Austria, Belgium, Czech Republic, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Poland, Slovenia, Spain, Sweden, and United Kingdom. Given problems of comparability between the NUTS classification and the location information included in the original data source, countries such as Denmark, Luxembourg, the Netherlands, and the Baltic countries were not considered for the purposes of the map.

Figure 3.1 shows that high-tech manufacturing firms in Europe are geographically concentrated in a limited set of localities, which host either well-known clusters or large

Figure 3.1. **Distribution of HTM firms in the European Union (Quantiles based on LQs)**

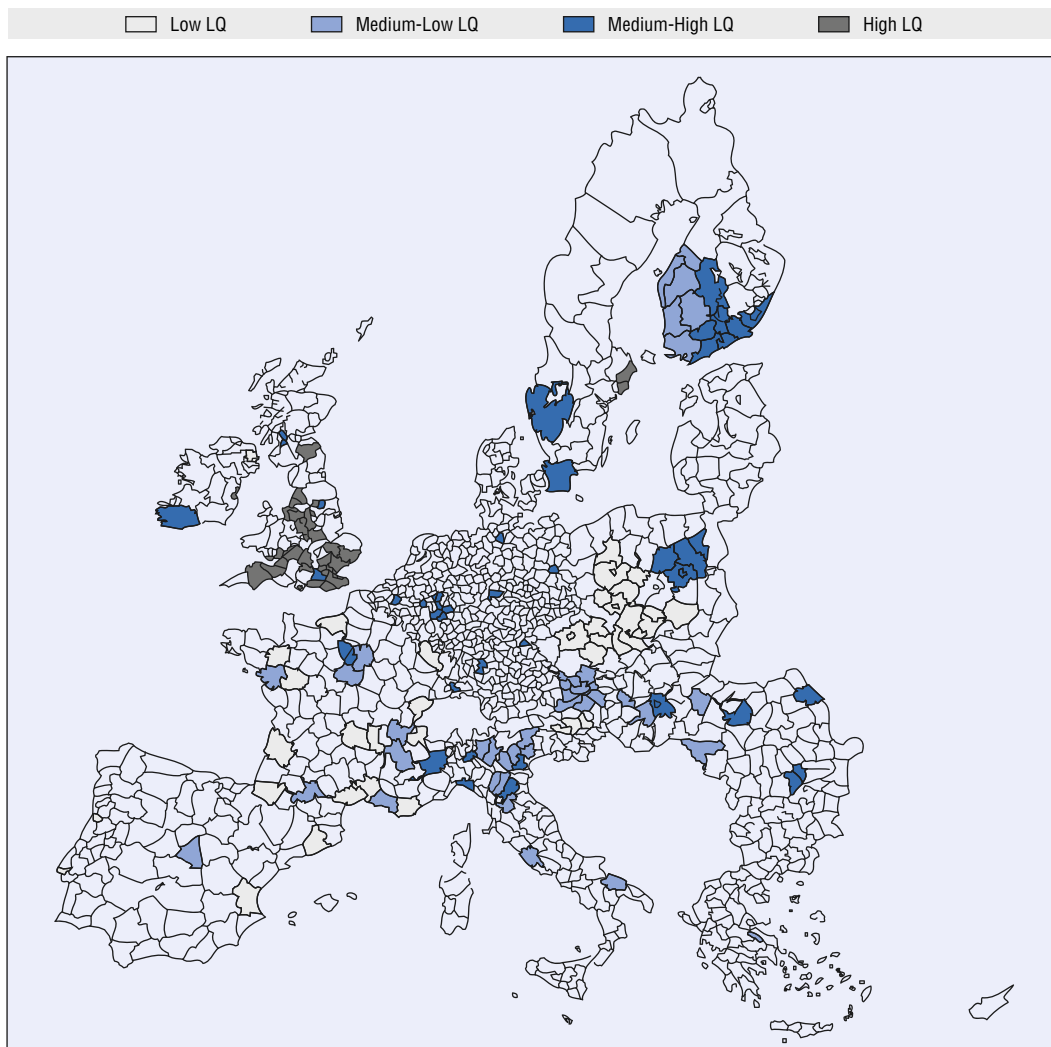


Source: OECD elaboration based on ORBIS database available from Bureau Van Dijk.

science parks. Baden-Württemberg (e.g. Tuttlingen, Pforzheim, Schwarzwald-Baar, etc.) emerges as the heart of high-tech manufacturing in Germany. Other important high-tech manufacturing regions are in the UK (e.g. Peterborough in Cambridgeshire), France (e.g. Sophia-Antipolis, Lyon and Toulouse) and Italy (e.g. Belluno in Veneto; Reggio Emilia and Modena in Emilia Romagna; Milan, Varese and Como in Lombardy). Interestingly, there are also HTM concentrations in some parts of Eastern Europe, which might indicate the local presence of green-field (newly established) foreign direct investment. Examples include Mazowieckie and Wielkopolskie in Poland; Brno in the Czech Republic; and Budapest and Győr in Hungary.

Figure 3.2 shows the results of a similar exercise for KISA firms, which are characterised by a different spatial pattern as against HTM enterprises. First of all, there is a large number of KISA concentrations in the UK, (e.g. Reading, Oxford, Nottingham, Manchester and Bristol), which might also infer a bias in the original data sources. Secondly, KISA firms often tend to

Figure 3.2. **Distribution of KISA firms in the European Union**
(Quantiles based on LQs)



Source: OECD elaboration based on ORBIS database available from Bureau Van Dijk.

cluster around large metropolitan areas, including London, Paris, Milan, Stockholm, Brussels, and Dublin. This finding is in line with recent literature, which suggests that technological progress in transport and telecommunications has made it possible for firms to separate production from management, with the former being relocated to areas with same-sector specialisation and the latter being concentrated around large urban areas where business service employment is abundant (Duranton and Puga, 2005).

United States

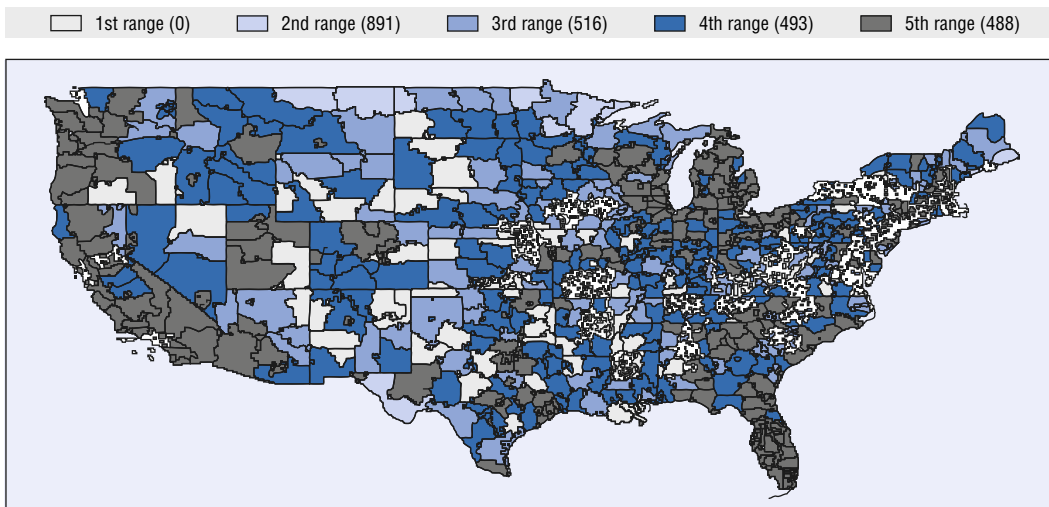
Maps from the United States provide more in-depth information on the location of HTM firms (more than 67 000 units in the sample) and KISA companies (around 400 000 units in the sample), thanks to a detailed territorial classification based on company postal codes. The basic territorial unit of these maps is the sectional centre facilities of the United States Postal Service, which total 2 388 in the country. Generally, the first three digits of the US postal code designate a sectional centre facility. The unit of analysis is represented by the number of HTM and KISA companies located in each area corresponding to one sectional centre facility.

Two distinct types of map were calculated for each distribution of US firms by economic activity. The first type illustrates the basic characteristics of firm spatial distribution based on quantiles; the second type is built from a statistical algorithm for analysis of spatial agglomeration named LISA (i.e. Local Indicators of Spatial Association), which is based on a local spatial autocorrelation test developed by Anselin (1995). While the first type allows us to detect the uneven distribution of firms across the United States – also highlighting areas characterised by a significant territorial concentration of specialised firms – the second type is more able to point out real clusters in the sense of groups of localities that share concentrations in the relevant sectors. The LISA methodology is explained in more detail in Annex 3.A2 of this chapter.

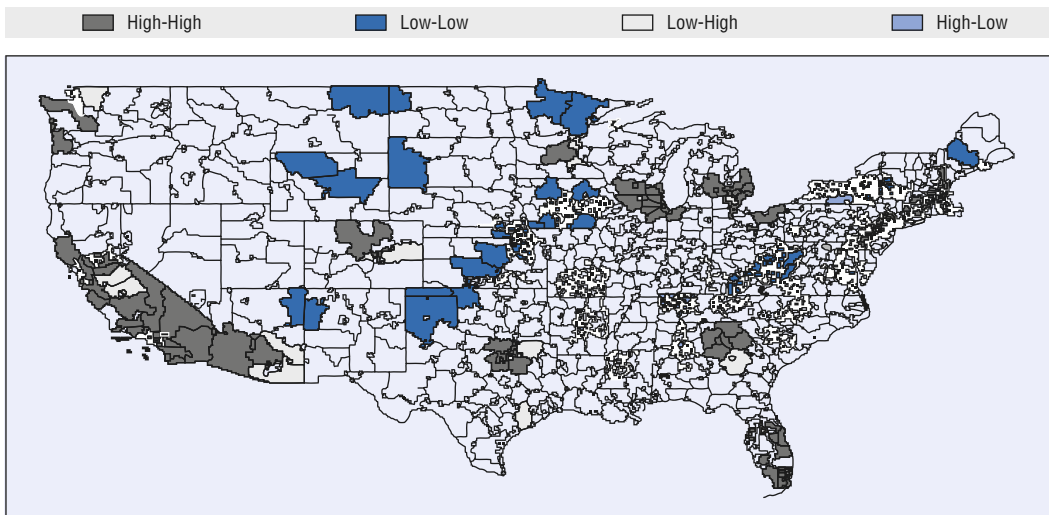
Figure 3.3 corroborates the presence of an uneven spatial distribution of HTM firms in the United States. Moreover, it also clearly highlights that high-tech manufacturing activities tend to concentrate within specific localities in some key US States, such as California, Florida, Texas, New England and the northern Midwest.

However, the raw distribution of US high-tech manufacturing firms does not support any significant additional territorial analysis. An improved analysis of the spatial patterns of high-tech manufacturing firms in the United States can be obtained by using the LISA analysis, which captures agglomeration on the basis of spatial correlation across neighbouring areas.

Figure 3.4 highlights the presence of agglomerations of high-tech manufacturing activities in the United States using a four-class taxonomy based on the LISA technique. Our key interest is in neighbouring localities characterised by large numbers of HTM firms, giving rise to a dark grey area on the map. These are consolidated high-tech business clusters of significant scale. In addition we identify three other types of localities: those with lower but still significant concentrations surrounded by neighbouring localities that themselves have either low-but-significant or high HTM concentrations (Low-Low/Low-High), and those that themselves have high HTM concentrations but are surrounded by others with lower, but still significant, concentrations (High-Low). These three categories represent weaker clusters and clusters with less spatial extent.

Figure 3.3. **Distribution of HTM firms in the United States (Quantiles)**

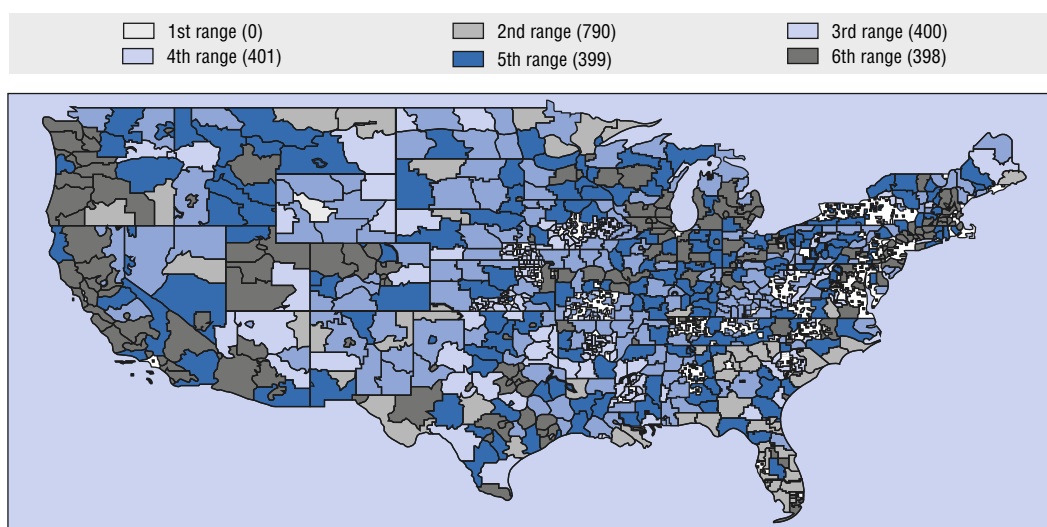
Source: OECD elaboration based on ORBIS database available from Bureau Van Dijk (Geoda software).

Figure 3.4. **Agglomerations of HTM firms in the United States – LISA methodology**

Source: OECD elaboration based on ORBIS database available from Bureau Van Dijk (Geoda software).

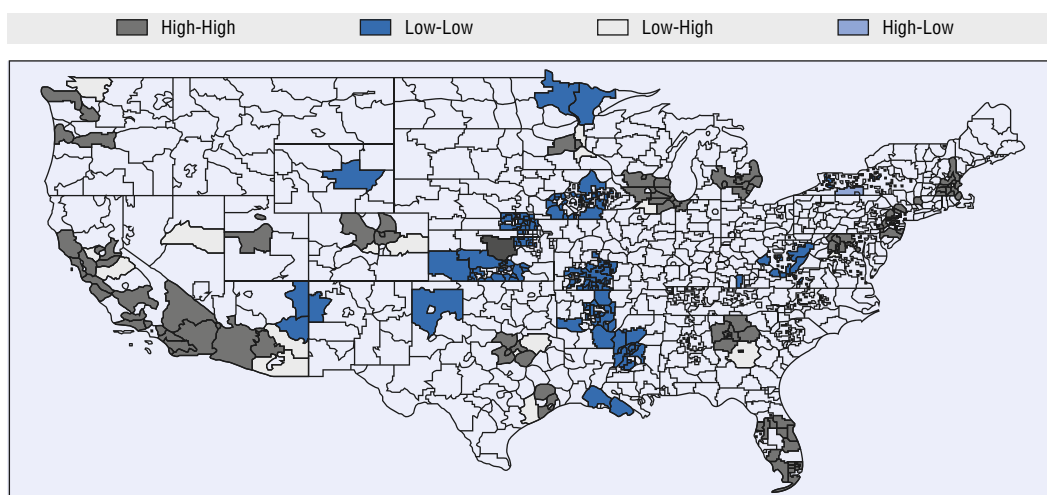
Consolidated clusters of high-tech manufacturing firms can be detected in a vast inter-state conglomeration including California and Arizona, while they correspond to specific localities in other American states such as Boston's Route 128 in Massachusetts, Madison in Wisconsin, Denver-Boulder in Colorado, Seattle in Washington, Dallas-Fort Worth in Texas, Miami-Orlando in Florida, Atlanta-Roswell-Lawrenceville in Georgia, Minneapolis in Minnesota and Detroit-Hamilton in Michigan. The two maps that follow repeat the same exercise for knowledge-intensive service activities.

Figure 3.5 points out the location of KISA firms in the United States using the same data source, territorial grid and methodology adopted for Figure 3.3. This map provides empirical evidence on the uneven distribution of US firms in knowledge-intensive services. KISA firms tend to concentrate in a limited number of US States, including California, Arizona, Washington, the northern Midwest, Florida and New England.

Figure 3.5. **Distribution of KISA firms in the United States (Quantiles)**

Source: OECD elaboration based on ORBIS database available from Bureau Van Dijk (Geoda software).

Figure 3.6, based on the same methodology adopted for Figure 3.4, highlights the patterns of spatial agglomerations of US KISA firms. Consolidated clusters of knowledge-intensive services firms (dark grey areas) are found in a large area of California including San Francisco, Los Angeles and San Diego, as well as in specific localities such as Phoenix (Arizona), Seattle (Washington), Portland (Oregon), Denver and Colorado Springs (Colorado), Dallas-Fort Worth and Houston (Texas), Miami and Orlando (Florida), Atlanta (Georgia), Washington-Reston (Washington, DC), New York City (New York), Philadelphia (Pennsylvania), Boston (Massachusetts), Detroit-Hamilton (Michigan), Madison-Rockford (Wisconsin), and Chicago (Illinois).

Figure 3.6. **Agglomerations of KISA firms in the United States – LISA Methodology**

Source: OECD elaboration based on ORBIS database available from Bureau Van Dijk (Geoda software).


Cluster rankings: A preliminary exploration

The combination of different indicators of business demography and business performance at the local level calculated experimentally from the ORBIS database can lead to an international analysis of the strength of clusters based on a composite indicator. Tables 3.1-3.4 below present a very preliminary analysis of the performance of selected clusters that are known in the literature and are assessed through their business birth-rate and a composite performance indicator. The composite indicator takes into consideration the following variables for the European clusters: *a*) an enterprise birth indicator (share of firms less than 5 years old); *b*) an economic growth indicator (average rate of turnover); *c*) an employment growth indicator (average rate of employment growth); *d*) profitability (average return on total assets); *e*) financial constraints to growth (average liquidity ratio and average solvency ratio). In the case of the US clusters, given data source constraints for this country, the composite indicator is limited to the first three variables in the list.

Table 3.1. **Business birth rate in HTM clusters**

Name of business cluster	Country	New firm registrations in a 5-year period (2002-06) per thousand businesses active in 2006
Madison research	United States	367.9
Lyon biotech	France	360.2
Toulouse aerospace	France	331.1
Tsukuba	Japan	285.7
Boston (Route 128)	United States	281.4
Linz	Austria	281.3
Oslo	Norway	280.1
Sophia-Antipolis	France	277.8
Tucson	United States	265.3
Warsaw	Poland	248.9
Cambridge	United Kingdom	200.9
Sao Paulo	Brazil	197.2
Heidelberg	Germany	161.8
Mirandola	Italy	120.0
Göttingen	Germany	103.4

Source: OECD elaboration based on ORBIS database available from Bureau Van Dijk.

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The main conclusion that can be inferred from this preliminary analysis is that the entrepreneurial vitality and economic performance of clusters vary substantially regardless of the country, which supports the view that high-tech business clusters have localised competitive advantages that are likely to rest on local knowledge spillovers. Some other interesting aspects of the results are that US clusters seem to perform better than the others but also that well-performing clusters are located in places as different as the United States and France, where clusters have very dissimilar origins and levels of political support. This ties in with a key argument from the literature, which is that there is no one way to build strong and good-performing clusters. On the other hand, appropriately tailored local policies can certainly play a role in nurturing these industrial agglomerations by facilitating local knowledge spillovers, for example by strengthening formal and informal links among firms and between firms and research organisations, supporting basic and applied research, and creating intermediary institutions that facilitate the transfer of knowledge and technologies. (OECD, 2007a; Potter and Miranda, 2009).

Table 3.2. Ranking of HTM clusters based on the composite indicator

Ranking	Name of business cluster	Country of residence
1	Boston (Route 128)	United States
2	Tucson	United States
3	Lyon biotech	France
4	Sao Paulo	Brazil
5	Sophia-Antipolis	France
6	Madison research	United States
7	Tsukuba	Japan
8	Oslo	Norway
9	Cambridge	United Kingdom
10	Toulouse aerospace	France
11	Heidelberg	Germany
12	Linz	Austria
13	Warsaw	Poland
14	Göttingen	Germany
15	Mirandola	Italy

Source: OECD elaboration based on ORBIS database available from Bureau Van Dijk.

Table 3.3. Business birth rate in KISA clusters

Name of business cluster	Country	New firm registrations in a 5-year period (2002-06) per thousand businesses active in 2006
Dommel Valley (Eindhoven)	Netherlands	400.0
Silicon Valley	United States	362.8
Austin ITC	United States	326.3
Louvain Technology Corridor	Belgium	294.1
Aalborg	Denmark	285.7
Oulu	Finland	264.7
Kista	Sweden	262.5
Amsterdam-Alley	Netherlands	195.7
Ottawa	Canada	158.3
Cornell research district	United States	100.0

Source: OECD elaboration based on ORBIS database available from Bureau Van Dijk.


StatLink  <http://dx.doi.org/10.1787/814047837382>

Table 3.4. Ranking of KISA clusters based on the composite indicator

Ranking	Name of business cluster	Country of residence
1	Silicon Valley	United States
2	Austin ITC	United States
3	Oulu	Finland
4	Aalborg	Denmark
5	Amsterdam-Alley	Netherlands
6	Kista	Sweden
7	Cornell research district	United States
8	Louvain Technology Corridor	Belgium
9	Ottawa	Canada
10	Dommel Valley (Eindhoven)	Netherlands

Source: OECD elaboration based on ORBIS database available from Bureau Van Dijk.

The role of local knowledge flows for spatial agglomerations and local innovation systems

The above section illustrated the phenomenon of spatial clustering of economic activity in knowledge intensive sectors. A broad literature, briefly summarised here, suggests that local knowledge transfers are important to this clustering process. This literature stresses the fact that knowledge does not spill over long distance – which means firms will have to locate near the original source if they are to tap into it – and that knowledge spillovers are particularly important for the innovation activities of SMEs.

Knowledge spillovers decay with distance

Unlike information that can be easily exchanged through the Internet, the knowledge that drives long-term growth is technical, detailed and context-specific (Auerswald, 2007). Most economically useful knowledge is tacit, which means that it cannot be codified in blueprints or transmitted over long distance but rather needs close, local interaction to be exchanged. Tacit knowledge is not just created *a priori* through investments in education and training or the attraction and retention of qualified labour, but is also generated by the very interaction process between customers and suppliers or between users and producers, which explains why proximity is so important for knowledge spillovers to happen.

Geographical proximity is crucial, but cognitive and institutional proximities also matter. Cognitive proximity implies that the two parts involved in the interaction need to have a common technical background and understanding. Institutional proximity involves shared norms and values that also enhance the exchange of tacit knowledge (Gertler, 2003). Both strengthen the importance of geography for knowledge spillovers.

In a study on the US economy, Jaffe *et al.* (1993) find that patents are more likely to cite other patents if they are from the same state. The localisation of patent citations, which are taken as a proxy for knowledge spillovers, fades over time but only very slowly. Analysis of the impact of R&D investment on patent production provides similar results (Bottazzi and Peri, 2003; Moreno, Paci and Usai, 2005). The impact is positive and statistically significant but only within the spatial limit of approximately 250-300 km, after which the effects of knowledge spillovers disappear. The size of spillovers also diminishes with distance. Bottazzi and Peri (2003) conclude that “doubling R&D spending in a region would increase the output of new ideas in other regions within 300 km only by 2-3%, while it would increase the innovation of the region itself by 80-90%”. A relationship therefore exists between knowledge spillovers, spatial clustering and innovative output (Giuliani, 2005). This is especially true for knowledge-driven sectors, which are those where R&D intensity, basic university research and highly-skilled workers are most important. For example, in the United States, knowledge-driven industries such as semiconductors, process and control instruments and radio and TV communications are all highly concentrated in the three states of Massachusetts, California and New York (Audretsch and Feldman, 1996). Similarly, three-quarters of the US biotechnology industry is located in only five urban centres (OECD, 2007b).

Knowledge spillovers are not only spatially concentrated but also more relevant within the same or related industries. Cognitive proximity is important and knowledge spillovers will be possible only if both parties involved in the exchange share some technical commonalities. Knowledge from one industry will spill over more easily to another related industry and major innovations are more likely to occur when knowledge spillovers take

place between sectors that share competences, rather than within one specific sector. As a result, industries that rely on a common science base tend to cluster geographically, and related variety of local industries is deemed to further economic development (OECD, 2008c; 2009b). For instance, Feldman and Audretsch (1999) find that the diversity among complementary economic activities with a common science base is more conducive to innovation in terms of returns to R&D investments than narrow sector specialisation. Similarly, Fritsch and Slavtchev (2007) find an inverse U-shaped relationship between industrial diversity and regional economic performance, which implies the existence of an optimum degree of industrial diversity beyond which both broader diversification and narrower specialisation will have a negative effect on local innovation (measured through patent applications disclosed by regional inventors). Regions and localities can therefore grow by transforming existing mature industries into higher added value activities in related sectors. Examples include transitions from telephone handset production to mobile Internet system design or from vehicle production to GPS, road sensing and safety equipment (OECD, 2007b).

Knowledge spillovers benefit new and small firms

New and small firms can benefit substantially from knowledge spillovers. Due to limited assets and resources SMEs invest less than large companies in R&D, in both absolute and relative terms, and are more prone to innovate by drawing on collaboration. Moreover, small businesses have limited search patterns and will consequently co-operate only with other firms located nearby (OECD, 2005). Business linkages and networks are therefore key for the innovative endeavours of SMEs. Winters and Stam (2007), in an analysis of high-tech enterprises, show for instance that innovation networks positively affect both product and process innovation and that the positive relationship between firm size and innovation disappears when networks are taken into consideration. This might imply that small-sized firms are able to compensate for the lack of critical mass through business networks and knowledge spillovers. In particular, knowledge spillovers from public research organisations (PROs) have been considered particularly important for the innovation activities of SMEs (Acs, Audretsch and Feldman, 1994). Indeed, a recent strand of theory suggests that entrepreneurial activity is strongly affected by the knowledge created but not exploited by incumbent organisations, which makes entrepreneurship a process that strongly hinges on knowledge spillovers (Acs et al., 2006).

A form of knowledge flows: University-industry knowledge transfers

In knowledge- and technology-intensive sectors, relationships with universities and other public research organisations take on growing importance for innovation in SMEs. This has led to the emergence and growth of university-based knowledge transfer offices (KTOs), which take responsibility for the whole process of identification, protection, valorisation and transfer to industry of university innovations.


Despite the increasing importance of university-industry knowledge transfers and of public schemes that try to bolster such transfers, it is difficult to produce reliable and comparable data on this phenomenon. Patents and numbers of spin-off companies are relatively easy to count, but the way research agreements, invention disclosures or licensing income are accounted differ widely across countries. In addition, data collection is regular in some countries but sporadic in others.

In Europe the most reliable survey is carried out by ProTon, the European knowledge transfer association originally created by the European Commission in 2003. The survey is biased towards universities and public research organisations that are part of the network but also attempts to cover non-members. In the United States, the Association of University Technology Managers (AUTM) has undertaken similar surveys since the early 1990s.

Table 3.5. **KTOs at a glance in Europe and the United States**

	Europe (ProTon Survey)				United States (AUTM Survey)	
	2004	2005	2006	2007	2006	2007
No. respondents	172	392	325	323	189	194
No. PROs served	249	422	370	462	189	194
Av. KTO age (years)	10.0	8.6	11.2	11.4	17.9	18.5
Invention disclosures						
<i>Total number</i>	2 373	4 475	5 261	5 982	18 874	19 827
<i>Average per KTO</i>	31.6	15.3	18.3	20.2	99.9	102.7
Priority patent apps						
<i>Total number</i>	943	2 162	2 496	3 304	11 622	11 797
<i>Average per KTO</i>	12.7	6.4	8.7	10.7	61.5	61.1
Patents granted						
<i>Total number</i>	123	176	687	1 173	3 255	3 622
<i>Average per KTO</i>	2.1	1.3	2.5	4.0	17.2	18.8
Licenses granted						
<i>Total number</i>	423	295	3 174	3 765	4 963	5 109
<i>Average per KTO</i>	6.3	2.4	11.2	12.6	26.3	26.3
Licensing revenues						
<i>Total value (million EUR)</i>	22.2	82.7	73.1	61.9	1 250.2	1 893.7
<i>Average per KTO (thousand EUR)</i>	375.8	284.3	266.8	212.6	6 984.2	10 126.5
R&D contracts granted						
<i>Total number</i>	1 857	61 203	96 168	98 122	n.a.	n.a.
<i>Average per KTO</i>	31.5	220.2	381.6	364.8	n.a.	n.a.
Spin-offs generated						
<i>Total number</i>	108	435	473	550	553	555
<i>Average per KTO</i>	1.7	1.4	1.6	1.8	2.9	2.9

Source: ProTon and AUTM surveys.

StatLink  <http://dx.doi.org/10.1787/814100253438>

Data show that KTOs have a much longer tradition in the United States than in Europe. While the average age of a KTO in the United States is 18.5 years, in Europe it is only 11.4 years. With regard to output indicators, innovation disclosures are much higher in US universities (102.7 per university) than in Europe (20.2) and so are priority patent applications (61.1 vs. 10.7)⁴ and the number of patents granted (18.8 vs. 4.0). However, the gap between the United States and Europe with regard to the average number of licences granted is much lower: 26.3 in the United States and 12.6 in Europe. There are two possible reasons for this. One objective issue is that the US patent system is five times less expensive than the European system. Another, more questionable argument is that European universities are more reluctant to apply for patents for which they do not perceive a concrete licensing opportunity. However, value of licensing revenues associated with KTOs in the United States is markedly higher than in Europe. The average value for a US KTO is over EUR 10 million, whereas it is only EUR 212 000 for a European KTO. Within the European aggregate value, though, relevant differences exist between countries such as

the United Kingdom or Denmark, where there is a more consolidated licensing tradition (average licensing revenues are at approximately EUR 300 000), and southern European countries like Italy and Spain, where the value is only EUR 30 000. Finally, data on university spin-offs in the two different contexts diverge much more slightly, with nearly 2 spin-offs per KTO a year in Europe and nearly 3 in the United States.

University-industry knowledge transfers are also of increasing importance in Asia; Box 3.2 provides a snapshot of recent trends in China, Japan, and Korea.

Box 3.2. University-industry knowledge transfer in Asia

In China, university-industry knowledge transfer is a recent topic, but it has captured increasing attention. In 2002, a law along the lines of the US Bayh-Dole Act was enacted that enables universities to manage their own IPR, have equity investments in new firms, and commercialise R&D results. The establishment of KTOs has also been encouraged, with universities being given considerable freedom in the way they can run these centres. Data, however, show that knowledge transfer is still incipient in China. Universities have a great number of patents (126 per KTO), but only 1.6 of them are international. Moreover, the number of licences granted and licensing revenues remain quite low.

In Japan, a large proportion of university inventions are passed directly to companies through joint research agreements. This poses a challenge to the fairness of a system in which large companies disproportionately benefit from publicly funded research and in which start-up opportunities are accordingly diminished (Kneller, 2007). Currently, collaborative research is predominant and the role of KTOs is still marginal (there are 35 of these offices in the entire country).

Finally, in 2000 Korea passed a law according to which universities may choose to own IPRs and are asked to set up KTOs, while researchers have to be compensated up to 50% of the licensing revenues from their successful commercialised inventions. Over the past years the number of patents has increased by nearly 60% and royalties have passed from USD 9 million to USD 16.4 million.

Source: Piccaluga and Pietrabissa (2009).

Knowledge transfers concern not only industry and universities but also government organisations, financial bodies and intermediary institutions that play a supporting function. Table 3.6 gives an overview of the role and responsibilities of the different actors within an innovation system in the process of knowledge transfer.

The role of global knowledge flows for local innovation systems

Local knowledge flows are crucial to entrepreneurship and SMEs in an innovation system as they strengthen the knowledge base and the absorptive capacity of local firms. However, emphasis has also more recently been placed on the role of global knowledge flows in bringing new ideas to local innovation systems and thereby avoiding typical systemic failures such as lock-ins or learning failures.

Globalisation has underpinned the contribution of global knowledge flows to national and local competitiveness by creating new opportunities for knowledge generated abroad to be exploited locally and for knowledge produced locally to be harnessed overseas. The following graphs cast light on international knowledge flows by presenting information

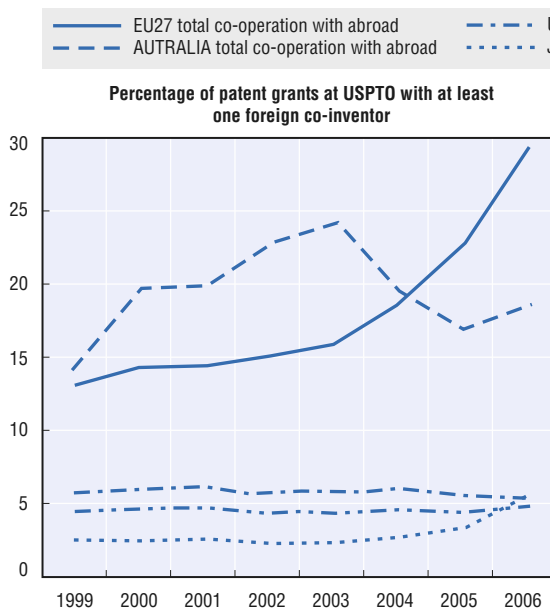
Table 3.6. **Activities, responsibilities and expected results of knowledge-transfer actors**

Actor	Activities	Responsibilities	Expected results
Public research	Carry out basic and pre-competitive research.	Choose research topics and partners; make results available for dissemination and transfer; collaborate with industry.	Production of scientific results; valorisation of IP; formation of human resources; contribution to economic development.
Industry	Undertake industrial R&D.	Monitor research results generated by others; orient internal and external research activities; valorise useful research results; collaborate with PRO.	Production and sale of goods and services jointly developed with PRO; employment of high-skilled workforce; co-funding of research activities.
Government	Express strategic research interests; set up laws that enable the other actors to carry out their functions; co-ordinate the other actors.	Operate with well-defined timing and tools; guarantee clear selection and evaluation processes; ensure fast funding of selected projects.	Legal tools for R&D management; increased R&D funding; incentives for participation of researchers in KT processes.
Finance	Fund industry and university research; support university entrepreneurship.	Participate in transfer activities; identify criteria for risk sharing; support investments in R&D.	New financial services for R&D; investments in technology-based start-ups; appropriate evaluation of research intangibles.
Intermediary institutions (Development agencies, incubators, science parks, etc.)	Facilitate the match between providers and users of technology; carry out technology transfer activities; co-ordinate R&D financial tools; support technology start-ups.	Analyse and select research results; propose strategic orientations for research activities; promote the valorisation of research results; favour collaboration among actors.	New patents and companies; creation of new opportunities for PROs; fostered R&D culture among firms.

Source: Piccaluga and Pietrabissa (2009).

about patent grants and patent applications at the US Patent and Trademark Office (USPTO) and at the European Patent Office (EPO) that have at least one foreign co-inventor (i.e. international co-patenting).

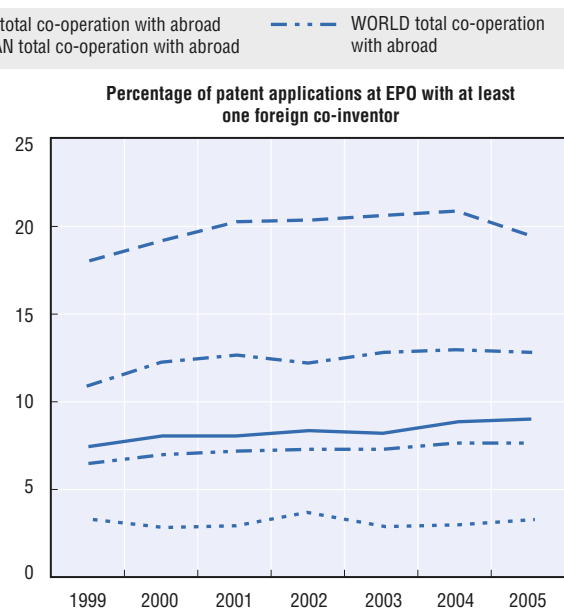
Figure 3.7.



Source: OECD Patents statistics

StatLink  <http://dx.doi.org/10.1787/814010147868>

Figure 3.8.



Source: OECD Patents statistics

StatLink  <http://dx.doi.org/10.1787/814018681704>

The reference is the priority date, which corresponds to the first filing worldwide and is therefore closest to the date of the invention.⁵ The first table (*i.e.* patents granted by the USPTO) shows that global co-patenting is significant but roughly steady and between 4.5% and 4.8% of the overall patents over the 1999-2006 reference period. However, the number of “international patents” granted to both Europeans (EU27) and Australians has increased markedly over the reference period, with the trend from Australia being less regular than for the EU. Japan is, on the other hand, the country with the most limited extent of international co-patenting, although its share has significantly doubled from 2.6% to 5.3%. Trends for the EPO confirm that Australia engages very actively on co-patenting, but also show positive moderate trends in the range of +1.5% for the United States (+1.7%), the EU (+1.6%) and the aggregate level (+1.2%). The two main conclusions are that: *a)* international co-patenting is important and, in the case of the EPO, is on the rise; *b)* small economies (Australia, in our case) are more likely to engage in international collaborations and draw on global knowledge sources than large countries; *c)* among the three main OECD areas (EU, USA and Japan), Japan is the country that co-operates the least with other countries on co-patenting.

Knowledge flows move either “inward” or “outward” from a place. Knowledge flowing out of an area is often associated with an inflow of payments from licensing, royalties, fees and sales. Knowledge flowing into an area can be critical in enabling domestic firms and research organisations to access world-class technologies. Involvement in both inward and outward flows, therefore, stimulates the innovation and economic development of a locality.

Motivations behind knowledge flows change depending on the industry (Pilat *et al.*, 2009). In sectors where the technology life cycle is short (*e.g.* ICT, electronics and telecommunications), companies tend to look for partners to keep up with new developments within the same sector and in related industries. Where technology life cycles are longer and IPR protection stronger (*e.g.* pharmaceuticals, chemicals and material sciences), companies mainly look outside to stay abreast of cutting-edge research. Emblematic is the example of large pharmaceutical companies setting up relationships with small biotechnology firms to maintain an open window on a promising but risky field of research.

There exist a number of channels through which global knowledge flows take place, three of which seem particularly important (OECD, 2004): *i)* cross-border alliances among firms and between firms and research organisations; *ii)* knowledge transfers from foreign direct investment (FDI); and *iii)* attraction of skilled labour. All three can contribute to the generation, transmission and exploitation of knowledge, thus increasing technological development and entrepreneurship in terms of potentially exploitable new products, services and organisational methods.

Cross-border alliances

The importance of local networking is well-recognised within innovation systems and clusters, but networks also need to be open to global sources of knowledge and markets. Participation in global value chains, indeed, contributes positively to the efficiency and innovative potential of SMEs (OECD, 2008a). This is particularly true in knowledge-intensive sectors, where cutting-edge suppliers are unlikely to be locally available and strategic alliances are crucial to launching new products and to exploring new markets.

Cross-border alliances contribute to knowledge inflows and outflows by involving firms and organisations in activities such as international product licensing or joint

agreements for product or process development. They can develop both horizontally and vertically. At the horizontal level, they are normally among SMEs or between SMEs and technological/research organisations working together on research, technology licensing or cross-sales and marketing agreements. At the vertical level, buyers and suppliers can collaborate in the innovation of products or processes or in the outsourcing of specialised inputs. Informal and formal (*e.g.* joint ventures, mergers, acquisitions) agreements can also be used to gain access to relevant knowledge.

However, clear barriers exist to the emergence of international networks of SMEs. Small firms may not be aware of overseas opportunities or may be too inward-looking to look for knowledge sources abroad. Similarly, SMEs may also be unaware of the steps and procedures to enter in formal agreements with a foreign partner or may be discouraged by the high costs and risks involved in the internationalisation process (OECD, 2008b). As a result, public policy has a key role to play, helping to address information barriers and to ensure that the risks and costs of international networking are minimised for participating SMEs through, for instance, the provision of loans and guarantee schemes. Chambers of Commerce and business associations can play an important role in both the design and delivery of effective support instruments as a recent OECD review of entrepreneurship and SME support systems in various OECD regions shows (Potter, Marchese and Hofer, forthcoming, 2010).

Knowledge transfers from foreign direct investment

Another important source of global knowledge is inward foreign direct investment (FDI). Foreign multinationals can stimulate local development through firm-specific advantages, including efficient and advanced operational practices and technologies, which can spin off into the host economy to drive productivity improvements and innovations in local firms and organisations. But this is more likely to happen if multinationals are plugged into the local economy through effective linkages with local firms and research organisations.

Knowledge transfers from FDI can take place either passively or actively. The establishment of spin-off enterprises from multinational companies and the normal flows of workers and managers between companies within the local labour market are some of the clearest examples of “passive” knowledge transfers. However, such transfers can also be actively spurred through intentional efforts by foreign investors or potentially supported by public policy, such as through networking events (business forums, supplier groups, technical visits, seminars, etc.), the planned exchange of staff (secondments, mutually agreed recruitment and training, etc.) or joint projects (*e.g.* with training providers and technology institutions).

OECD reviews of FDI and local development in Spain, Switzerland, Russia, Ukraine, and Scotland have examined how local and regional governments and development agencies have developed initiatives to improve the linkages of inward FDI with the rest of the economy. Supplier development programmes have had, for instance, a prominent role in counteracting the “branch plant” nature of traditional FDI in which foreign affiliates develop few connections with local firms and research organisations. Similarly, the attraction of FDI has been combined with the promotion of local clusters by targeting FDI in those sectors where the locality has strong productive agglomerations and then linking foreign investors up with local enterprises and technology/research institutes. The encouragement of corporate spin-outs from FDI is another option, especially considering

that foreign multinationals are often less reluctant to allow spin-offs than normally thought, due to the benefits that they themselves can derive from this strategy.

The attraction of foreign skilled workers

Renowned examples of attractive local economies, such as Silicon Valley and Austin in the United States or Dublin in Europe, are witness to the importance of attracting foreign high-skilled workers to stimulate entrepreneurship. But it is also important in everyday economies. For receiving places, the inflow of foreign talent has positive effects on the number of skilled workers, levels of R&D, enrolments in graduate programmes and the potential creation of growth-oriented businesses by immigrants. For sending localities, the emphasis has often been placed on the brain drain and the associated downsides such as the losses of human capital and productive labour. However, as recent OECD work shows, qualified people can also accrue skills more rapidly abroad and this can benefit the country of origin if they decide to return home or co-operate with the home country at some point (OECD, 2004; Hofer, 2009).

A number of factors affect the ability of a locality to attract a skilled labour force. First of all, economic opportunities are clearly important. However, these often do not correspond to a single good job offer, but rather to the possibility of developing a career in one place. While it is true that many people move abroad as a temporary career step, others will wish to stay if proper career advancement opportunities are given. Policy can best influence such opportunities by building up strong innovative and highly productive sectors and clusters and by supporting local skills, knowledge institutions, specialist finance, and knowledge networks.

Secondly, “people climate” has received increasing attention as an element of the attractiveness of a place. Tolerance and access to social networks appear to be key factors in attracting skilled, entrepreneurial and career-minded people. In addition to general “people climate”, particular conditions influence specific groups. So, academics and researchers will look particularly at the quality of universities and research laboratories, as well as at the overall research support system, whereas entrepreneurs will be interested in the climate for business start-up and innovation, including the availability of specialist finance. Both are key elements of place-making policy initiatives.

Thirdly, at a more macro level, immigration and tax rules do play a role. Visa regulations can easily encourage or discourage the attraction of highly educated people working in knowledge-intensive industries, who can also be interested in privileged fiscal treatment such as temporary tax holidays.

Conclusions and policy recommendations

The main message of this chapter is that knowledge of markets and technologies is a critical input to the entrepreneurial venture and can be acquired through the participation of entrepreneurs and SMEs in local and global knowledge flows. Knowledge affects the likelihood of entrepreneurs setting out in business and their subsequent business success, as demonstrated by the multi-venture process. It is also critical to the innovation performance of SMEs. Furthermore, many high-potential start-ups, including corporate and university spin-offs, rely on market and technological knowledge acquired in their source organisations for their success.

The innovation system concept is helpful in understanding how policy can promote innovative entrepreneurship and SME innovation by improving the flow of knowledge

among agents involved in different activities. The concept recognises that the knowledge used in SME innovation is not solely, or even largely, the result of the research and development efforts of given firms but stems much more from knowledge transfers among agents. An important task of policy is therefore to facilitate the process of knowledge acquisition by SMEs and entrepreneurs by dealing with system failures that prevent the optimal flow of knowledge, and in particular with the lack of connection that often characterises the relationship between the knowledge exploration (universities, research organisations, etc.) and knowledge exploitation (large and small enterprises) parts of an innovation system.

There are two main action areas for policy. One involves strengthening knowledge flows within given national and local innovation systems and clusters, recognising that many aspects of knowledge may more easily be transferable among agents that are in close geographical proximity. With this objective, policy may seek to increase the motivations of universities and research organisations to transfer knowledge to other national or local actors and strengthen the mechanisms available to them to do so, such as by encouraging the development of knowledge transfer organisations/technology intermediaries and technology brokers and binding parts of the funding of universities and research organisations to the undertaking of local knowledge transfer functions. A further key issue is the need to strengthen the absorptive capacities and innovation potentials of local entrepreneurs and SMEs in order to enable them to effectively participate in local knowledge flows. Policy may also increase the probabilities of knowledge transfer by seeking to better match the knowledge bases and competences of the knowledge explorers and the knowledge exploiters in the system by better aligning the specialisms of universities and research organisations with the specialisms of firms. The message of related variety, however, is that knowledge transfers across complementary sectors are extremely important to innovation. Bridging activities should therefore be promoted not only within given sectors but also across sectors that are complementary in knowledge bases and shared competences since interactive learning across related sectors is more likely to lead to important or breakthrough innovations, in the sense of combining existing knowledge in new ways.

Secondly, it must be recognised that agents in national and local innovation systems and clusters must also interact with global actors beyond the walls of their own dominant geographical innovation systems. Cross-border alliances among SMEs, strengthening the linkages of foreign direct investors with local SMEs and attraction of foreign talented labour are three of the possible channels through which global knowledge flows can strengthen SME and entrepreneurship performance and help open new growth trajectories and fend off lock-ins and other systemic failures.

Based on these core messages, the following key policy recommendations are formulated.

Key policy recommendations

- *Design advice and training programmes for start-up entrepreneurs who have strong technological knowledge but lack market and commercial expertise.*
- ❖ *Diagnostic and training programmes insisting on business planning and key management principles represent fruitful policy options to strengthen the pre-entry knowledge and capabilities of entrepreneurs. Similarly, investment readiness*

programmes are appropriate for later stages of business development in which equity finance is involved. Emphasis also needs to be placed on a new set of “entrepreneurship skills” that move away from traditional business management competences and include strategic thinking, proactive orientation to change and innovation, foresight ability with regard to new market opportunities, etc. Schemes that target these skills can go a long way toward both enhancing business survival and nurturing the emergence of high-growth SMEs.

- *Promote corporate and university spin-offs as high-potential knowledge-intensive businesses.*
 - ❖ Spin-offs, both corporate and university-based, are an important target for promotion efforts because the internal technology and market competencies they carry from their sources in universities and other firms make them more likely to grow faster than the average start-up. Programmes for corporate spin-offs should aim to diversify the customer base of these firms, which often run the risk of being trapped in a one-way relationship with the parent company. Moreover, these programmes can help embed multinationals in the local economy by encouraging managers or skilled workers of the foreign affiliate to set out their own business. As to university spin-offs, the gap between technological invention and commercial innovation should be bridged through “proof-of-concept” support for testing the technical and commercial viability of early-stage innovative ideas, pre-competitive research support and seed funding programmes. An example is the Austrian *AplusB* (Academia plus Business) programme, which supports university centres with the mission of launching academic spin-offs. The programme raises awareness about business creation among students and faculty; provides coaching about business planning to those interested in the start-up process; and gives office space and links to external experts (see Austria’s Country Note).
- *Interactive learning networks boost SME innovation and need to be stimulated.*
 - ❖ Interactive learning networks will encourage innovation, especially for small-sized firms that lack assets and resources to invest in R&D. Cluster programmes continue to receive much attention from national and local policy makers in light of the importance of agglomeration economies and of helping firms to link up with each other and with research organisations at the local level. Informal interpersonal interactions among entrepreneurs should be encouraged alongside more formal networks, for instance through shared space and facilities. Two possible examples are business incubation and science park programmes. Here, the more participants share a similar educational and professional background, the more fruitful the knowledge flows are likely to be. China’s Torch programme represents one of the most comprehensive collective learning policies implemented by a national government. In 20 years of operation, this programme has supported 53 high-tech development zones, 62 university science parks, about 200 business incubators and 35 software parks (see China’s Country Note). Co-operatives and business consortia can also support small-firm upgrading through, for example, joint technology purchase. Such associations can include customers, suppliers and technology institutions.
- *Universities need to be actively involved in the innovation system.*
 - ❖ Local universities and research institutes need to be actively involved in knowledge flows and so be given the opportunity to unfold their “third mission” to contribute to the development of their region (OECD, 2007c; Potter, 2008; OECD 2009c). Universities and

other research institutes can foster entrepreneurship by generating and diffusing innovations and supplying highly skilled and entrepreneurial workforces to industry. Indeed, the centrality of this role increases with the growing importance of knowledge-based activities in the globalised economy. In this new setting, success in meeting economic and social challenges will depend on the ability of firms to generate and exploit new products and services, and higher education institutions can play an important supporting function through the transfer of knowledge. Collaborative research programmes that focus on pre-competitive research and put together university and company researchers are an option. Technology-bridging institutions can also be useful, as they help shape the direction of research and facilitate technology transfer by strengthening the industry-university link. In Australia, for instance, Enterprise Connect is a programme that runs six manufacturing network centres and five innovation centres. The two together provide a number of services for SMEs, including no-cost business reviews for the identification of market opportunities and access to world-class technologies, job placement of researchers within SMEs, and linkages to more technologically advanced firms or business experts (see Australia's Country Note).

- *The absorptive capacity of SMEs needs be strengthened.*
 - ❖ Knowledge transfer programmes should be coupled with measures that strengthen the absorptive capacity of small firms, since lack of motivation and capacities on the part of SMEs often proves to be the most important barrier to industry-university collaboration. Skills development or innovation purchasing initiatives can fit this purpose, as can staff exchanges and secondments. The voucher scheme implemented in the Netherlands is an example of an innovation-purchasing initiative that has enabled SMEs to take a first step toward public research organisations and undertake simple technology upgrading projects (see for example the Netherlands' Country Note).
- *Labour mobility accelerates knowledge flows within an innovation system.*
 - ❖ More generally, labour mobility within an innovation system should be promoted as a tool enabling local knowledge flows and spillovers via the transfer of skills and experience, although marked inter-firm labour mobility can deter private investments in training, especially in SMEs. University-industry staff exchange programmes should also be considered, although rigid university employment practices and the very university incentive structure (*e.g.* the pressure to publish on peer review journals) can render this specific type of labour mobility difficult.
- *Promote cross-fertilising technologies with multiple industrial applications.*
 - ❖ Considering that every technology implies several possible entrepreneurial opportunities, often in more than one industry, policies should target broader technologies with potential multiple industrial applications rather than more narrowly defined sectors. This will favour cross-sectoral knowledge flows and the possible emergence of new industries, rather than only strengthening existing sectors. Programmes that promote the overall commercial use of biotechnologies, nanotechnologies or material sciences go in this direction, though they require a strong knowledge base at the university level. Related variety should also be taken into consideration in attempting to diversify into new growth areas based on new combinations of existing sectoral and technological strengths. The United States has traditionally been at the forefront in the promotion of cutting-edge and cross-

fertilising technologies, through a comprehensive approach in which two key programmes are the Small Business Innovation Research (SBIR) and the Technology Innovation Programme (TIP). The large awards granted by TIP focus on next-stage commercialisation and help bring forward the commercialisation potential of successful prototypes funded by SBIR, so the two programmes are complementary (see the United States Country Note).

- *Encourage openness to global sources of knowledge.*
 - ❖ In a time of globalisation, innovation systems need to be open to external sources of knowledge in order to avoid lock-ins and economic sluggishness. Policy makers can help SMEs cope with the information barriers and risks and costs associated with international networking by setting up legal services or guarantee schemes, or by organising study visits and business forums for local entrepreneurs. They can also assist by supporting SMEs to upgrade their R&D, skills and technologies so as to facilitate the move into more knowledge-intensive networking. Inward foreign direct investment is also an important – though sometimes overlooked – source of new knowledge for the local economy, and policies should strive to embed it by developing linkages between FDI ventures and local firms and research organisations. A third way of triggering global knowledge connections is to promote the attraction and exchange of highly-skilled foreign labour.

Notes

1. Innovation systems may also have a sector dimension, and part of the literature is devoted to research on sectoral systems (Malerba, 2002). However, the analysis of knowledge flows within any specific sector goes beyond the scope of this chapter, except for the broad distinction between high-tech manufacturing and knowledge-intensive services introduced in the section on the spatial concentration of innovative industries.
2. These categories use NACE classifications. HTM comprises: aerospace (NACE 35.3); pharmaceuticals (24.4); computers and office machinery (30); electronics-communications (32); scientific instruments (33). KISA comprises: post and telecommunications (64); computer and related activities (72); research and development (73).
3. An overview on the ORBIS database is given in Annex 3.A1.
4. Patent protection can be sought abroad but the applicant must apply within one year of the date of the application first filed inside his/her country. These patent applications may link to the earlier filing date of the original application. This is known as “priority patent application”.
5. Based on international rules, the inventor has then up to 12 months to apply for protection of the same invention at another patent office (application). This means that it takes at least 18 months after the priority date for an invention to be published and it can take from 3 to up to 10 years for a patent to be granted.

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ANNEX 3.A1

The “ORBIS” Database

The scope of ORBIS for territorial analysis

The ORBIS database, developed and maintained by Bureau Van Dijk (BVD), is a source of business micro data. The database includes around 40 million companies, has a geographical coverage of up to 200 countries, and can consider all sectors of economic activity. There are no exclusion thresholds in terms of enterprise size, unless national limitations reduce the coverage of administrative data sources. Given national data source constraints, there is plenty of information at the firm level about sector, legal status, ownership and an array of financial and economic variables. The target population consists of firms with a corporate legal status, which means that micro firms with less than ten employees may be largely excluded from this database.

The value of the ORBIS database for territorial analysis rests on the possibility to rearrange firm-level data according to detailed company location. The information on company location relates to the complete address, which includes street, city and postal code. A wide range of entrepreneurship, economic performance and financial indicators can be calculated at the local level from the ORBIS database:

- Business demographic indicators, *e.g.* business birth rate; survival rate; distribution of firms by age, etc.
- Economic performance indicators, *e.g.* labour productivity; turnover per employee; growth rates according to turnover, value added or employment; productivity growth.
- Profitability indicators, *e.g.* profit margin; return on capital employed; return on total assets, etc.

While economic performance and profitability indicators can be calculated from the ORBIS database at different levels of industry or geographical breakdown using standard formulas, the calculation of business demographic indicators raises methodological problems. Limited information available in the ORBIS database on complex business demography events, such as mergers and acquisitions, makes the definition of a company profile over time incomplete, with spurious effects on the calculation of birth, survival, and death rates. Moreover, ORBIS naturally tends to overestimate real entry rates compared to real exit rates, as it is a continuously expanding database in terms of both international and national coverage. In this respect, information regarding the company's incorporation year is essential to disentangling real entry from increasing coverage effects.

As is well understood, the date of company incorporation merely reflects fulfilment of the administrative requirements to start a company. As a result, this event does not

necessarily imply the effective establishment of the company as an active economic unit, since in most cases a company becomes effectively active with a considerable time-lag (from one month to around one year) after its date of consolidation. In synthesis, the two different types of demographic information included in the ORBIS database – i.e. the date of company incorporation and the entry of a new company in the open panel dataset – tend respectively to anticipate and to postdate the real birth of a company.

Potential biases of territorial data calculated from commercial databases

The key territorial information included in a commercial database with firm-level data is the company's complete postal address. Since this information is provided at the maximum available territorial detail, it can be easily rearranged according to various administrative and functional territorial classification schemes.

The postal address relates to the place where the company has established its headquarters in order to carry out its legal and administrative obligation. Two different sources of *location bias* can be associated with the use of this information to produce territorial data. The first concerns use of the company instead of the local unit as the reference statistical unit. As already outlined in the previous section, the attribution of all company activities to a single location leads to incoherent territorial data in the case of multi-plant companies. The second source of location bias concerns use of the legal or administrative location of the company as a proxy for the place where the company concentrates its economic activity. For a number of reasons, including geographical proximity to financial and administrative institutions, the place where the company sets up its administrative or legal headquarters may diverge from the place where it carries out its core economic activities.

Besides location bias, other characteristics of commercial databases can indirectly alter the consistency of territorial data calculated from this sort of source.

Coverage restrictions concern the under-coverage of the set of companies extracted from the database with respect to the relevant target population, where the latter is conventionally assumed to include all active enterprises resident in a given country. Under-coverage is generally induced by threshold effects in which firms under a certain size are not included in the original data sets or by additional restrictions on revealing information on small areas imposed by the database provider.

A *structural bias* is a systematic deviation from the target population in the sample distribution of key economic variables (number of firms, turnover, employees, value added) by classification variables (economic activity, firm size and location). Such a deviation potentially generates biased economic indicators. Structural biases may be induced by a number of factors such as restrictions in the database and poor data quality consistency across industries, regions, and company-size classes.

A *selection bias* can be generated by the presence of selectivity criteria in the database, for instance the exclusion of all companies with some specific legal status. It occurs when the selection effect is significantly correlated with variables of interest for analysis. For instance, some key economic indicators, such as labour productivity or firm profitability, can be expected to be correlated with company characteristics such as legal form.

The extent to which statistical biases affect indicators

Territorial data in the form of absolute values are affected by coverage restrictions, structural bias and selection bias. This is because simple aggregations of micro data by relevant territorial units completely mirror the characteristics of input data.

Normalised territorial indicators, of which location quotients (LQ) are the most relevant example, may mitigate the negative impact of coverage restrictions and structural bias. If coverage restrictions or a structural bias homogeneously affect the spatial distribution of the sample – *e.g.* SMEs are underrepresented in the same direction and with the same magnitude in all territorial areas – the standard location quotient (LQ) tends to neutralise these sources of bias in the input data.

Dynamic territorial indicators, such as employment or labour productivity growth rates in a given period, present particular characteristics in terms of potential sources of bias as compared to static territorial indicators. While the consistency of static territorial indicators is altered by an uneven spatial distribution of the sample of micro data as compared to the target population, the consistency of dynamic territorial indicators is only affected by a dynamic change in the spatial distribution of the sample of firms not in line with the target population. This means in practice that dynamic territorial indicators are potentially more robust, and more resistant to different sources of bias than static ones. Nevertheless, a dynamic territorial bias can occur in some specific cases, since commercial databases are sometimes upgraded in terms of coverage and data quality. This database upgrading may induce a structural break that can alter the spatial distribution of companies by increasing or decreasing the magnitude of a static territorial bias.

(Spatial) econometric modelling may also represent a possible way to deal with different types of territorial bias in the data. In particular, if model regressors absorb some sources of bias, this econometric approach may provide interesting and unbiased results. However, the sources of territorial bias should not be correlated with the model error or the spatial covariate.

This discussion balances the unquestionable informative relevance of commercial databases to carry out non-standard territorial analysis with an insight into the methodological problems that may affect the consistency of these territorial data. The conclusion is that normalised static territorial indicators and dynamic territorial indicators are more robust with respect to different sources of territorial bias. Therefore, these types of indicators should be favoured.

ANNEX 3.A2

The LISA Methodology

The LISA (Local Indicator of Spatial Association) Methodology builds on Moran's I test, which is the most commonly used measure of spatial correlation:

$$I = \frac{n \sum_{i=1}^n \sum_{j=1}^n w_{ij} (y_i - \bar{y})(y_j - \bar{y})}{\sum_{i=1}^n \sum_{j=1}^n w_{ij} \sum_{i=1}^n (y_i - \bar{y})^2}$$

where (n) is the number of units, (\bar{y}) is the mean of the variable, (y_i) the variable value at location (i) and (w_{ij}) is a weight indexing location of (i) relative to (j). Moran's I can be interpreted as the correlation between variable y and its "spatial lag", formed by averaging all the values of y for the neighbouring units. The output of Moran's I varies between -1.0 and +1.0, where 0 indicates no spatial autocorrelation, and negative/positive values indicate negative/positive spatial autocorrelation. In the case of uneven spatial clustering, global spatial indicators, such as Moran's I, are found to be less useful and local indicators of spatial association (LISA) have been developed (Anselin, 1995). LISA is a direct extension of the Moran's I scatter plot, based on a variable and its spatial lag. Each quadrant of this scatter plot corresponds to one of the four different types of spatial association: high-high (HH); low-low (LL); high-low (HL); low-high (LH).

Moran's I and LISA differ in data employed and analytical scope. Moran's I is a global measure of spatial autocorrelation. It uses the complete dataset to derive a single value for the entire study region, and the overall pattern in the data is summarised in a single statistic. In contrast, LISA calculates a local version of Moran's I for each areal unit in the data. In particular, LISA shows statistically significant groupings of neighbouring areas with high and low values around each region in the study area. From an analytical perspective, LISA is a decomposition of the Moran global indicator. In particular, the sum of LISAs for all observations is proportional to global Moran's I, implying that LISA can be interpreted as an indicator of local spatial clusters (*i.e.* regions with similar values).

The LISA cluster maps developed for the USA provide a graphic representation of locations with a significant local Moran statistic classified by type of spatial correlation: a) high-high association (HH) – a county with many high-tech/KISA firms has neighbouring counties with many high-tech/KISA firms; b) low-low association (LL) – a county with few high-tech/KISA firms has neighbouring counties with few high-tech/KISA firms; c) low-high association (LH) – a county with few high-tech/KISA firms has neighbouring counties with

many high-tech/KISA firms; and *d*) high-low association (HL) – a county with many high-tech/KISA firms has neighbouring counties with few high-tech/KISA firms. The HH and LL locations suggest clustering of similar values (positive spatial correlation), whereas the HL and LH locations indicate spatial outliers (negative spatial correlation).

Univariate LISA is potentially highly informative in identifying potential clusters of firms and significant spatial associations between economic variables. However, the scope of these indicators should be limited to exploratory data analysis. In the absence of a well-defined spatial modelling framework, which includes control variables, LISA results can be affected by any type of spatial drivers, including spurious spatial correlation effects. The evidence of a spatial association between high-tech firms may be driven not only by co-location and interaction effects but also by spurious effects such as the presence of urban areas, industrial facilities, or a rich and efficient infrastructure endowment, that is to say, driven by “sharing” rather than “learning” agglomeration economies. Further analysis is needed to investigate these effects.

Chapter 4

Entrepreneurship Skills

This chapter describes the role of entrepreneurship skills in driving successful new venture creation and putting innovative initiatives into action in SMEs. Also discussed are the roles of tertiary and school education, vocational training and the use of knowledge-intensive service activities and small business support in the provision of entrepreneurship skills. Policy recommendations are provided.

The importance of entrepreneurship skills for SMEs and start-ups

Learning processes are at the core of entrepreneurship and SME development. They are essential for the formation of a new business, its survival and growth as well as for the upgrading of existing SMEs. Recent studies strongly underline this connection and signal as one of the qualities of successful entrepreneurs an exceptional capacity to learn and acquire knowledge from everywhere and everything that comes their way (Smilor, 1997; Minniti and Byrgave, 2001). Successful entrepreneurs are, and this also applies to small business owners and SME managers, “jacks-of-all-trades” (Lazear, 2004: p. 1). But what is it that entrepreneurs undertake and what skills permit it? The OECD defines entrepreneurship as human action in pursuit of the generation of value by identifying and exploiting new products, processes or markets. So a process of transforming opportunities into value is at the heart of entrepreneurship and applies to all of new firm founders, small business managers and SME workforces supporting introduction of innovations. It is built on cumulative learning and preparedness (Gibb Dyer, 1993; Gibb 2002, 2009), and this comes from entrepreneurship skills.

Three key questions guide the debate on entrepreneurship and SME learning and the role of public policy: What skills are needed? How is the necessary learning and preparedness acquired? How can entrepreneurship skills be fostered through government intervention? Entrepreneurship often appears to be spontaneous; there are numerous examples of successful entrepreneurs who did not undergo any special training or are self-taught. Yet people with viable business ideas can also be hindered in their steps into entrepreneurship by a lack of appropriate skills and behaviours. The evidence suggests that new entrepreneurs often face problems, for instance in presenting their business case to potential investors or in enforcing contracts, and that training and mentoring can make a difference. Small business managers can face problems in meeting new challenges for which their existing skills are limited. Also in the case of workers in existing SMEs, data confirm the existence of a skills and training problem holding back innovation. Across OECD countries, employees of SMEs participate in formal training activities to only half the extent that staff in large firms do (OECD, 2010b, forthcoming). Hence, formal skills and training policies have only a poor reach into the SME sector. Even informal competence-building measures have little take-up among low-skilled SME workers.

In the future there will be a need for new types of skills matching new types of jobs, as industry is transformed into a low-carbon economy. “Green and silver jobs” are expected to grow and there will be a marked shift towards business services jobs in advanced economies (CEDEFOP, 2008a). The level of skills is also expected to increase. Even in the most negative scenario, more than 80% of jobs by 2020 are expected to require medium and high levels of skills while low-skills jobs will continue to decline (CEDEFOP, 2008a). Entrepreneurship skills will also be at a premium. These are not “basic” skills; they are more sophisticated, requiring greater capacities to transform ideas into value in a changing business environment. Training for this skill is, first of all, not usually part of a formal education curriculum. Second, such skill is not usually brought out in the industry training

system. Therefore, looking towards the skills scenario of 2020, it is time to give entrepreneurship skills greater attention.

Skills for entrepreneurship¹

“Skills” refers to the abilities and capacities of people who perform tasks demanded of them in work organisations. These skills can be generic or specific in relation to functions at work such as managing people, computing, collaborating, dealing with risk and uncertainty or developing a new product or service (Tether et al., 2005). They are usually acquired through education, training and/or experience.

Although each task might require a series of skills for its successful accomplishment, skills at work can be broadly classified into the eight groups shown in Table 4.1. As working environments and society develop, this classification will need to be adjusted. For example, “green skills” is a recent addition, but this OECD classification is a good reflection of the current working environment. There are three broad skills categories: basic, advanced and converging. *Basic* skills are those more generic and routine skills found in occupations present in most industries and organisations. *Advanced* skills have a higher component of knowledge intensity and can be found in technical occupations and management positions, but they also refer to social and communication skills needed for team work, and specific language and cultural skills that are of growing importance in certain multicultural working environments. *Converging* skills require several of the other skills plus skills specific to entrepreneurship, or for adjusting to the green transformation of jobs or indeed new green jobs.

Entrepreneurship skills, as defined in Table 4.1, are specific skills that are required for creating and running new business ventures or innovative projects in existing firms. They involve risk assessment and warranting, strategic thinking, self-confidence, the ability to make the best of personal networks, motivating others to achieve a common goal, and the ability to deal with other challenges and requirements. Although hard to pin down, they are essential for the success of new firm creation and innovation in existing SMEs.

Relationship between skills and innovation

The degree to which the different skills groups influence or determine innovation needs to be analysed with respect to the four main types of innovation: product innovation, process innovation, organisational innovation and marketing innovation. Clearly, advanced/knowledge-intensive skills and converging skills are more important to innovation than basic skills, particularly when they are provided as an in-house or external service to drive or complement a particular development. For example technical engineering services can be crucial for radical innovation in manufacturing and services sectors (Martinez-Fernandez and Miles, 2006).

Entrepreneurship skills, which are part of this broad group, include two components related to innovation: an active component comprising the entrepreneur’s propensity to drive innovation, and an absorptive component comprising the entrepreneur’s capacity to recognise and welcome innovation delivered by external factors (Green et al., 2007). Entrepreneurship involves both the impulse to create and innovate and the recognition of innovation from others and the desire to implement innovation (e.g. starting a new venture, finding new markets, introducing new organisational models) and motivate others to succeed in its implementation. The requirements for successful entrepreneurship can be further unbundled into the three elements set out in Box 4.1: knowledge, skills and attitudes.

Table 4.1. **Classification of skills at work**

BASIC SKILLS	
Generic	General IT user skills, oral communication, written communication, numeracy and literacy, office administration skills.
Routine	Repetitive, more basic, low knowledge-intensive skills (<i>e.g.</i> packing chocolates in boxes in a factory line, making copies using a simple photocopy machine).
ADVANCED/KNOWLEDGE INTENSIVE SKILLS	
Technical	Skills for problem solving; design, operation, rethinking and maintenance of machinery or technological structures or marketing plans; ICT professional skills, research skills (<i>e.g.</i> work developed by engineers, researchers, marketing professionals) and drafting skills.
Management	Skills for business planning, regulations and quality control, human resources planning (recruitment, training and skills development) and allocation of resources (<i>e.g.</i> management of intellectual property, financial management, firm health and safety operations).
Social and communication	Motivation and appreciation of people's characteristics for working individually and in teams; customer handling; appreciation and communication through networks and value-chain partners (<i>e.g.</i> ability to reach consensus and agreements, ability to recognise an individual's talent and a team's contributions to common goals).
Multi-language and cultural	Ability to communicate in more than one language, appreciation of the cultural characteristics of different ethnic groups (<i>e.g.</i> communications by a customer representative selling products/services in different countries, capacity to incorporate cultural differences in negotiations).
CONVERGING SKILLS	
Entrepreneurship	Specific skills for creating and running new business ventures and innovative projects in existing firms, such as risk assessment and warranting, strategic thinking, self-confidence, the ability to make the best of personal networks, motivating others to achieve a common goal, co-operation for success, and the ability to deal with other challenges and requirements met by entrepreneurs.
Green	Specific skills to modify products, services or operations due to climate change adjustments, requirements or regulations (<i>e.g.</i> water purification and site remediation planning/engineering in mining, solar panels installation, wind turbines design, green management, carbon capture and storage techniques).

Source: OECD, 2010b, forthcoming.

Box 4.1. Core characteristics of entrepreneurs

Knowledge. An entrepreneur is able to identify and extract knowledge that is *relevant*. They are tuned in to recognise available opportunities that can be significant for their personal, professional and/or business activities.

Skills. An entrepreneur possesses entrepreneurial skills, including strategic thinking, self-confidence and the ability to deal with challenges and uncertainties. In particular, the entrepreneur needs to master the ability to *co-operate for success* with others – a specific capability different from other basic and advanced skills needed in a working environment. The skill to co-operate for success involves the capacity to undertake successfully the following activities:

- planning, organising and communicating;
- project development and implementation;
- team building and attribution and rewarding of success;
- recognition and proactive orientation to change and innovation;
- risk assessment and warranting.

Attitudes. An entrepreneur uses initiative, a positive approach in the face of positive or adverse change, and an adaptability to learn (and unlearn) from life situations inside and outside the work environment.

Source: Adapted from Green *et al.*, 2007.

Entrepreneurship skills are considered here as converging, because they require the integration of several other skills, with both a horizontal understanding of business development and a vertical specialisation in one or more fields related to core competitive advantage. One of the definitional difficulties is that these skills are relevant not just to budding entrepreneurs but also to existing SME managers and to wider SME workforces. Indeed, with respect to the latter, firms are now more aware of the need to train their workforce in entrepreneurship skills. For example, a recent survey of SMEs in New Zealand shows that entrepreneurship activities in the firm are the activities most linked with firms' skills upgrading initiatives (OECD, 2010b, forthcoming).

How are entrepreneurship skills acquired?

Entrepreneurship skills are best understood in relation to lifelong learning, where the individual acquires skills through their life history. In formal education, entrepreneurship training can be provided at different levels, from primary and secondary schools, to vocational colleges and tertiary and university education. The focus and objectives may of course vary. Entrepreneurship education in schools tends to be about embedding an entrepreneurial mindset. The aim is to foster more positive attitudes to this career road that students may carry with them into their later careers, making the decision to start or run an enterprise more probable and increasing people's willingness to be enterprising at work. Entrepreneurship teaching in higher education also seeks to do this, but may in addition seek to impart more technical-related skills such as in management and business planning.

However, it is often argued that the working environment rather than formal education is where "entrepreneurs" learn the most. This section therefore explores entrepreneurship skills provision both in the formal education system (focusing on higher education, vocational education and schools) and in work environments (focusing on informal entrepreneurship learning at work through the involvement of workers in knowledge-intensive service activities and entrepreneurship training by SME support organisations).

Universities and higher education institutions

Entrepreneurship teaching

OECD work shows that third-level (higher education) entrepreneurship teaching activities are increasing (Potter, 2008). Until recently, entrepreneurship education was very rarely provided. Now, however, it is a rapidly evolving field with emerging new approaches that meet increased demand from students and the need for tailored teaching. More universities, faculties and students are becoming involved and the variety of content and pedagogies is increasing. There are nonetheless some international differences in the extent and nature of entrepreneurship teaching provision, with North American universities leading the way in introducing and refining approaches.

Survey work reported in Solomon (2008) examined the types of entrepreneurship teaching offered in the United States. This showed that the most common courses in the broad field of entrepreneurship were in "entrepreneurship", "small business management" and "new venture creation". In order, the most common methods of teaching methods were business plans, discussions, guest speakers, case studies and lectures by business owners. Some 60% of instructors developed their own sets of course materials. Structures

for entrepreneurship teaching are also often in place, with approximately one-third of colleges and universities having an entrepreneurship centre, and one-third having an entrepreneurship professor or chair. Management of entrepreneurship courses tended to be housed in existing academic departments (41%) or business schools (31%); although entrepreneurship centres or departments of small business and entrepreneurship were managing 23% of entrepreneurship courses.

Research comparing entrepreneurship education across universities from the United States, Canada and Denmark suggests that entrepreneurship education provision in US universities is relatively advanced (Hoffman *et al.*, 2008). Entrepreneurship education was compared among selected universities in the three countries, on five important dimensions of teaching activities: educational scope (the breadth of programmes offered, how courses are spread across undergraduate and postgraduate levels, etc.); educational set-up (the extent to which guest lecturers, practical experiences, private businesses, and experimental teaching activities are involved, etc.); institutional characteristics (interaction between faculties, prioritisation of entrepreneurship, allocation of funding, incentives to students and teachers, etc.); outreach (scope of university networks – co-operation with incubators, alumni networks, access to experienced practitioners, access to venture capital) and evaluation (degree of monitoring and assessment of entrepreneurship activities). The work found that on average, the US universities were strongest on these five dimensions, although Canada performed equally well in terms of educational scope and outreach. The Danish universities were weaker on all dimensions. For example, at Stanford University and Cornell University in the United States, student participation in entrepreneurship programmes was 15% and 20% respectively. In comparison, the participation rate at the Canadian universities was between 5% and 7%, while none of the Danish universities reported participation rates above 2.5%.

Despite the rapid growth in entrepreneurship teaching in higher education, there are a number of issues that need to be addressed in adapting universities to the needs of a more entrepreneurial economy (Potter, 2008). Two major issues are scaling up provision in order to offer courses to a larger number of students, and shifting towards more interactive and experiential teaching methods in the entrepreneurship domain.

In terms of provision, while many universities now offer entrepreneurship teaching, the numbers of students participating remains a small share. This is associated with two barriers. Firstly, entrepreneurship teaching is often confined to certain departments and centres, in particular business and engineering schools and new university centres of entrepreneurship, whereas potential entrepreneurs come from a wide variety of disciplines. Secondly, entrepreneurship teaching is often not well rewarded, either for students or for staff. Courses are often offered to students as optional complementary modules with no credits for their degrees. Teachers are hard pressed to deliver on their core programmes – the basis for recruitment and promotion – and those not working on core activities can find it difficult to justify strong investments in what may be seen by their hierarchies and peers as side projects, whatever the expressed interest of the students.

Teaching approaches must also evolve to accommodate how entrepreneurship skills are best learned rather than be tethered to traditional classroom forms. Many interactive, reality-based and experiential approaches have been developed, including virtual and real business creations, business plan competitions, strategy games and discussions with entrepreneurs. These methods are better placed than classroom lectures to develop

entrepreneurial behaviours. The use of these methods can be promoted by greater networking among universities and faculties. Inappropriate constraints to the participation of entrepreneurs in entrepreneurship teaching programmes are another challenge.

Entrepreneurship support frameworks

A recent OECD study in eastern Germany revealed that higher education institutions in the six eastern German regions (*länder*) are actively engaged in supporting entrepreneurship not just through entrepreneurship teaching but also through support for enterprise start-ups by students and staff. Indeed, entrepreneurship teaching can have a greater positive impact on the rate of new firm creation if closely linked to start-up support. The eastern German universities either use government schemes, private sector funding or a combination of both to sustain and expand this aspect of their “third mission”. Half of them have or are about to establish an entrepreneurship chair or a professorship. More than two-thirds have established dedicated start-up support services, in the form of entrepreneurship centres and technology transfer units, which offer would-be entrepreneurs and those already in the start-up process consultation and access to networks and premises. In addition, the majority of the universities provide direct support to start-up: mentoring, grants, incubation facilities. A clear strength to build on is the presence of people – teachers, researchers, and university staff – with a clear interest in entrepreneurship support. All of these developments demonstrate the importance given to the creation of new growth potential ventures out of universities.

The study identified the important role of public policy in initiating and enhancing entrepreneurship support in universities across the following six areas.

- *Strategy*: There is clear role for public policy in “opening up” universities towards their “third mission”, which ideally should be part of their key missions – research and teaching. Clear incentives and rewards are needed for professors, researchers and students to engage. Public policy can facilitate their introduction by adding “entrepreneurship support” to the list of performance criteria on which universities are assessed.
- *Resources*: Public kick-off funding for entrepreneurship support infrastructure is common to many OECD countries. Yet, it is the balance between a minimum long-term financing for staff costs and overheads and the openness to private sector involvement in the financing of entrepreneurship chairs and incubation facilities which proves to be successful.
- *Support infrastructure*: Universities will need to find their place in existing start-up and entrepreneurship support systems. Networking and incentives for clear referral systems can be useful to increase the effectiveness and efficiency of start-up support and to reduce duplication, confusion and waste of resources.
- *Entrepreneurship education*: The exchange of good practice in creative teaching methods allows for improvement and innovation. Universities need to have a genuine interest in such exchange, but public policy can facilitate the creation of platforms, publications, teaching material, etc. Another important area for public policy intervention is curricula development and the integration of entrepreneurship courses, such as creativity classes.
- *Start-up support*: A key success factor for university entrepreneurship support lies in private sector collaboration. Universities can create a protected environment for nascent entrepreneurship. This can be an important stimulus for students and researchers to make a first step towards the creation of a venture. Yet, in order to avoid “over protection”, early exposure to market conditions is advisable.

- **Evaluation:** Public policy organisations and universities will need to work “hand in hand” in developing a monitoring and evaluation system which demonstrates the socio-economic impact of university entrepreneurship support and reveals needs for changes.

The work has also developed a criteria list of good practice across the six dimensions from an assessment of existing literature and case studies of university entrepreneurship support. Policy makers and university management can use these criteria to self-assess and re-orient their current approaches (Box 4.2).

Box 4.2. Entrepreneurship support in universities: Criteria for good practice

Strategy

1. A broad understanding of entrepreneurship is a strategic objective of the university, and there is top-down support for it.
2. Objectives of entrepreneurship education and start-up support include generating entrepreneurial attitudes, behaviour and skills, as well as enhancing growth entrepreneurship (both high-tech and low-tech).
3. There are clear incentives and rewards for entrepreneurship educators, professors and researchers, who actively support graduate entrepreneurship (mentoring, sharing of research results, etc.).
4. Recruitment and career development of academic staff take into account entrepreneurial attitudes, behaviour and experience as well as entrepreneurship support activities.

Resources

1. A minimum long-term financing of staff costs and overheads for graduate entrepreneurship is agreed as part of the university’s budget.
2. Self-sufficiency of university internal entrepreneurship support is a goal.
3. Human resource development for entrepreneurship educators and staff involved in entrepreneurship start-up support is in place.

Support infrastructure

1. An entrepreneurship-dedicated structure within the university (chair, department, support centre) is in place, which closely collaborates, co-ordinates and integrates faculty-internal entrepreneurship support and ensures viable cross-faculty collaboration.
2. Facilities for business incubation either exist on the campus or assistance is offered to gain access to external facilities.
3. There is close co-operation and referral between university-internal and external business start-up and entrepreneurship support organisations; roles are clearly defined.

Entrepreneurship education

1. Entrepreneurship education is progressively integrated in curricula and the use of entrepreneurial pedagogies is advocated across faculties.
2. The entrepreneurship education offer is widely communicated, and measures are undertaken to increase the rate and capacity of take-up.
3. A suite of courses exists, which uses creative teaching methods and is tailored to the needs of undergraduate, graduate and post-graduate students.

Box 4.2. Entrepreneurship support in universities: Criteria for good practice
(cont.)

4. The suite of courses has a differentiated offer that covers the pre-start-up phase, the start-up phase and the growth phase. For certain courses active recruitment is practised.
5. Out-reach to alumni, business support organisations and firms are a key component of entrepreneurship education.
6. Results of entrepreneurship research are integrated into entrepreneurship education messages.

Start-up support

1. Entrepreneurship education activities and start-up support are closely integrated.
2. Team building is actively facilitated by university staff.
3. Access to private financing is facilitated through networking and dedicated events.
4. Mentoring by professors and entrepreneurs is offered.
5. Entrepreneurship support in universities is closely integrated into external business support partnerships and networks, and maintains close relationships with firms and alumni.

Evaluation

1. Regular stock-taking and performance checking of entrepreneurship activities is undertaken.
2. Evaluation of entrepreneurship activities is formalised and includes immediate (post-course), mid-term (graduation), and long-term (alumni and post-start-up) monitoring of the impact.

Vocational education and training

Vocational education and training (VET) is a type of task-oriented technical education widely used to prepare future self-employed entrepreneurs and SME employees. Vocational training colleges have traditionally had a craft focus. Many of the craft occupations are in practice pursued by the self-employed and people working in micro businesses, for example plumbers, painters, electricians and information technology specialists. Other people go on to work in larger SMEs and may benefit from training provided before employment or in lifelong learning activities whilst in employment.

In addition to courses entirely taught in vocational education institutions, an important element of the system is apprenticeships, where the trainee is based mainly with an employer. Apprenticeship programmes are widespread, with countries like Denmark, Australia, Germany and France often being referred to as good practice. Apprenticeships combine classroom teaching, often in vocational training institutions, with on-the-job training. In France, for example, since 1925 firms have been obliged to pay an apprenticeship tax (0.5% of the pay-roll), up to 40% of which is earmarked for apprenticeships. All firms (apart from those employing apprentices) pay this “apprenticeship tax” (Stone and Braidford, 2008). Germany furnishes a second example – there the VET dual system includes on-the-job training or in-company training combined with part-time vocational school training. Since 2002 the demand for apprenticeship positions has constantly exceeded their supply, both in eastern and western Germany (Zwick, 2007). The German model is considered effective, contributing to innovation by nurturing the skills needed by the firms. As a third example,

the “Australian Apprenticeships”, bring together the traditional apprenticeship and the traineeship systems. This initiative has been especially successful, escalating from about 120 000 apprentices in 1995 to over 400 000 by 2003. The numbers in Australian Apprenticeships represent 3.5% of the working population, one of the highest rates of contracted training in the developed world. One reason for the success of these programmes is financial incentive from federal and state governments. These incentives bring employer commitment to the system; they also create and fund intermediary bodies such as Group Training Organisations and New Apprenticeship Centres, rather than leaving the “selling” of the programmes to training providers (Smith and Smith, 2007).

For many, the natural way for entrepreneurs to learn is by doing (Stenström and Tynjälä, 2009), and for this reason the “apprenticeship” could be seen as a vehicle to promote entrepreneurship skills. Traditional apprenticeship programmes aim to train skilled employees and do not explicitly train entrepreneurship skills, however, and would need to be expanded to impart entrepreneurship skills in a wider sense.

Interaction with vocational training institutions tends to be more important for skills development in small firms than in larger ones, since the latter can often afford to run their own apprenticeship programmes. However, improving entrepreneurship skills in SMEs through vocational education and training is challenging due to obstacles to SMEs in accessing formal training. Schemes such as training leaves are not fully taken up by employees. Participation in voucher-type schemes is high among employees, but on average only 50% of the amount of finance available for training is used and there is a low participation from micro and small enterprises and from unskilled, semi-skilled and older employees. Training packages and apprenticeship schemes have been very successful in some countries as employers use the national qualification system to upgrade the skills of their workforces. However, in general, voluntary policies have had greater success than compulsory measures (OECD, 2010a, forthcoming).

It is clear that incentives for training are often needed to engage small businesses owners and self-employed people. It can be argued that this reflects an inappropriate training supply in vocational training institutes which is too often designed around conventional norms of business management education and not enough around the motivations of entrepreneurs. Gibb (2009) argues that a distinction must be made between manager development as traditionally exercised by vocational training colleges – a teaching de-contextualised from developing the individual – and management development, which is what entrepreneurs demand – i.e. development of the manager via a process of developing the business. The key emphasis of the entrepreneur is on the “need to know” involved in the start-up process: finding an idea; validating it; determining on what scale it is necessary and desirable to operate; identifying what resources – physical, knowledge, financial – are required; negotiating for these resources; setting up the business to meet administrative and regulatory requirements; and ensuring survival until the business proves its viability. Meeting the challenge of providing more relevant entrepreneurship teaching in vocational education therefore requires changes in programmes and pedagogy to focus on teaching the “how to”. The business plan should not be as central to the teaching process as is usually the case, rather curricula and assessment materials should focus on the problems and opportunities that arise at various stages of business development. Programmes should not be overloaded with information that will not be used in practice – such as regulatory environments, industry trends, balance sheet and ratio analysis, venture capital finance, product life cycles and so on.

And more experiential learning methods should be developed – for example drawing on the entrepreneurship skills created in drama, debating, drawing and networking exercises.

The literature also offers some suggestions about how vocational education and training needs to be adapted to better meet the needs of SME workforces. Currently, workforce development measures are not flexible enough to be fully taken up by SMEs. An evaluation conducted by Brummelkamp *et al.* (2005) made a number of recommendations: policy measures should target both workers and enterprises, not providing financial incentives alone but also allowing freedom of choice and market transparency; administrative burdens should be limited; and the policy instruments should be appropriate to the policy context. In addition, there should be transparency and clarity of objectives and information to both employers and employees and provision of standardised accreditation.

Another step that can be taken to fit the vocational training offer more closely to what is demanded by SME managers is the introduction of “innovation bootcamps”. This might involve a series of engaging online or seminar-based workshops to jumpstart innovation, entrepreneurship and creativity in an SME. Owner-managers do not see themselves as having time to participate in long academic styled programmes but weekend “bootcamps” would have greater attractiveness and practical outcomes (Cooney, 2009).

Schools

The need for people to have new skills for entrepreneurship is accompanied by a need for shifts in school curriculums and this is occurring slowly in many countries, encouraged by national governments and international organisations. As Cooney (2009) points out, this is not just about business start-up or positive attitudes to entrepreneurs and entrepreneurship. It is also based on the view that students who receive entrepreneurship education as part of their schooling show improved school attendance and educational attainment, have increased problem-solving and decision-making abilities, improved interpersonal relationships, teamwork, money management and public speaking skills, are more likely to find employment and have enhanced social psychological development (self esteem, self efficacy, etc.) (Henry *et al.*, 2003). Hence the goal is not to get all students to start their own businesses, but to give young people the ability to think positively, to look for opportunities to make things happen, to have the self-confidence to achieve their goals, and to use their talents to build a better society economically and socially (Cooney, 2009).

The European Commission Small Business Act for example invites European Union Member States to:

- Introduce entrepreneurship as a key competence in school curricula.
- Ensure that the importance of entrepreneurship is reflected in teacher training.
- Step up co-operation with the business community for entrepreneurship education at all levels.

The emphasis is therefore at three levels: introducing entrepreneurship into the curriculum, developing teaching methods appropriate to the subject (such as virtual business creation games) and drawing on entrepreneurs in the business community as resources for teaching. Furthermore, entrepreneurship teaching should not be separated from the study of other disciplines, but incorporated into a wide range of teaching activities.

A number of European countries have already recognised the benefits of an entrepreneurship education and implemented policies to ensure that school students receive it (Cooney, 2009). In Finland for example, entrepreneurship education is a thematic entity, not a subject. In 2004 the Finnish Ministry of Education produced an Action Plan for Entrepreneurship Education that covered all levels of the education system, and working together with the Ministry of Trade and Industry appointed a working group entitled “From Higher Education Institutes to Entrepreneur”. The Ministry of Education also appointed an Entrepreneurship Steering Group to ensure that the agreed programme of action was properly implemented. In Norway, entrepreneurship is included in the curricula at all levels, and three government departments are involved in its delivery (Ministry of Education and Research, Ministry of Trade and Industry and Ministry of Local Government and Regional Development). In addition to co-operation between ministries and directorates, there are also partnership agreements with businesses as part of the action plan. The primary goals of the Norwegian strategy are to develop knowledge and competences in students related to entrepreneurial activities, strengthen young people’s belief in and capabilities of their own creative forces, and foster a culture for entrepreneurship. Scotland has also launched an entrepreneurship education called “Determined to Succeed” (Box 4.3).

Box 4.3. Scotland’s “Determined to Succeed” entrepreneurship education strategy

Scotland’s “Determined to Succeed” entrepreneurship education strategy details the actions that needed to be taken by the Scottish government to embed entrepreneurship into the national schooling system. The strategy is part of a long-term drive to build an enterprise culture in Scotland that will give young people a better chance of realising their full potential and will give the economy of Scotland the skills, new ventures and entrepreneurs it needs for growth. As part of its action plan, the strategy contains a section entitled “What success will look like” which highlights how the programme will be measured. Obviously, the more important indicators cannot be measured in the early years of the programme but it demonstrates a political commitment to long-term planning and the future development of the country. Local authorities lead on the delivery of the action plan, working in partnership with key players including the business community, HM Inspectorate of Education, Learning and Teaching Scotland, Careers Scotland and the Scottish Qualifications Authority. Every local authority has an action plan setting out their approach to implementing “Determined to Succeed” in a local context, and all have staff with responsibility for delivering enterprise in education. An annual reporting process ensures examples of good practice can be shared and support can be channeled appropriately. All local authorities have communications strategies which keep parents informed of how they can support their child’s learning.

A report by HM Inspectorate of Education (2007) highlighted the four capacities that are being developed through the strategy and these are:

(1) Successful learners

- are skilled in generic processes and activities such as core skills;
- appreciate the relevance of what they are learning;
- can use experiences in enterprise to reflect on other learning and make connections;
- are self-motivating and accept setbacks as learning experiences;

**Box 4.3. Scotland's "Determined to Succeed"
entrepreneurship education strategy (cont.)**

- can generate and act upon original ideas;
- understand transitions throughout life and the importance of making connections between past, present and future experiences.

(2) Confident individuals

- have a "can do", "be all you can be" attitude;
- are self-aware and can reflect on their own particular strengths, development needs, interests and aspirations;
- are skilled in planning, influencing, negotiating and teamwork;
- are creative, flexible and resourceful in managing change;
- have experienced challenging, entrepreneurial projects;
- have developed a constructively critical attitude towards commerce and business;
- take imaginative and informed approaches to problem solving involving calculated risks.

(3) Responsible citizens

- have knowledge and understanding of the nature of work and social and economic enterprise;
- understand the roles, rights and responsibilities of individuals as employees, managers, employers, entrepreneurs, investors, customers and global citizens;
- are willing to take responsibility for and accept the consequences of their own actions;
- understand the positive and negative contributions of technology and business to society;
- have knowledge and understanding of personal finance, as well as national and global economies.

(4) Effective contributors

- have an understanding and appreciation of the world of work, the value of different occupations and entrepreneurship and their contributions to the economy and to society;
- have knowledge and understanding of wealth creation and wealth distribution both nationally and globally;
- are willing to take the initiative and lead;
- actively engage in school and community life in a positive manner to the benefit of the school and the wider community;
- understand the roles and contributions to society of voluntary organisations;
- have experience of engaging positively with a wide range of people in society.

In examining the different entrepreneurship education policies currently being pursued by different governments, it can be argued that the Scottish strategy is among the clearest in terms of what it wishes to achieve, how it wants to achieve its goals, what stakeholders needs to be involved, and what regular measurement systems need to be embedded into the overall process.

Further details of the Scottish strategy on entrepreneurship education can be found at www.ltscotland.org.uk/enterpriseineducation/index.asp.

Source: Cooney (2009).

The European Commission has recently assessed the degree to which entrepreneurship has been included as a key competence in national curricula for secondary education in various European countries in line with the Oslo Agenda for Entrepreneurship Education in Europe (European Commission, 2007). It found that in several countries (including Spain, Finland, Poland and the UK) entrepreneurship is already a recognised objective and is embedded explicitly in national curricula, but that despite an increasing spread of elements of entrepreneurship in secondary teaching, only a small minority of countries have well established entrepreneurship education in the curriculum. Embedding entrepreneurship further into school teaching will require in addition incentives and support to teachers involved in entrepreneurship activities as well as support to non-profit organisations that are active in this area.

Training in SMEs

Studies of training outcomes have clearly shown the positive effect of general training by SMEs. Examples are regular programmes to train new employees or potential team leaders and project management and foreign language language training (Markowitsch and Hefler, 2007). However, encouraging SMEs to train remains a key policy challenge.

Across the EU-15 countries, data from the Eurostat Continuing Vocational Training Survey show that employees in enterprises with less than 50 employees receive significantly less in-company training than employees in larger firms. This remains true in countries reputed for their high levels of training culture such as Denmark, the Netherlands, Norway and Sweden. In terms of annual volume of hours spent by employees in training, the average in firms with less than 50 employees is about half that of large firms with 1 000 employees and more, and about two-thirds of the average of all firms. In some countries a relatively high proportion of small firms with between 10 and 49 employees provide some formal training for their employees: Denmark (48%), Finland (38%), the Netherlands (36%), Sweden (51%) and the United Kingdom (35%), but even here the participation rates are much smaller than for larger firms (Denmark 56%, Finland 62%, the Netherlands 42%, Sweden 68%, United Kingdom 52%). Furthermore, a number of countries have very few small firms providing any formal training: Greece (3%), Hungary (7%), Italy (11%), Poland (8%), Portugal (4%) and Spain (10%). The participation rate in these countries for large firms of at least 1 000 employees is much higher (Greece 33%, Hungary 26%, Italy 52%, Poland 46%, Portugal 43%, Spain 46%) (OECD, 2010b, forthcoming).

There are also important inequalities in training access in SMEs in relation to the age, education and type of occupation of the individual concerned. Analysis shows a systematic access gap in a range of OECD countries: younger, better educated workers in high-skilled occupations (such as managers, professionals and technicians) have greater access to training opportunities than less-educated older workers and workers involved in routine tasks (OECD, 2003; 2008a).

One of the reasons that SMEs undertake less formal training than large firms is cost. Examples of cost issues are the paperwork involved, the cost of preparation and planning of activities, investment in the training itself, and the adverse effects on management of workloads. The result is that employees of small and micro firms can miss out on any type of training beyond day-to-day informal learning on the job. Such an emphasis on employee-driven learning and trial-and-error behaviour can obviously be detrimental to both the firm and the employee.

SMEs, however, can be highly innovative, despite limited investment in formal training and strategic planning of training (Muller and Zenker, 2001). For example, entrepreneurial skills can be acquired through in-house team work for development of a new product. They may also be acquired when an SME collaborates with other firms in the industry value chain to introduce new ways to operate or to market a product or service. This provides an opportunity for employees to learn from others in different companies. In addition to enhancing SMEs' efficiency, innovative potential and growth prospects, inter-firm linkages in the value chain are therefore a significant feature for capacity building of SMEs (OECD, 2008), but one that is not currently addressed by formal training programmes.

KISAs and learning at work

Learning at work or learning by doing in SMEs can also be stimulated by activities with a high knowledge component, undertaken in collaborations between SME employees and external professionals or in SME employee work groups (OECD, 2006; Martinez-Fernandez and Martinez-Solano, 2006). At the heart of this are knowledge intensive service activities (KISAs) such as electronic commerce, information technology, market research, and industry development advice.

KISA projects can be undertaken by SMEs with outsiders such as business consultants, clients and suppliers in the firm's network and/or value-chain, which could involve either formal (contractual) and/or informal (networking) activities. External professionals introduce their embedded knowledge to the SME and work with its employees in pursuit of new or improved solutions to current needs of the firm – at the same time increasing the skills, knowledge and competencies of employees in significant ways. SME work with external KISA suppliers is important because the professionals brought in apply their expertise to the management of increasingly complex technologies, rapidly changing operational environments and evolving business concepts (OECD, 2006, p. 47). This results in “co-production of knowledge” by the different workers involved, constituting a critical nexus of today's networking economy. Alternatively, internal projects can be undertaken, for example to improve work processes (such as quality control, marketing and product development) with SME employees learning from or together with their co-workers. Many entrepreneurship skills are acquired in the process of knowledge co-production; they range from analytical and problem-solving skills to creative thinking to integration of technical knowledge. Indeed, KISA activities could also be understood as informal learning resulting from activities related to work that are not organised in terms of learning objectives, learning time or learning support (CEDEFOP, 2008b).

Can KISAs be associated with formal or informal training on the job? “Formal training” here refers to learning that occurs in an organised and structured environment (*e.g.* in an education or training institution or on the job) and is explicitly designated as learning (in terms of objectives, time or resources). Formal learning is intentional from the learner's point of view; it typically leads to validation and certification. “Informal training” refers to learning resulting from daily activities related to work, family or leisure. It is not organised or structured in terms of objectives, time or learning support. Informal learning is in most cases unintentional from the learner's perspective (CEDEFOP, 2008b). KISAs can be placed within the informal training category although it includes a greater component of knowledge intensity and interactive skills.

KISAs are embedded in many occupational profiles and tasks performed at work, not only high-knowledge intensive tasks but also more routine, low-knowledge tasks (“knowledge” and “skills” can be embedded in every working activity). Until now the attention of policy makers has tended to be on the contribution of knowledge workers to entrepreneurship and innovation. However, when opportunities are created, routine workers can also make an important contribution to transforming SME activities to a context of increased knowledge intensity and innovation activity. Innovative firms are moving towards recognising the important contribution that routine workers can make both in innovative outputs and in skills acquisition for the firm. For example, “Advance Metal Products” (an Australian SME specialised in metal work and machinery) involves floor workers with engineers in activities oriented to find new uses for old machinery. The skills acquired in the process range from analytical, problem solving and communication skills to creative thinking and integration of technical knowledge. Although not formally recognised by standard qualifications, such skills constitute a competitive advantage for these routine workers in the labour market. Working with engineers also helps routine employees to further analyse their own activities and how they can better be performed (Martinez-Fernandez, Receretnam and Sharpe, 2007). These types of KISA – that act as a specialised “service” for the firm and where the component of knowledge production is high – are an example of the sophisticated entrepreneurship skills that can be learned at work and by employees usually classified as working in “low-knowledge intensity” tasks.

KISAs are still a relatively unexplored area despite their importance to the new interactive skills required in the work place. Further development is needed, especially in the context of the new green growth economy and in occupations that depart from previous rigid conceptions of job profiles (Miles et al., 2008). Engaging with KISAs is a way SMEs acquire knowledge and new entrepreneurship skills through formal (contractual) and informal (networking) activities, where professionals interact with their embedded knowledge in pursuit of new or improved solutions to current needs of the firm; they thus fuel innovation and growth of the firm and employment. These activities are largely performed in-house with external actors such as business consultants or other professionals from the SME’s network and/or its value chain. As KISAs are undertaken to quickly respond to needs, there is no accreditation or contrasted evaluation, and little is known of their effects and impact on skills upgrading and employability of the labour force. Entrepreneurship policies should pay more attention to this way of developing entrepreneurship skills, however, so that measures can better correspond to how SMEs actually upgrade skills that are relevant to their production, operations and entrepreneurship processes.

One way of encouraging this would be to introduce innovation vouchers, which enable SMEs to purchase outside KISAs on a consultancy basis in support of an innovation objective. Enterprise Ireland for example has introduced vouchers worth 5 000 EUR to enable SMEs to get support for new product and process development, new business model development, new service delivery and customer interface, new service development, tailored training in innovation management or innovation/technology audits. Similar schemes are reported in Chapter 2 for Greece, the Netherlands, Portugal, the United Kingdom and Slovenia.

Small business support

There is a number of small-business-specific support programmes aimed at developing entrepreneurship skills in SMEs (although as yet there are no specific programmes supporting KISAs). In particular, the kinds of training offered by local chambers of commerce and business associations, and the investment activity of local governments in private sector development, for instance through smart infrastructure such as HEI networked business incubators, can make a difference in training take-up rates.

Business succession

Business succession, that is, the transfer of businesses from retiring owners to new owners, is an interesting field for policy that can combine elements of business start-up support with upgrading of an existing firm. A recent study by Itkonen (2009) of a Finnish entrepreneur training programme to facilitate business succession found that a combination of theoretical knowledge acquired formally in the classroom via VET providers and practical knowledge acquired on the job was successful in providing entrepreneurial skills to novices. One of the reasons is the opportunity that on-the-job training gave to novice entrepreneurs to discuss work problems and test out solutions with real entrepreneurs and experts.

SME management training

According to a European Commission document on management capacity-building policies for SMEs, a common issue throughout Europe is that an overwhelming majority of SMEs do not have structured training schemes for managers. Access to training is likely to be unplanned, unstructured, and limited both in terms of number of courses and in number of training days or hours (European Commission, 2006). This has adverse effects on the capacity of SMEs to adapt to new markets and technologies. There is also evidence linking lack of management skills to SME failure (Dawe and Nguyen, 2007) and of a relationship between management training and better overall performance of the firm (OECD, 2002).

For these reasons a series of programmes and initiatives are directed to management training in SMEs, which is defined as “group-taught formal learning, external to the firm, provided for owners and managers of independent enterprises with 250 employees or fewer, and at least partly funded by the organisation” (OECD, 2002, p. 6).

Evaluations of these measures indicate that networking opportunities, combined with dedicated one-to-one attention and a “hands-on” approach are elements of successful approaches. Effective management training initiatives for small firms usually involve critical self-evaluation; sharing of experiences that provide an opportunity to achieve business insights by learning from others in similar positions; and solving business challenges using experienced mentors.

Business counselling

“Counselling” is a “one-to-one” service tailored to the specific requirements of the individual firm. It is a type of knowledge-intensive service activity performed usually within the firm. It involves internal or external consultants that work with the business owner or managers to think about processes, business models or solutions to specific problems. This type of training is common in SMEs although the volume differs from large firms. SMEs tend

to participate in these activities on an informal basis and through interactions with companies and organisations in their network. As such these activities, even if critical for the entrepreneurship and innovation process of the firm and to upgrade professionals' skills, do not carry standard qualifications and cannot be labelled as standard training (Martinez-Fernandez, 2005; Martinez-Fernandez et al., 2005a, b; Martinez-Fernandez and Martinez-Solano, 2006; OECD, 2006). Business counselling activities are found in professional services such as financial, marketing, legal, personnel development, training, recruitment and business management services. Examples from this group include the provision of management skills for integrating e-commerce into the core business. They may also include legal advice to a firm/organisation on the design of new business structures to support innovation in products or services or the protection and commercialisation of new intellectual property. Another example could be the training of key personnel in knowledge management for commercialisation of new products and services through public support; such was the case with the COMET programme in Australia (see Chapter 2, p. 48).

Local skills ecosystems

The competitiveness of firms also depends on the learning infrastructure available in the community where the firm is embedded – what are called “skills and training ecosystems” (OECD, 2010b, forthcoming; Hall and Lansbury, 2006). This learning infrastructure includes training institutions and organisations in the local community. Small firms must rely on training skills available locally, on the way the ecosystem upgrades these skills, and on the way the services are offered (Hall and Lansbury, 2006).

The concept of skill ecosystems directs attention to the interdependency of multiple actors and policies in creating and sustaining the local conditions under which appropriate skills can be developed and deployed in clusters of firms in particular regions. Effective entrepreneurship skill formation policy also demands an appreciation of workforce development as an alternative to traditional approaches centred on the provision of training in discrete competencies.

The concepts of workforce development and sustainable skill ecosystems underline the importance of establishing and cultivating regionally-based networks and partnerships organised around those concepts. For many countries there is likely to be considerable merit in encouraging the development of regional and industry-specific networks that bring together public and private training providers (including colleges and universities), employers, industry representatives, unions, labour market and training intermediaries (temporary work agencies and group training companies), local and regional government agencies, and community representatives. Governments have a critical role to play as catalysts here, providing an appropriate policy context and support for the resources, infrastructure and institutional framework to establish and operate the networks (Hall and Lansbury, 2006; OECD, 2010b forthcoming).

The role of local networks and skills ecosystems in encouraging SMEs to participate more fully in entrepreneurship training activities has received little attention in policy design. Although training can in principle be provided by experts from other countries or regions, it tends to be seen as a local resource by both enterprises and employees. This, and the positive effects of local networks and connectivity in achieving the vitality of local economies, suggests that a local policy orientation might be useful in promoting greater entrepreneurship training cultures in SMEs.

An example of an organisation providing entrepreneurship training in a local skills ecosystem is provided in Box 4.4 below.

Box 4.4. **Formaper**

Formaper, the training agency of the Milan Chamber of Commerce, Industry, Craft and Agriculture, works to meet the training demand of its 325 000 registered enterprises. The institutional task is to contribute to the *development of an entrepreneurial culture*, building on specific know-how acquired in the most dynamic and vital of Italian regions, including several world-class SME clusters. The overall objective is to support sustainable economic and social development through the provision of high-quality training and consulting services.

Formaper activities are aimed at providing technical assistance to private and public sector development through active involvement in international co-operation projects. Typical assignments include delivering tailored training and support services for the following fields of expertise:

- Development of SMEs, especially in their start-up phase, and entrepreneurship development – training programmes for owners, managers and consultants in business planning, financial services, ICT and marketing.
- Adult learning and links with the labour market.
- Regional development, including capacity building for Business Support Providers (BSPs) and SME development agency staff.
- Public administration.

Policy recommendations

- *Build up entrepreneurship education in universities and higher education institutions.*
 - ❖ Scale up, smartly. Increase the number of entrepreneurship courses and participating students where there is evidence of success. Make sure that the entrepreneurship teaching fulfils high quality standards and is extended across subjects to reach a wide range of potential entrepreneurs. Provide training, encouragement and support for staff embarking on entrepreneurship teaching activities. Facilitate teaching activities for existing and former entrepreneurs.
 - ❖ Encourage growth-oriented entrepreneurship. Shift emphasis from business management to enterprise growth challenges, including finance and internationalisation. Teach the skills required for growth including opportunity identification, risk taking, strategy making, leadership, negotiation, networking, building strategic alliances, and intellectual property protection.
 - ❖ Introduce interactive teaching methods that incorporate practical experience. Encourage learning by doing in contrast to more traditional forms of academic learning. Introduce cross-functional problem-solving approaches that replicate the bundle of activities and functions that need to be applied in entrepreneurship situations, rather than breaking up teaching into separate business functions as in traditional management courses. Involve entrepreneurs in the design and teaching of entrepreneurship courses. Expose students to entrepreneur role models, for example by using entrepreneurs as mentors, speakers and interview subjects. Provide students with opportunities to work in existing SMEs and to add value to these firms through

placements and consulting projects. Develop case studies tailored to the environment that students will face.

- ❖ Link into wider networks. Tap into the resources of alumni networks to help fund and support entrepreneurship programmes, for example by asking alumni to get involved in teaching, using them to support links to companies for placements, using them as mentors and so on. Monitor alumni and build relationships with them to this end. Facilitate access to common materials and sharing of good practice by favouring networking among institutions and teachers and providing support for the inter-institution mobility of entrepreneurship teachers.
- *Strengthen VET programmes for business founders, SME managers and SME workforces.*
 - ❖ Change the nature of vocational education and training to better fit the needs and motivations of entrepreneurs: emphasise the “need to know” and the “how to”; do not overload programmes with information that will not be used in practice; develop more experiential learning methods.
 - ❖ Offer short duration “innovation bootcamps” for SME owner-managers such as weekend seminars and short online courses.
 - ❖ Increase the flexibility of vocational education and training for SME workforces. Target both workers and enterprises; limit administrative burdens; increase transparency and clarity of objectives and information to employers and employees; give standardised accreditation.
- *Embed an entrepreneurship mindset through the school education system.*
 - ❖ Develop the training function of small business support programmes including programmes for business succession, SME management training and business counselling.
 - ❖ Include entrepreneurship activities in school curricula; develop interactive materials and activities and involve entrepreneurs and businesses; provide training, incentives and support to teachers involved in entrepreneurship activities.
- *Reinforce training in SMEs*
 - ❖ Use these and other approaches to support the integration of new employees and the development of potential team leaders; launch projects to impart entrepreneurship skills across all occupations around product and process development initiatives; improve the average level of project management skills; offer foreign language training; broaden the focus of entrepreneurship skills development projects to encompass all occupations and not just management; increase apprenticeships in SMEs since they are ideal for entrepreneurship skills development.
- *Increase the use of informal learning sources.*
 - ❖ Tap into knowledge-intensive service activities (KISA) processes to increase the entrepreneurship skills acquisition of SME workforces. Consider the use of Innovation Vouchers for this purpose.
- *Strengthen local skills ecosystems.*
 - ❖ Promote greater participation of SMEs in local training programmes through the engagement of employers, unions and individuals, such as in programme design and management.

- ❖ Create integrated training strategies combining training located in higher education, vocational education and training, knowledge-intensive activities performed by the firm and SME support programmes.

Note

1. “Skills for entrepreneurship” refer to those capabilities involved in firm creation or in realising a new product, service or activity.

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Chapter 5

Social Entrepreneurship and Social Innovation

The chapter outlines social entrepreneurship and social innovation before going on to provide concrete examples. While it may be argued that these fields require better exploration and articulation, that does not mean that their role should be underestimated. They have already proved to be effective tools to meet social challenges and needs and contribute to sustainable development. Policy makers and investors are looking with growing interest at these areas, and have an important role to play in the provision of tailored support to aid their development.

Introduction

Social entrepreneurship and social innovation have, in the past decade, garnered particular attention from policy makers, academics, practitioners, and the general public. Both are important tools to tackle social challenges and to respond to them when the market and the public sector do not.

The unparalleled challenges at global, national and territorial levels demand new strategies and tools to successfully address them. The market and the state cannot, on their own, regulate and solve all problems. New approaches are needed to tackle major social issues, “most especially in the presence of the systematic retreat of the governments from the provision of public goods in the face of new political ideologies that stress citizens’ self-sufficiency and give primacy to market-driven models of welfare” (Nichols, 2006, p. 1).

If economic globalisation offers opportunities to improve living conditions, it also implies substantial and continuous restructuring and change – most especially in a time of economic crisis – and a renewed or new approach, not only to the new social challenges but also to the old ones that have not yet been met successfully. Competition keeps increasing and as a consequence, all territories have to engage more strongly in innovation, both technological and social, and in entrepreneurship, both “commercial” (for-profit businesses pursuing as a primary objective economic value and its appropriation) and social (primarily aiming at addressing and satisfying unmet social needs, and therefore creating social value).

The most urgent challenge for national governments, local authorities, policy makers and economic stakeholders is therefore to help the less well-off adapt to new and changing situations and – more importantly and more generally – to promote sustainable economic and social development so that once the economy has recovered the benefits can be widely diffused.

Social entrepreneurship and social innovation are part of the solution, as they both explicitly aim to provide innovative solutions to unsolved social problems, putting social value creation at the heart of their mission in order to improve individuals’ and communities’ lives and increase their well-being.

Even if social entrepreneurship as an activity is developing quickly around the world (Box 5.1) and social innovations are appearing everywhere, these are both relatively recent fields of research and practice and the notions are still ill-defined. A term like social entrepreneurship tends to overlap with terms such as social economy, third sector, non-profit sector, social enterprise and social entrepreneur, some of which are also ill-defined and overlapping (see the Glossary at the end of the book). Moreover, definitions are context-sensitive, in the sense that the geographical and cultural contexts matter. As some authors (Kerlin, 2006; Defourny and Nyssens, 2008) explain very clearly, social entrepreneur, social entrepreneurship and social enterprise do not have the same meaning in the United States as in Europe for example,¹ and this difference also complicates things. The same confusion exists over social innovation.

There is, therefore, a need for greater conceptual clarity to be developed around these areas.

This chapter examines social entrepreneurship and social innovation and explores their meaning, as well as considering concrete examples of both. It is divided into two sections: the first focuses on social entrepreneurship and the second on social innovation. It also provides recommendations as to how to most effectively support social entrepreneurship and promote social innovation.

Box 5.1. The growth of social entrepreneurship

While empirical evidence shows that social entrepreneurship is growing in many countries, measuring it – like measuring the social economy, the third sector and the non-profit sector – is difficult. This is due not only to the variety of the entities belonging to the field, but also to the fact that these entities vary according to the geographical context and that countries recognise social entrepreneurship differently.

The “Social Entrepreneurship Monitor” is a special report of the Global Entrepreneurship Monitor (GEM) UK project to estimate the percentage of social entrepreneurs in UK society using population survey data. The GEM report found that 1.2 million people, which corresponds to 3.2% of the working-age UK population, could be classified as social entrepreneurs (defined in the survey as being involved in founding and running a social venture younger than 42 months). As the comparable number for commercial entrepreneurship is 6.2%, this points to the importance of social entrepreneurship. According to the report, social entrepreneurs in the United Kingdom are more likely to be women, young, and well educated (Harding, 2006).

According to Mair and Ganly (2010), in Japan, where a legal structure for non-profit organisations was introduced in 1999, the number of social entrepreneurship entities developed from 1 176 in 1999 to 30 000 in 2008, and this sector contributed JPY 10 trillion (USD 110 097 billion according to OECD STAT) to the economy in 2005, which represents 1.5% of Japan’s GDP.

When referring explicitly to social enterprises, undoubtedly a major expression of social entrepreneurship, recent UK data released by the Third Sector in July 2009 (www.cabinetoffice.gov.uk/media/231495/factoids.pdf) refer to an estimated average (2005-07) of 61 800 social enterprises in England. In 2005 social enterprises had a turnover of GBP 27 billion and contributed GBP 8.4 billion to the UK economy. In 2007/08 540 000 people were employed in the third sector as a whole in England. In Italy, according to a recent estimate (2009) provided by the Iris network www.irisnetwork.it, there are 15 000 social enterprises employing 350 000 employees, serving 5 million users and with an economic turnover of EUR 10 billion.

In Korea from 2007 to 2009, the Korean Ministry of Labor has certified 251 organisations as social enterprises (36 in October 2007; 19 in December 2007; 30 in April 2008; 24 in July 2008; 48 in October 2008; 64 in December 2008; 26 in May 2009; 8 in July 2009) out of 515 organisations that applied (data elaborated for OECD by the Korea Labor Institute and the Research Institute of Social Enterprise).

Moving to the social economy, a recent report by CIRIEC (2007) clearly shows its diversity in European countries. Part of the study is devoted to the presentation and analysis of the different definitions of social economy existing in the 25 countries included in the study. The report presents the main figures for the social economy in the European Union, by

Box 5.1. **The growth of social entrepreneurship** (cont.)

country and globally, differentiating three groups of organisations: co-operatives and similar accepted forms; mutual societies and similar forms; and finally, associations, foundations and other related non-profit forms. “The main conclusion to be drawn is that the social economy in Europe is very important in both human and economic terms, over 11 million paid employees, equivalent to about 6% of the working population of the EU. These aggregates underline the fact that this is a reality which cannot and should not be ignored by society and its institutions” (CIRIEC, 2007, p. 44). The study can be downloaded at www.socialeconomy.eu.org/spip.php?article420.

In the United States, the Johns Hopkins Nonprofit Economic Data Project (NED) is generating information on the dynamics of the non-profit sector by analysing diverse datasets on non-profit organisations, including data on non-profit finances, employment and wages, and volunteering. The website of the project (www.ccss.jhu.edu/index.php?section=content&view=9&sub=10 – accessed on 28 October 2009) reports that: “Nonprofit employment is much larger than expected and much more widely dispersed, outdistancing many major industries in its contribution to state employment and payrolls; Nonprofit employment is dynamic, growing more rapidly than overall employment; Nonprofit employment is spreading to the suburbs and rural areas; Nonprofit wages actually exceed for-profit wages in many of the fields where both sectors operate; Despite their growth, nonprofits in many states are losing ‘market share’ to for-profit firms in many fields where both sectors are operating.”

To complete the overview and to have an idea of the economic weight of co-operatives in the United States (not included in the non-profit sector in that country but belonging to it in Europe), it is important to note that more than 30 co-operatives have annual revenue in excess of USD 1 billion. Indeed, around the world the largest 300 co-operatives (in terms of turnover) – the so-called Global 300 – have combined assets of USD 30-40 trillion and annual turnover of USD 963 billion. In effect, the Global 300 is the 10th largest economy in the world (ICA, *Annual Report*, 2006).

Social entrepreneurship

The concept of social entrepreneurship is still poorly defined and its boundaries to other fields of study remain fuzzy. While to some this may appear to be a problem, it could also be seen as a unique opportunity for researchers from different fields and disciplines, such as entrepreneurship, sociology and organisational theory, to challenge and rethink central concepts and assumptions (Mair and Marti, 2006, p. 36).

What is social entrepreneurship?

Social entrepreneurship can be defined as entrepreneurship that aims to provide innovative solutions to unsolved social problems. Therefore it often goes hand in hand with social innovation processes, aimed at improving people’s lives by promoting social changes.

Social entrepreneurs link themselves to a wide spectrum of organisations that have an entrepreneurial approach and whose overall primary mission is to tackle social problems. Social entrepreneurship is, therefore, about solving social problems rather than exploiting market opportunities. Social currency is the motivation of social entrepreneurs who “... all have one thing in common: the innovative use of resources

to pursue opportunities to catalyze social change” (Mair and Ganly, 2010). Social entrepreneurs are in pursuit of “sustainable solutions to problems of neglected positive externalities” (Santos, 2009, p. 1).²

The challenge of defining social entrepreneurship

Defining what social entrepreneurship is poses important challenges – and the growing interest in social entrepreneurship by policy makers as well as social investors means that it cannot be left undefined. Policy makers and investors need clarity: unclear landscapes and boundaries can limit their support, which is critical to the smooth development of these fields.

Whether it is better to concentrate on setting the boundaries or analysing the landscape of social entrepreneurship, or to adopt a more inclusive or more exclusive definition of it, remains an important discussion in the field: both approaches have advantages and disadvantages. Given that social entrepreneurship is still an evolving field of practices, it might be best to avoid narrowly defining it, so as to avoid excluding initiatives that may be entitled to be considered social entrepreneurship even if they have not met all of the essential characteristics. On the other hand, overly diluting the concept can actually serve to create confusion rather than to eliminate it, with attendant problems for the support and development of the sector.

A great variety of definitions of social entrepreneurship and social entrepreneurs has been provided since the early 1980s (see Annex 5.A1 for a non-comprehensive list of definitions). But according to some authors the theoretical underpinnings of social entrepreneurship have not yet been adequately explored (see for *e.g.* Austin *et al.*, 2006; Mair and Marti, 2006; Weerawardena and Mort, 2005).

Authors such as Neck, Brush and Allen (2009, p. 15) suggest that “a lack of agreement on what defines social entrepreneurship or a social entrepreneur may not be important”, arguing that what really matters is understanding the landscape of the sector.

Careful analysis of the growing literature reveals a perceived risk that the term social entrepreneurship could become very inclusive and, as a result, represent an immense tent into which all kinds of socially beneficial activities fit (Martin and Osberg, 2007). Many authors, concerned over the problems that could pose, have attempted to elaborate more exclusive definitions (see for example Annex 5A: Nicholls, 2006; Mair and Marti, 2006; Martin and Osberg, 2007; Wei-Skillern *et al.*, 2007). In order to do so, some have revisited their previous assumptions (Light, 2008)³ or have instead focused on the landscape of social entrepreneurship to suggest a typology of entrepreneurial ventures in order to identify those that could be included in the social entrepreneurship field (Neck *et al.*, 2009),⁴ or have identified sets of primary and secondary characteristics of social entrepreneurship (Brouard and Larivet, 2009).⁵

Social entrepreneurship theories

It appears that “... a consensus over the boundaries of social entrepreneurship remains elusive” (Nicholls, 2006, p. 7), but also that a certain clarity has begun to emerge in recent years. Arguably, a good balance between the need to include some concepts and practices from the field and to exclude others has been reached. Some recurring key words also provide clear hints as to what should not be missing when referring to social

entrepreneurship: social value, social mission, social wealth, social change, social impact, social innovation, sustainability, creativity and a business approach.

The content and approaches of definitions vary; they tend to include multiple dimensions; and they present a number of conflicting “tensions” within the notion itself. The most important of these “tensions” appears to be the following:

1. Is social entrepreneurship an individual or a collective phenomenon? That is, should one focus on individual social entrepreneurs rather than on collective social entrepreneurship initiatives? *It appears that social entrepreneurship can be both an individual and a collective phenomenon.* The reality, as some concrete examples will demonstrate later on, presents us with a few outstanding individual social entrepreneurs, many lesser-known ones, and many collective initiatives. Those initiatives include a number of social enterprises, which are often collectively owned and managed in the form of a co-operative, and initiatives realised by communities that can be seen as collective entrepreneurial actors (Peredo and McLean, 2006).
2. Is social entrepreneurship shaped by social value rather than economic value? The answer would be that, while economic sustainability is needed in order to pursue the social mission of social entrepreneurship initiatives, *the creation of social value is the essential feature of the initiatives, for the social entrepreneur’s principal aim is to produce social change.* To be more precise, the novelty represented by social enterprises and social entrepreneurship is that the economic value serves social objectives. In this sense, social entrepreneurship creates “blended value that consists of economic, social and environmental value components” (Emerson, 2003).
3. Is social entrepreneurship located only in the non-profit sector, or can it also be found in the for-profit and public sectors? *While many social entrepreneurship initiatives can be found in the non-profit sector, some social entrepreneurship “attitudes” also concern other sectors: the for-profit sector (for-profit business reaching outstanding, concrete levels of social responsibility and a high level of creation of social value) and the public sector⁶ (central and local authorities engaging in or promoting socially innovative programmes and measures in partnership with the other sectors).*
4. Does social entrepreneurship aim to achieve incremental social impacts, or is it meant to produce radical social transformations only? While the debate here is an ongoing one, it seems that if social entrepreneurship is a way to improve the quality of life of individuals and communities through social value creation and innovative paths, it is *not essential to establish whether its impact has to be incremental or radical.* Radical changes are, of course, desirable and possible, but they are not easy to achieve and cannot happen regularly. Pursuing more limited social impacts and changes can create a virtuous circle of more systematic changes while social entrepreneurs start to successfully tackle more major challenges. Social entrepreneurship aims, therefore, at pursuing both radical and incremental social changes.
5. Is social entrepreneurship a local phenomenon or a global one? While many initiatives happen at the local level, their impact and the repercussions that flow from that impact cannot be isolated, as there are ultimately global links. The clearest examples of this would be the increasing amount of venture philanthropy made available in Europe, North American and Japan to support local social entrepreneurship initiatives (Mair and Garley, 2010).

The distinction between a commercial entrepreneur – who, in creating jobs and in providing goods and services, obviously also has a social impact – and a social entrepreneur is that social entrepreneurs create their business in order to produce a social impact (or to address a neglected positive externality). Solving social challenges is their articulated goal and the whole business project is built around this objective. For social entrepreneurs the social impact is not a just consequence of their entrepreneurial activity, as it is often for commercial entrepreneurs, but the main goal of it. Social change (whether radical or limited), not the exploitation of a market opportunity to increase personal wealth, is the explicit goal of social entrepreneurs and their business mission.

Thus, it can be said that social entrepreneurs create value but are not motivated by the appropriation of this value: “What distinguishes social entrepreneurship from commercial entrepreneurship is the predominant focus on value creation rather than on value appropriation. ... Although individuals may have multiple goals, organizations need clarity of purpose in order to engage with their environment in coherent ways. They need to choose either value creation or value appropriation as their dominant focus” (Santos, 2009, p. 13).

Box 5.2. Social entrepreneurship “attitudes” in the for-profit sector

Corporate social responsibility (CSR) is a concept distinct from that of social entrepreneurship; the two ideas do not overlap. Still, some commercial business can have significant CSR initiatives in the social entrepreneurship field, most especially if they support the development of this sector. One good example is *Banca Prossima* in Italy, created by *Intesa Sanpaolo*, a large Italian banking group, in November 2007. Its mandate is to create social value, operating “as a bank” – i.e. by taking deposits, making loans and providing other financial services, but not by grant awards – dedicated to the non-profit sector. In being restricted to deposits and loans, it differs from most banks working with non-profits. Much of the social-value creation of *Banca Prossima* is obtained through its loan activity. The “bank” developed its own scoring system, used alongside the group’s Basel-2-compliant rating system in the evaluation of clients’ credit standing. This takes account of factors such as fundraising ability among the general public, ability to attract public or foundation grants, internal governance, and share of revenues via market transactions – important to evaluating nonprofits with marginal assets that can be pledged as collateral.

Two years after its inception, *Banca Prossima* had: shareholder funds of about EUR 120 million (one of the largest capitalisations in its field); collected about EUR 380 million in deposits; loaned about EUR 170 million (and set up loan commitments for a further EUR 160 million); and about 6 500 clients – roughly two-thirds gained from outside the group’s previous reach. It had worked partly on its own and partly in conjunction with *Intesa Sanpaolo*, in various social interest projects including the following:

- A scheme for advancing payments from the Campania Region to a consortium of nonprofits that won a regional auction for provision of healthcare services to old and disadvantaged people; this was one of the first such schemes in the south of Italy.
- A nursery centre project run jointly with a consortium of “social co-operatives” that would train the childcare workers, guaranteeing quality standards; *Banca Prossima* grants loans with no personal guarantee required. The resulting network is currently one of the country’s largest, servicing over 8 000 3-year-olds and employing over 2 000 women.

Box 5.2. Social entrepreneurship “attitudes” in the for-profit sector (cont.)

- A project for setting up residences to host mentally disabled people who have outlived their parents.
- A project to finance volunteer organisations, whereby *Banca Prossima* provides loans guaranteed up to 20% by means of a fund set up by local centres servicing volunteer organisations in Lombardy and a Foundation (the *Fondazione Cariplo*).

Source: Banca Prossima.

Social entrepreneurship practices

Having considered the theoretical approach to social entrepreneurship, some examples of it are now presented; these show the variety of its expressions. Individual social entrepreneurs are featured (Institute for One World Health, inspired by a powerful leader), together with collective organisations (co-operatives like the Health and Social Care Co-operative in Wonju, Korea), registered charities (such as Silai for Skills) and associations (like SIEL BLU). Their organisational forms, tools and governance systems differ and their missions vary according to the problem they address – but their overall goal is a common one: to improve or to radically solve a social problem.

The Wonju Health and Social Care Co-operative (Box 5.3) is a good example of the multiple impacts that co-operatives seek at the local level:⁷ in this particular case the core mission is to provide health services, but in conjunction with preventing illness through a wider approach to the different factors influencing illness (poor housing and diet). Moreover the co-operative aims at employing local disadvantaged workers, thus contributing to the local employment of individuals from groups who may find it difficult to get jobs. And it is inserted into a network of other co-operatives and the local community, so that it becomes a full economic actor within the community.

Box 5.3. Health and Social Care Co-operative (Wonju, Korea)

The Health and Social Care Co-operative in Wonju (Korea) was founded in 2002. It was established to create a healthy and safe local community by working with those experiencing or vulnerable to social exclusion, including the elderly, those living in poverty, the disabled, and low-income people with housing problems. The co-operative focuses not only on providing healthcare services, but also on addressing wider health issues, such as poor housing and diet. Another priority is to employ disadvantaged workers in service delivery areas.

Financially supported by local credit co-operatives, other co-operative support organisations and small contributions from local residents, the Health and Social Care Co-operative also received support from the local community through volunteering activities, and local government and non-profit organisations through joint service provision. The co-operative is a democratic organisation, and significant emphasis is placed on the participation of local residents.

Source: OECD (forthcoming).

Box 5.4. **Institute for OneWorld Health (United States)**

One World Health is the first non-profit pharmaceutical company created in the United States. Founded as a medical research organisation by pharmaceutical scientist Victoria G. Hale in 2000, it aims to address the developing world's need for affordable medicines to treat infectious diseases that otherwise would be overlooked due to the absence of a viable market. One World Health seeks to challenge the assumption that pharmaceutical research and development is too expensive to create new medicines for the world's poor. Through partnership and collaboration with pharmaceutical scientists, non-profit hospitals in the United States and abroad, biotechnology industries, companies, universities and organisations, drug research is brought from the lab into the clinic and on to regulatory approval and manufacturing for patients in the developing world. An experienced team of pharmaceutical scientists is assembled to identify the most promising drug and vaccine candidates to be developed into medicines. They then partner with companies and non-profit hospitals and organisations in the developing world to conduct medical research on new cures, and manufacture and distribute medicines to populations at risk.

One World Health also creates interesting opportunities for industry, government and academia, and developing world partners. Pharmaceutical and biotechnology industries are key to the success of new drug development; One World Health's non-profit model benefits industry by offering dual market opportunities through its role as global development partner and by taking responsibility for markets in developing countries. It also obtains resources from private foundations and governments to fund the development costs of taking a new drug through to market in the developing world, and provides international regulatory expertise to increase the number of countries in which an important new drug is marketed. Furthermore, One World Health can help to serve as a bridge between government researchers, academia and industry by advocating access to key industry resources such as chemical libraries, so as to advance research into development. Finally, collaboration with developing world partners in clinical trials, pharmaceutical manufacturing, and the distribution of new medicines for neglected diseases is important. One World Health undertakes this task and also acts as an advocate for increased funding for academic laboratories in the developing world. It builds capacity by training healthcare workers and scientists in clinical drug development, which in turn stimulates new avenues of economic development.

Source: www.oneworldhealth.org/.

Health-related problems are at the core of the initiative of pharmaceutical scientist Victoria G. Hale, founder of the Institute for One World Health (Box 5.4). There the concern is to tackle the issue of health at the global level through an entrepreneurial approach (like the Korean co-operative, but in this case its reach is local). As in the case of the Korean co-operative in Wonju, a partnership approach is adopted here, both inside the United States, and with companies and non-profit hospitals and organisations in the developing world. While the primary goal of the Institute is to produce affordable medicines to treat infectious diseases in developing countries, other impacts are also pursued. One that can readily be seen is the capacity-building opportunities offered to healthcare workers and scientists, with a possible further impact on economic development.

Silai for Skills (Box 5.5) provides an enlightening example of how social enterprises (here with the legal status of a registered charity) pursue multiple social goals to empower people. Several elements need to be underlined. The choice of location – a difficult area in Bristol – shows the willingness to create, or recreate, a positive socio-economic dynamic in

Box 5.5. **Silai for Skills (England)**

Silai for Skills is a long-established women's training and employment project based in the inner city area of Easton in Bristol, England. This innovative social enterprise (a registered charity) has as its main objective to help build women's skills, to later start a business or simply to further their education, while at the same time increasing their self-confidence. In fact, many of the students pursue further goals in education or in the workplace, or move on to self-employment. The positive results gained from its work with women across Bristol have led to the project's longevity: Silai for Skills has been in operation for 19 years. Women of all ages, backgrounds and skill levels are welcome, and to facilitate their diverse origins all training material information has been translated into six of the most commonly used languages in the Bristol area.

To further accommodate the needs of their clients, Silai for Skills offers bilingual tutors and numeracy and literacy support. It can also provide a free day nursery service in the building for parents and certain courses run between 10 a.m. and 3 p.m. to fit around school hours, although evening courses are also available. For those seeking further help in finding education and learning opportunities locally, and help with career planning and job applications, the project offers information, advice, and guidance services free of charge to all (students and non-students alike).

A wide range of courses in practical, specialised fields in fashion and art design (garment making), and home craft skills (general sewing, upholstery, machine knitting), as well as courses to gain essential skills in mathematics and English, are provided. There is a charge for courses, but prices are affordable (with the help of concessions), so that all students can have access to the services regardless of their financial situation.

A new development for Silai for Skills is an "enterprise unit" in which current and past students can receive counselling and training on setting up a new business, or just to gain greater confidence for later endeavours. Also, each year a number of students desiring to start their own business can set themselves up on their on-site workshop, running their business from there for one year while at the same time receiving expert advice from the unit.

Source: www.silai.org.uk/index.htm.

a deprived area. This is very often the case for social enterprises that choose to go where traditional for-profit business do not, but where services are most needed by a local population that is not always in a position to pay for the services that traditional for-profit business would provide at a higher price. In fact, as social enterprises can mix their financial resources [combining public subsidies, grants and donations, market revenues and (limited) voluntary work], they can provide services at a lower, more affordable, price.

SIEL Beu (Box 5.6) is a French social enterprise promoted by Ashoka, an organisation whose main aim is to support social entrepreneurs in building their activity. Disease prevention among elderly people, as well as the prevention and limitation of dependency, is the focus of the association's activity. Given the challenges represented by an ageing population, this mission is an important one. Its expansion from the initial start in a few retirement homes through to home care for the elderly and disabled, training for healthcare professionals and training to help companies prevent accidents through regular physical activities in the workplace demonstrates the importance of the services it delivers. Focusing on preventative health has the result of reducing public spending on healthcare, as well as improving the lives of individuals and their families. For this reason,

Box 5.6. SIEL Bleu (France)

In 1997, SIEL Bleu (acronym for Sport, Initiative And Leisure) was created in Strasbourg, France. It is a legally recognised non-profit organisation that offers elderly people low-cost programmes of adapted physical activity, thus focusing on prevention as an immediate and more effective response to problems, and reducing their future dependency on expensive medical care. SIEL Bleu has developed a number of customised preventive programmes and training sessions that include gymnastics practiced on chairs, strengthening, stretching, balance exercises to prevent falls, and Alzheimer's gymnastics to slow down degeneration. Thus, in just under a decade, it has grown from the original 12 retirement homes it used to serve and from its unique Strasbourg location to now working in more than 1 700 retirement homes in 70 "départements" (administrative territories) across France.

Since 2008, SIEL Bleu has followed a diversification strategy by targeting different audiences. Apart from providing physical activity courses to nursing homes, it has developed specific training departments. There is DomiSIEL, which was created to offer programmes of adapted physical activity for elderly and disabled people in their home, and SIEL Bleu Formation, which works as a training department for healthcare professionals working with the elderly. There is also GPS Santé, a commercial venture created to help companies prevent accidents and muscular-skeletal disorders among its workers through regular physical activity exercises in the workplace.

With the help of strong national and local networks and allies, SIEL Bleu has been able to build awareness; build funding mechanisms (it self-finances 70% of its 6 million EUR annual budget by selling its services to institutional care providers); and develop a well-trained staff. Partnerships have been built with the French government authorities and ministries such as the Department for the Elderly and Department of Sport. In 2002, the National Education Ministry set up a sport and physical training degree programme, with a related diploma, aimed specifically at care for the elderly. Programme and funding schemes are also in place through the Department of Social Welfare and healthcare insurance companies that help to pay for SIEL Bleu's services. Moreover, SIEL Bleu makes sure to keep its costs low so that programmes are easily accessible to everyone. If someone is in need of its services but is unable to pay for them, the association works with the person to reach a compromise.

Source: www.sielbleu.org.

and because of the quality of the services offered by SIEL Bleu, the French government has lent its support to the services offered by the association.

Social innovation

"The financial and economic crisis makes creativity and innovation in general and social innovation in particular even more important to foster sustainable growth, secure jobs and boost competitiveness." – José Manuel Barroso, President of the European Union, 20 January 2009

What is social innovation? The OECD definition

In 2000, the Local Economic and Employment Development Committee (LEED) of the OECD provided a definition of social innovation, in the framework of its Forum on Social Innovations (FSI). This multi-stakeholder Forum was created in April 2000 with the main

objective of facilitating international dissemination and transferring best policies and practices in social innovation. Some eleven organisations from six countries signed the Charter of its establishment.⁸ The definition of social innovation was adopted by all the signatories.

For the OECD social innovation implies conceptual, process or product change, organisational change and changes in financing, and can deal with new relationships with stakeholders and territories:

“Social innovation seeks new answers to social problems by: identifying and delivering new services that improve the quality of life of individuals and communities; identifying and implementing new labour market integration processes, new competencies, new jobs, and new forms of participation, as diverse elements that each contribute to improving the position of individuals in the workforce.

Social innovations can therefore be seen as dealing with the welfare of individuals and communities, both as consumers and producers. The elements of this welfare are linked with their quality of life and activity. Wherever social innovations appear, they always bring about new references or processes.

Social innovation is distinct from economic innovation because it is not about introducing new types of production or exploiting new markets in themselves but is about satisfying new needs not provided for by the market (even if markets intervene later)⁹ or creating new, more satisfactory ways of insertion in terms of giving people a place and a role in production.”

The key distinction is that social innovation deals with improving the welfare of individuals and communities through employment, consumption and/or participation, its expressed purpose being to provide solutions for individual and community problems” (OECD LEED Forum on Social Innovations, www.oecd.org/cfe/leed/forum/socialinnovations).

It is worth noting that the OECD definition was the first one ever provided by an intergovernmental organisation and, more generally, among the first to be produced.

It is a definition that clearly links social innovation to local development, as social innovation is seen as a way to improve the welfare of individuals and communities and explicit reference is made to new relationship with territories. One instance of this is the relationship that some kinds of social enterprises put into motion by including local authorities, as shareholders, in their governance system. Examples include the French SCIC – *société coopérative d'intérêt collectif*, co-operative of collective interest – and the British CIC, community interest company. This should enable local authorities to directly participate in projects that, because of the collective/community interest they take into account, are likely to have a positive impact on local development in terms of social capital, sustainable employment, provision of services of general interest and so on. The local authorities play a direct role here in the local development dynamics by supporting projects explicitly seeking to make a positive impact in the territories in which they operate and contributing to a response to social needs that had not yet been not satisfactorily tackled.

Nevertheless, even if not explicitly mentioned in the OECD definition, the so-called “global challenges” are not excluded from the definition, as social innovation finally aims to provide social change for improving people’s quality of life.

Many of the elements presented in the OECD definition have been taken into account by other definitions at a later stage.

Theories of social innovation

The notion of social innovation has not yet been totally explored. Many definitions exist (see Annex 5.B), but more analysis is needed. Like social entrepreneurship, social innovation has blurred boundaries. Nevertheless, the term has been widely used to refer to different ideas and approaches to address unsolved social problems. As with social entrepreneurship, a balance between inclusive and exclusive definitions has to be found.

Social innovation is needed because many social challenges are resistant to conventional approaches to solving them. Social innovation is about new responses to social needs and challenges. Both the process and the outcome of social innovation are relevant. The changes that social innovation can produce are of a different intensity: some social innovations are incremental (as they build on what already exists), while others are radical and transform approaches and situations. “Innovations can be disruptive and generative – that is, they can disrupt patterns of production, consumption and distribution and generate further ideas and innovations (like the move to a low-carbon economy or the creation of a preventative system of criminal justice)” (Caulier-Grice and Mulgan, 2009). The scale of these changes can be large – fighting global climate change and reducing poverty, or small, such as creating a community garden (Goldenberg *et al.*, 2009, p. iv). Provision of new and effective social services to individuals and groups, or fighting disease, or tackling problems associated with ageing, or youth unemployment or environmental sustainability, are other examples of the different levels at which social innovation can be achieved.

In order to address complex social issues and challenges (NESTA, 2007) transformative action is needed across the various sectors involved (non-profit, for-profit, and government). Indeed, meeting the economic and social challenges of the coming decades will increasingly require fundamental improvements in public services, and social innovation is critical to this process (NESTA, 2008a). “Social innovation can take several forms. These include public sector innovation within public services, to improve performance or to save money, and innovation in the non-profit sector or for profit private sector that improves public services or provides new ones. Social innovation from the third sector (voluntary and community groups and social enterprises) may be ‘spun-in’ to mainstream public services provision” (NESTA, 2008b, p. 1).

Social networks based on Information and Communication Technologies (ICT) are also gaining importance both as social innovation in themselves and as producers of social change (De Biase, 2009), and should no longer be neglected as channels. The increased use of ICT by social enterprises and by civil society is strengthening the links between technological innovation and social innovation, and widening the impact that social innovation can have at global level.

Social innovation neither takes a single form, nor is the monopoly of one sector, but can happen in all sectors – including households,¹⁰ which are usually disregarded. Social innovation can be driven by governments (new models of public health), the private sector (open source software) or civil society (fair trade) (Mulgan *et al.*, 2007). It can also start in one sector and be taken up by another, such as the private sector taking on a social innovation produced in the non-profit sector. While in the past emphasis was placed on the non-profit sector as the “homeland of social innovation”, the private and the public

sectors have since adopted the idea of social innovation, and this has obviously resulted in its wider application and new impetus and energy. Still, the non-profit sector plays an important role in fostering and implementing social innovation because it does not have a profit-making dimension as its main goal, and can therefore pay attention to long-term social issues.¹¹ At the same time the non-profit/social economy sector is increasingly adopting an entrepreneurial approach to further pursue its social objectives (which has been identified as the “new wave of social entrepreneurship”, as underlined by the GEM symposium in September 2009).

It is important to recognise that successful social innovation requires a range of actors. In the initial stages it relies on highly skilled individual “champions” and the enthusiastic support of a small but dedicated and influential community. The absence or loss of either of these can prove a significant setback (NESTA, 2007). Therefore, a critical problem for social innovation is to scale it at the appropriate level, meaning that it has to be effectively adapted to a local context and have the potential for a feeling of local ownership to develop around the innovation (NESTA, 2007).

“Scaling social innovations, requires ‘bees’ – small organizations, individuals and groups who have new ideas, and are mobile, quick and able to cross pollinate to find big receptive ‘trees’, that is big organizations – such as governments, companies or non-governmental organisations, which are generally poor at creativity but good at implementation and which have the resilience, roots and scale to make things happen. Much social change is a result of a combination of the two” (NESTA, 2007, p. 3).

The real problem here seems to be how to connect “bees” and “trees”. In order to create the necessary links between them, intermediaries are needed. There must be acknowledgment of a need or demand within society, and then the effective supply, which comes first from innovative ideas and secondly from the transformation of these ideas into concrete projects. However, there is a notable absence of intermediaries able to connect demand and supply and to find the right organisational forms to put the innovation into practice (NESTA, 2007). This is certainly an area to be addressed by policy makers.

Social innovation in practice

Some concrete examples of social innovations follow. It might be surprising to see that all of them deal with financing. Obviously social innovations appear in many other fields: charter schools, community-centred planning, emissions trading, fair trade, habitat conservation, international labour standards, socially responsible investing, supported employment (for disabled and disadvantaged workers) and individual development accounts are all examples of recent and important social innovations (Phills, Deiglmeier and Miller, 2008). But financing is an area in which much innovation is happening and has happened in the past, and is therefore worthy of a specific focus. For instance, for the Stanford researchers in social innovation (Phills, Deiglmeier and Miller, 2008), microfinance is the “quintessential” social innovation.

Furthermore, the OECD definition explicitly indicates changes in financing as a main aspect of social innovation. Apart from the case of Individual Development Accounts (Box 5.7) (which the OECD has studied in depth: OECD, 2003b) and Bank Palmas (Box 5.8), the innovations presented here are extremely recent. The Equisol fund (Box 5.9), which has started operating at the beginning of 2010, represents a very innovative partnership among different actors to support social enterprise development, and is a social innovation worth underlining.

Social Impact Bonds will be piloted in 2010 in the United Kingdom in the context of reducing re-offending by ex-offenders. The field of social innovation is an evolving one: social innovations keep appearing. Here we give a sense of the variety of initiatives, actors and approaches that can be found. The examples also show that social innovation does not happen alone; it is the result of the joint efforts of multiple stakeholders.

Box 5.7. Individual Development Accounts (IDAs)

IDAs are matched savings accounts held with financial institutions – usually banks and credit unions but also non-profit organisations – which enable people with low incomes to improve their economic and social status. IDAs are the primary vehicle for asset building in the United States. A typical programme provides saving incentives by matching small savings with official (government agencies) or private (non-profit organisations and companies) subsidies on a 1:1, 2:1 or even higher basis, up to limits fixed by the programme rules. The client commits to making a small regular saving, weekly or monthly depending on the client's income flows, for a period of up to three years. At its end, the client can draw on the money saved plus the matching funds for a capital expenditure allowed by the programme. The most common uses for matched funds include home ownership, education, and starting a small business.

Accompanying this is a programme of financial education, with attendance at training sessions in financial management and economic literacy usually mandatory as a condition of participation. Programme workers also maintain close personal contact with clients to provide counselling and encouragement. The programme sponsor is responsible for recruiting participants and the provision of counselling and financial education support. Once recruited, the IDA participant opens an IDA account with a partner financial institution and begins saving. Although only four IDA schemes existed as recently as 1996, a key Washington-based, private organisation, the Corporation for Enterprise Development (CFED), started a trend in 1997. It created and obtained foundation financing for the American Dream Demonstration (ADD), a large-scale, five-year IDA pilot project with 13 competitively selected community partner sites operating 14 programmes in a mix of urban and rural locations across the country. The first accounts opened in 1998, and by mid-2000 there were 2 378 of them. CFED itself has played a major role in getting IDAs onto the US political agenda and pushing legislative and administrative developments supportive of the movement at both the federal and state levels. Moreover, similar innovations copying the IDA formula have originated in developed countries, such as Canada and the United Kingdom, as well as in developing countries, including Peru and Uganda.

Many successful programmes have been realised through Individual Development Accounts. One such example is the Belmont Shelter Corporation in Buffalo, New York. This company aims to provide people with affordable housing in the western New York region. In addition to administering rental assistance programmes, they offer a number of housing-related programmes and services promoting home ownership, educating renters and landlords, improving existing housing stock, and developing and managing affordable housing. Currently, they provide direct services to more than 10 000 low-income households annually.

Asset building for low-income people programmes have also been developed in countries such as Chinese Taipei and Singapore, and have recently received attention in Korea as well.

Source: OECD (2003b).

Box 5.8. Bank Palmas (Brazil)

In 1998 the first community bank of Brazil, Bank Palmas, was opened in Conjunto Palmeiras, a community in the northeastern region of Brazil with approximately 30 000 residents. Confronting significant local difficulties, including a lack of basic services such as water, electricity, transport and health services, the Association of Residents of Conjunto Palmeiras proposed a community bank as way of helping themselves.

Palmas Bank has three main characteristics: management responsibilities are borne by the community; there is an integrated system of local development that promotes credit, production, commercialisation and training; and the bank issues a local currency (Palmas currency), which complements the official currency (real) and is accepted and recognised by local producers, merchants and consumers, thereby creating an alternative and solidarity market within the community. The Palmas currency is pegged to the Brazilian real (1 Palma is worth BRL 1), which allows productive entrepreneurial activities within the community, e.g. commerce, industry and services, to exchange currency each time it is necessary to replenish stocks of products that are not produced in the neighbourhood.

The Bank has also developed an economic system that has an alternative micro credit line (for producers and consumers), incentive tools for local consumption (credit card and social currency) and new ways of commercialisation (fairs, solidarity shops/stores) promoting local job creation and income generation.

The Palmas currency is accepted by 240 businesses, which offer discounts from 2% to 15% to encourage people from poor neighbourhoods to buy with the social currency. Local public administrations are also supportive of the currency, and pay between 5% and 20% of salaries in the Palmas currency to those employees who live in the neighbourhood.

Aside from the currency, the Palmas Bank seeks to engage with communities' needs by initiating programmes to provide training to vulnerable young people and women; to raise awareness of the community benefits of consuming local goods and services, and the wider benefits of the solidarity economy; to help build a network of local producers and traders; and to promote the development of local co-operatives.

In order to promote the social innovativeness of the bank, in 2003 it was decided to create the Palmas Institute. Today the Institute heads a network of 47 community banks throughout Brazil and built around the model of Bank Palmas. In 2005, an agreement to enter into partnership with the *Secretaria Nacional de Economia Solidária* (National Secretariat of Solidarity Economy) and the *Banco Popular do Brasil* was signed. The agreement allowed not only Bank Palmas but also the rest of the community banks to have access to credit and to act as banking correspondents of *Banco Popular do Brasil* (now integrated into the Bank of Brazil) and contributed to growth in the number of community banks in Brazil.

Community banks are located in areas characterised by poverty and banking and financial exclusion, such as areas dominated by indigenous people and isolated districts in the semi-arid northeast and the urban periphery. Through the partnership with the Bank of Brazil, the Palmas Institute organises and manages a credit fund, which transfers a start-up sum of BRL 30 000 for each new community bank that is created. In addition, through its partnership with the Bank of Brazil, there is BRL 1.5 million (EUR 575 000)'s worth of credit available which can be directly invested in the neighbourhoods

Each community bank functions as a Civil Society Organisation of Public Interest (OSCIP) of micro credit. The Palmas Institute acts as an umbrella organisation, managing the network that provides legal support to all the community banks; the majority of these are just local associations with no institutional structure. As an OSCIP, The Palmas Institute can also establish partnerships with the public sector and official banks, generating resources and technologies for the benefit of the community banks that are part of the network.

Source: www.banquepalmas.fr.

Bank Palmas represents a powerful example of a social innovation driven by the community as a methodology for the sustainable eradication of poverty in disadvantaged neighbourhoods. Community banks represent a hybrid economy – locally connected but market driven – which helps to promote the attractiveness of an area and the proper development of the community. Supported by the Brazilian National Secretariat for Economic Solidarity, partner of several Brazilian “traditional” banks, supported by global networks of social economy organisations; spread throughout Brazil and also Venezuela (3 600 banks have been created following the example of Bank Palmas) and soon to South Africa, Mozambique, Panama, Ecuador, and Chile, the development model set up by the Bank Palmas is already a well-known reference point in Latin America and research centres worldwide.

Box 5.9. Equisol (France)

The Regional Council of Ile-de-France launched on 21 September 2009 Equisol (a combination of the words equity and solidarity), which is an investment fund specifically targeting social enterprises. It aims to fund hundreds of projects “with a social and/or environmental objective” during its 15-year lifetime. With a budget of EUR 1.75 million provided by the region, plus funding from other sources, this fund will enable capital to be provided to social enterprises during their creation, operation and development phases. The region has a 49% share of the fund, and has sought out other partners (including MACIF, Credit Co-operative, *Crédit Mutuel*, etc.) to finance socially useful business. With the funds from these sources, Equisol will have a budget nearing EUR 4 million. Esfin Gestion has been appointed to manage Equisol.

Through Equisol, Ile-de-France – home to 15% of the social enterprises in France – will be the first French region to cover all of the financing needs of the social enterprise sector. Designed to complement the overall financing offer already present in Ile-de-France, Equisol will ensure that there will be a range of financial tools, including micro-credit, repayable advances and bank guarantees, available to social enterprises.

To be eligible, the activities or the headquarters of a social enterprise must be based in the Ile-de-France region. The funding available ranges from EUR 10 000 to 100 000 and can be provided for a period of between five and ten years.

The originality of this partnership is built around the innovative relationship of the stakeholders involved, which shows, once again, that social innovation is often the result of networks and partnerships. The fund has adopted the co-operative form: the financial partnership is public and private and has been extended to networks of social economy organisations.

Source: www.iledefrance.fr.

Social Impact Bonds represent a very innovative way to engage private investors. They are innovative in three ways. First, they bring in private investors; secondly, the latter invest in a programme of actions targeting a selected group (such as ex-offenders); and third, the investment is based on a commitment from government to use a portion of the public spending savings resulting from improved social outcomes to pay back the private investors, potentially more than their initial outlay. The Social Impact Bonds are an example of a new financial tool to facilitate a more efficient market in social investment.

Box 5.10. Social Impact Bonds (United Kingdom)

Social Finance was created from the Commission on Unclaimed Assets, chaired by Sir Ronald Cohen, a leading social venture capitalist. The Commission had recommended that a Social Investment Bank be established to accelerate the flow of non-governmental pools of capital to address social issues.

Social Finance provides access to new sources of capital to tackle those issues. In some areas, government spending is tied up in meeting the high costs of the consequences of deep-rooted social problems; little is spent on addressing the problem itself. For example, significant funding is tied up in the prison system rather than working to prevent re-offending.

Social Finance developed a new social investment product, the Social Impact Bond, to target such social problems. The bonds raise investment to fund prevention programmes. Investors receive returns from government when targets are met on improved social outcomes, such as reduced re-offending, that deliver cost savings to government. This will drive significant investment into addressing the causes of deep-rooted social problems and create a new way of working between government and socially motivated investors. The Social Impact Bond can be applied to a range of long-term social problems, including health provision for the elderly, truancy and school exclusions, and re-offending. In March 2010, the first Social Impact Bond was agreed with the Ministry of Justice. It will be used to reduce re-offending among sort sentence prisoners and returns will be provided from the government savings generated by success.

Source: www.socialfinance.org.uk/downloads/SIB_report_web.pdf.

The following provides an outstanding example of how social media and social networks can contribute to connect people and good causes. In this case a web based platform has opened up the boundaries of donation mechanisms to support – among others – also social enterprises and socially innovative initiatives.

Box 5.11. ammodo: A global platform harnessing social media for social goods

ammodo is a global platform which connects nonprofit organisations, socially-responsible companies and engaged individuals in a unique environment of shared interests. It supplies the tools necessary to support online campaigning, fundraising, engagement and communication. This global platform has levelled the playing field for receiving and giving donations, embracing the breadth and power of Web 2.0.

It was founded as a mission-based, for-profit enterprise, in Dublin in 2005 by a serial entrepreneur, Peter Conlon, and Dr. Anna Kupka who travelled the world meeting with over 1 500 companies and nonprofits to understand their needs and challenges in harnessing social media for social good.

- After four years of building the ammodo platform the site was launched in June 2008 and is currently available in 12 languages (Dutch, English, French, German, Italian, Japanese, Korean, Polish, Portuguese, Spanish, traditional and simplified Chinese) connecting individuals from 130 countries and over 4 000 nonprofit organisations worldwide. These nonprofits range from large, internationally known organisations such as the Amnesty International, US Red Cross, UNHCR, WWF, Habitat for Humanity, right down to tiny organisations working on the periphery of communities around the world. ammodo provides a platform for:

Box 5.11. ammodo: A global platform harnessing social media for social goods (cont.)

- nonprofits to promote their cause(s) and solicit donations;
- Corporations to manage their Corporate Social Responsibility (CSR) activities (both internal and external); and
- individuals to research, engage with and support causes and organisations.
- The integration of company profiles, vast and various web tools and a secure donation interface called the “Giving Circle” make ammodo a “one-stop shop.”

ammodo facilitates charitable contributions from everyone, worldwide, in 33 currencies using virtually every payment method. The ability to make micro-donations reinforces the every-drop-counts approach to giving, as one can donate online to their organisation of choice anywhere around the world.

In the past grassroots nonprofits were often unable to utilise most online fundraising tools due to numerous limitations (countries, currencies, language, payment methods). This did not and does not apply only to countries physically distant from donors or developing economies but also to organisations in developed countries: take for example the Italian Red Cross. At the time of the massive earthquake that rocked the region of Abruzzo, the IRC was not activated to receive donations on ammodo. A wave of response from Italians and others around the world wanting to send immediate relief was being thwarted by a series of difficulties on the IRC site, from language (many 2nd – 3rd generation Italians do not have command enough of the language to navigate an Italian-language site) to payment methods accepted (to date, many Italian npo sites require a bank transfer or Italian credit card, limiting international donations). As a stopgap, the Irish Red Cross and American Red Cross accepted donations through ammodo and spread the word about their initiative. Had the IRC been active, they could have received the first emergency donations from around the world minutes after the quake struck.

In addition to online donation capabilities, ammodo offers giving vouchers and interactivity with other social networks like Facebook and Twitter. Nonprofits can add the “Donate Now” box to their Facebook Fan Pages.

The ammodo donations widget is one of the platform’s latest features. The cutting-edge micro-donations software is a compact, vibrant space, the same size as an iPhone screen and can sit on any website, blog or social network profile that can accept embeddable HTML. It has a welcoming image which invites visitors to donate. By clicking “donate” they are brought through the donation process then and there without navigating away from the site/blog.

In 2008, Edelman Goodpurpose released a study on “Mutually beneficial marketing: Why business and brands need a good purpose”, which stated that, “New findings ... reveal that nearly seven in 10 (68%) consumers would remain loyal to a brand during a recession if it supports a good cause”. That same study stated that “76% of consumers globally like to buy from brands that make a donation to worthy causes”.

In June 2009 ammodo was honoured as Laureate of The Computerworld Honors Program for its achievement in the application of information technology to promote positive social, economic, and educational change. It is the only donations platform to date where Chinese credit cards can be used (directed at Chinese nonprofits) and Chinese nonprofits can receive donations from around the world.

Sources: www.ammodo.com/.

The discussion now turns to the increased interest in social innovation among some OECD member countries and the *ad hoc* structures and special measures created as a result. These are important in moving social innovation towards the mainstream of public policies.

Initiatives presented here draw on examples from the European Union, the United States, the United Kingdom, Spain, France, Portugal and Australia.

As to the European Union, a two-day event was organised in January 2009 to explore ways to boost the social innovation dimension of the EU's renewed social agenda. The meeting gathered a number of experts and social innovators, and concrete examples of existing social innovations were discussed. As a follow-up to the meeting the Commission plans to support social innovation through various programmes – in particular through the use of structural funds – and will encourage the creation of networks for further reflection and sharing of good practice. Many initiatives are being undertaken with the support of the European Union, such as in the United Kingdom where a “Social Innovation Lab for Kent” was established in 2007, and in Spain, where a “Silicon Valley of Social Innovation” is being realised in the Basque Region.

In the United States, the recently established White House Office of Social Innovation and Civic Participation will co-ordinate efforts to enlist all Americans – individuals, non-profits, social entrepreneurs, corporations and foundations – as partners in solving social challenges. Located within the Domestic Policy Council, it will seek to: catalyse partnerships between the government and non-profit organisations, businesses and philanthropists in order to make progress on the President's policy agenda; identify and support the rigorous evaluation and scaling of innovative, promising ideas that are transforming communities; support greater civic participation through new media tools; and promote national civic service (Chronicle of Philanthropy, 2009). President Obama asked Congress to allocate USD 50 million in seed capital for the Social Innovation Fund, to identify the most promising results-oriented non-profit programmes and expand their reach throughout the country. The idea is simple: to find the most effective programmes and then provide the capital needed to replicate their success in communities around the country that are facing similar challenges. It will focus on priority areas, including education, healthcare and economic opportunity. It will partner with foundations, philanthropists and corporations that commit matching resources, funding and technical assistance. This is a national initiative but it will have to be articulated and implemented locally. The reference points for the Obama administration are local initiatives throughout the country that are “transforming communities”. It will include collaboration with individuals, non-profit organisations, business, social entrepreneurs and foundations, and “catalyse partnerships” with government.

In the United Kingdom, NESTA – the National Endowment for Science, Technology and the Arts – was established as a non-departmental public body (thereby operating at “arm's length” from government) with a GBP 250 million endowment from the National Lottery. The interest is used to fund and support innovation in science, technology and the arts, including social innovation, through research and contributing to the policy agenda and through funding start-up companies.

A critical element of its work on social innovation is “The Lab”. The Lab is a concept rather than a physical space, which includes projects aimed at creating better public services through social innovation. The work of The Lab is divided into three distinct parts. Challenge Lab looks at the contribution innovation can make to services, with an initial

focus on ageing, health and climate change; Methods Lab examines how public service innovation can be fostered; and Learning Lab seeks to disseminate what works and what does not work (www.nesta.org.uk).

Social innovation and entrepreneurship are also considered critical factors for economic development in Portugal, a view reflected in the recently approved Portuguese Government Programme. They are mainly addressed by two programmes: the Specific Programme to Support Social Economy Development (PADES), which includes support for social innovation, and the INOV-Social programme, which aims to support the modernisation of institutions and job creation through the annual inclusion of 1 000 qualified young people in social economy institutions.

France launched in December 2009 a “Large Loan” facility at the national level (*Grand emprunt*) to finance investment projects in order to increase growth in some priority areas as a response to the economic crisis. EUR 35 billion will be invested by the state and it is hoped that this could leverage from the private markets a further EUR 25 billion. The Large Loan facility will create a fund of EUR 100 million to support social entrepreneurship and social innovation.

Social innovation is also an area of growing interest in Australia. In 2008 the South Australian government announced the establishment of the Australian Centre for Social Innovation and committed AUD 6 million over three years to fund the organisation. The Centre is only now becoming operational (appointing its first Chief Executive in August 2009). It is anticipated that the centre will focus on challenging issues, such as health and ageing, as well as the multifaceted problems contributing to social exclusion.

Preliminary recommendations

Social entrepreneurship and social innovation aim to meet unsatisfied social needs and to respond to social challenges. There are tight links between the two fields. Social entrepreneurship is a vehicle and agent, though not the only one, of social innovation; social innovation very often originates inside the social entrepreneurship sector and can be taken up by other sectors later on. Social innovation is also about social change and refers more broadly to the processes and outcomes of that change.

Each of the two fields requires its own forms of support, and these are obviously to be provided with an understanding of the different geographical and traditional contexts in which support is provided. Some preliminary recommendations are provided here.

Social entrepreneurship

- *Build enabling environments and implement supporting policies*
 - ❖ Specific enabling environments (legal, fiscal, regulatory) might be needed for social entrepreneurs, according to the form that their initiatives take. Social enterprises, like associations or co-operatives, need an ad-hoc legal status and regulatory measures designed in order to allow them to fulfil their social and economic goals while pursuing medium and long-term sustainability on the market.
- *Provide sustainable finance*
 - ❖ A social capital marketplace should be fostered. Policy measures should include offering fiscal incentives to attract investors; offering multiple forms of credit enhancement; and, spearheading and monitoring innovative institutional arrangements between civil society, governments and financial institutions. Seed

funding is critical in the early phases of a project as it covers the costs linked to a start-up and also the costs of capital investments. This could be provided through small loans or grants.

- *Support further research*

- ❖ Governments should support further research into the field of social entrepreneurship and its main components (social enterprises, social economy organisations, social venture business, non-profit organisations, etc.), in order to assess the different needs of the entities belonging to the sector.

- *Provide training opportunities to social entrepreneurs and include social entrepreneurship in school and university curricula*

- ❖ Social entrepreneurs might need special training to help them hone and develop their entrepreneurial and creative skills. At the same time a culture of inclusive entrepreneurship needs to be nurtured to encourage role models of successful businesses and to include social entrepreneurship in school and university curricula.

- *Support market development for social enterprise and provide training for public officials and social enterprises to deal with public tenders*

- ❖ Public procurement measures should be further developed so that social enterprises can consolidate and expand their growth. European procurement law allows local authorities to insert certain social clauses in their procurement procedures terms of reference, for example to encourage the employment of long-term unemployed or disadvantaged people. Involving social enterprises in public service delivery can bring many community benefits. However, public officials are often not well acquainted with those benefits, while some small social enterprises are not familiar with public tenders and need skills and networks to successfully compete in public bids. Training both for public officials working on procurement and for social enterprises should be provided and encouraged.

- *Evaluate the impact of social entrepreneurship in selected areas*

- ❖ This will require the identification of quantitative and qualitative measurement tools, including the social return on investment measures and the balanced scorecard.

Social innovation

- *Support further research*

- ❖ Governments should support further research in the field of social innovation. More work is needed to develop a clear definition of social innovation, and to increase a general knowledge and understanding of its key elements and components and of the conditions that can help design, develop and foster it.

- *Establish innovation funds for social innovation*

- ❖ Dedicated funds are needed to support social innovation development. These could be dedicated to specific fields where social innovation should happen (or to support experiments and models at national and regional levels).

- *Create incubators for social innovations and foster the emergence of intermediaries who can connect social demand with the supply of social innovations*

- ❖ Incubators play a critical role in spreading social innovations, as they bring together the skills and expertise necessary to help sustain and develop a social enterprise;

provide a space to experiment and assess new ideas in practice; allow fast learning across a community of innovators; and, establish clear pathways for scaling up the most promising models. The absence of intermediaries in the social field is a key reason why too few innovations succeed. For intermediaries to be effective, they must be embedded across sectors – the state, the private sector and the social economy/non-profit sector.

- Evaluate the impact of social innovation in selected areas
 - ❖ This will require work on accountability, and the identification of quantitative and qualitative measurement tools, including Social Return on Investment measures and the balanced scorecard.

Notes

1. Kerlin (2006) analyses the commonalities and differences of the notion of social enterprise in the United States and Europe, and identifies ways in which Europeans and Americans can learn from each other. The broader definition of social enterprises in the United States (“... a wide spectrum of entities along a continuum from profit-oriented business engaged in socially beneficial activities (corporate philanthropies) to dual purpose business that mediate profit goals with social objectives (hybrids) to non-profit organisations engaged in mission supporting commercial activity (social purpose organisations)” (2006, p. 2) and the narrower one in the EU (usually enterprises with social and commercial aims, located in the third sector, i.e. the community, voluntary and social enterprise sector) can be explained by the differences in the history and in the institutional and legal frameworks for social enterprises in the two regions of the world.

Defourny and Nyssens (2008, p. 203) explain that the notions of social entrepreneurs, social entrepreneurship and social enterprise were used in an interchangeable way until recently and that “social entrepreneurship was seen as the process through which social entrepreneurs created social enterprises”. More recently though, the notions have been differentiated: “social entrepreneurs” in the United States are individuals launching activities dedicated to a social mission, while in Europe the emphasis is put more on the result of the activities of social entrepreneurs – that is, on the social enterprises themselves, which are usually of a collective nature, rather than on the individual social entrepreneurs themselves. The US approach to social entrepreneurs is therefore an individual, vocational one, while the European approach is a collective one. As far as the notion of social entrepreneurship is concerned, while the Americans tend to stress the blurred boundaries among institutional and legal forms, Europeans tend to stress the fact that social entrepreneurship is located inside the “third sector”. With reference to the notion of social enterprises, while in the European context this usually indicates non-profit entities pursuing the benefit of the community through the provision of goods and services, in the USA they are seen as “non-profit organisations more oriented towards the market and developing ‘earned income strategies’ as a response to decreasing public subsidies and to the limits of private grants from foundations” (p. 204).

2. Santos (2009) argues that if there are perceived positive externalities, government will act to address them, either by provisioning the activity themselves, or by creating public subsidies for the private provision of these activities. Still, some types of positive externalities, whose benefits will stay local and empower the most disadvantaged people, might be systematically neglected by governments. Here social entrepreneurship gives its full contribution. An example of this is the *Unis-Cité* initiative in France: this social enterprise was created to offer young people opportunities for civic service in order not only to increase their skills but also to foster their social integration. Only ten years later the French government, experiencing riots in some neighbourhoods, understood the importance of this service, and the way in which it made links between the problem of youth integration and the positive externalities generated by a civic service programme. It therefore funded such a programme on a large scale among French youth. This is an excellent example of how social entrepreneurs operate to address neglected positive externalities and then influence governments to act in the field.

3. In 2006 Light identified four components of social entrepreneurship: entrepreneurs – the people who pursue change; ideas – how change can be achieved; opportunities – for disrupting the equilibrium; and organisations – which seek to bring about change (Light, 2008, p. 17). These components, and the assumptions underpinning them, were formed based on the analysis of the

existing literature at that time, which had led him to a very inclusive definition of social entrepreneurship. Thus he suggested that it is “an effort by an individual, group, network, organisation or alliance of organisations that seeks sustainable, large scale change through pattern-breaking ideas in what governments, non-profits and business do to address significant social problems” (Light, 2008, p. 12). Later he challenged his assumptions through an evidence-based analysis approach and many of those he rejected in 2006 turned out to be true. This resulted in a more exclusive (that is narrow) definition of social entrepreneurship based on the idea that “there are special sets of attitudes, skills and practices that make social entrepreneurs and their work distinctive from more traditional public service” (Light, 2009, p. 21) and built around the following assumptions: 1) social entrepreneurs are not like other high achievers; 2) socially entrepreneurial ideas are big; 3) opportunities for grand changes come in waves; 4) socially entrepreneurial organisations are built to make changes.

4. Neck et al. (2009) focus on the landscape of social entrepreneurship rather than on defining it. In order to do so, they analyse four types of entrepreneurial forms; social purpose ventures; traditional ventures; social consequences ventures; and enterprising non-profits. Each of these has its own characteristics. They argue that only social purpose ventures (for-profit) and enterprising non-profits belong to the landscape of social entrepreneurship. “Regardless of profit orientation, social entrepreneurs identify opportunities to solve social problems: both people and planet problems” (p. 18).
5. Brouard and Larivet (2009) analyse most of the existing definitions of social entrepreneurship and identify a set of primary and secondary characteristics of it. The primary characteristics are as follows: social entrepreneurship represents a variety of activities and processes; it wants to create and sustain social value; it encourages more entrepreneurial approaches for social use; it displays various degrees of innovation and change; it is constrained by the external environment (p. 10). Among the secondary characteristics – that is, less recurring features – one can find various degrees of positive social transformation; various uses of business concepts, principles and models tools; a variety of legal forms, etc. (p. 10). Building on these characteristics, the authors define social entrepreneurship as follows: “Social entrepreneurship is a concept which represents a variety of activities and processes to create and sustain social value by using more entrepreneurial and innovative approaches and constrained by the external environment” (p. 11).
6. The public sector may be included because of the entrepreneurial nature of some of its social projects, which it employs in creating social value for the public good.
7. Somehow the ideal type of social enterprise.
8. The specific objectives of the Forum on Social Innovations are: to identify some key locally led actions for social innovation that are recognised as being successful in meeting their objectives but are not well known elsewhere; to review available evaluation evidence and research studies to explore their strengths and weaknesses and transfer potential; to raise external awareness and understanding of transferable policies and promote their take-up in a way that takes account of differing local contexts; and to reinforce international networks of policy makers in this field.
9. It was recently argued (Pol and Ville, 2009) that the distinction between social innovation and economic innovation made by the OECD is too rigid, and that this results in an empty intersection between the two. What the OECD definition wants to make clear is that the final goal of economic innovation is different from that of social innovation, which pursues the improvement of the quality of life of individuals and communities. This is not the articulated goal of economic innovation. Social innovation often happens as a consequence of a market (and government) failure in targeting needs. If the market intervenes later, this does not mean, as the authors suggest, that the innovation is no longer social.
10. Mulgan (2009) includes households as actors in the creation of social movements, such as the Slow Food Movement, initiated in Italy and now spreading internationally.
11. A comprehensive debate on the contribution of social economy organisations to local development through long-term projects, not constrained by the need of making profits in the short term, can be seen in Xavier Greffe’s chapter in Noya and Clarence (2007).

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ANNEX 5.A1

Definitions

Table 5A.1. Definitions of social entrepreneurship

Author(s)	Year	Definition
Fowler	2000	"Social entrepreneurship is the creation of viable (socio-)economic structures, relations, institutions, organisations and practices that yield and sustain social benefits." (p. 649)
CCSE	2001	"Defines 'social entrepreneurship' broadly to encompass a variety of initiatives which fall into two broad categories. First, in the for-profit sector, social entrepreneurship encompasses activities emphasising the importance of a socially engaged private sector, and the benefits that accrue to those who 'do well by doing good'. Second, it refers to activities encouraging more entrepreneurial approaches in the not-for-profit sector in order to increase organisational effectiveness and foster long-term sustainability". (p. 1)
Dees, Emerson and Economy	2002	"Social entrepreneurship is not about starting a business or becoming more commercial. It is about finding new and better ways to create social value." (p. 326)
Hibbert, Hogg and Quinn	2002	"Social entrepreneurship can be loosely defined as the use of entrepreneurial behaviour for social ends rather than for-profits objectives, or alternatively, that profits generated are used for the benefit of a specific disadvantaged group." (p. 288)
Institute for Social Entrepreneurs	2002	"Social entrepreneurship is the art of simultaneously pursuing both a financial and a social return on investment (the 'double bottom line')." (p. 1)
Thompson	2002	"Although social entrepreneurship is in evidence in many profit-seeking businesses – sometimes in their strategies and activities, sometimes through donations of money and time." (p. 413)
Lasprogata and Cotton	2003	"Social entrepreneurship means non-profit organisations that apply entrepreneurial strategies to sustain themselves financially while having a greater impact on their social mission (<i>i.e.</i> the 'double bottom line')." (p. 69)
Mair and Noboa	2003	"SE [Social entrepreneurship] is seen as the innovative use of resource combinations to pursue opportunities aiming at the creation of organisations and/or practices that yield and sustain social benefits." (p. 5)
Pomerantz	2003	"Social entrepreneurship can be defined as the development of innovative, mission-supporting, earned income, job creating or licensing ventures undertaken by individual social entrepreneurs, non profit organisations, or non-profits in association with for-profits." (p. 25)
Sullivan Mort, Weerawardena and Carnegie	2003	"Social entrepreneurship, the entrepreneurship leading to the establishment of new social enterprise, and the continued innovation in existing ones." (p. 76) "Conceptualises social entrepreneurship as a multidimensional construct involving the expression of entrepreneurially virtuous behaviour to achieve the social mission, a coherent unity of purpose and action in the face of moral complexity, the ability to recognise social value-creating opportunities and key decision-making characteristics of innovativeness, proactiveness and risk-taking." (p. 76)
Mair and Marti	2004	"The innovative use of resources to explore and exploit opportunities that meet a social need in a sustainable manner." (p. 3)
Haugh	2005	"Social entrepreneurship is the process of creating social enterprise." (p. 3)
Roberts and Woods	2005	"Social entrepreneurship is the construction, evaluation and pursuit of opportunities for transformative social change carried out by visionary, passionately dedicated individuals." (p. 49)
Seelos and Mair	2005	"Social entrepreneurship creates new models for the provision of products and services that cater directly to basic human needs that remain unsatisfied by current economic or social institutions." (pp. 243-244)

Table 5A.1. **Definitions of social entrepreneurship (cont.)**

Author(s)	Year	Definition
GEM	2006	"Social entrepreneurship is any attempt at new social enterprise activity or new enterprise creation such as self-employment, a new enterprise, or the expansion of an existing social enterprise by an individual, teams of individuals or established social enterprise, with social or community goals as its base and where the profit is invested in the activity or venture itself rather than returned to investors." (p. 5)
Leadbeater	2006	"One way to define social entrepreneurship would be through what motivates the actors, <i>i.e.</i> they want to create social value and put higher value on their social mission than financial one [...] Another way to define social entrepreneurship would be through outcomes: anyone who creates lasting social value through entrepreneurial activities is a social entrepreneur." (p. 241)
Mair and Marti	2006	"First, we view social entrepreneurship as a process of creating value by combining resources in new ways. Second, these resource combinations are intended primarily to explore and exploit opportunities to create social value by stimulating social change or meeting social needs. And third, when viewed as a process, social entrepreneurship involves the offering of services and products but can also refer to the creation of new organisations." (p. 37)
Nicholls	2006	"Innovative and effective activities that focus strategically on resolving social market failures and creating new opportunities to add social value systematically by using a range of resources and organisational formats to maximise social impacts and bring about changes." (p. 23)
Peredo and McLean	2006	"Social entrepreneurship is exercised where some person or group: 1) aim(s) at creating social value, either exclusively or at least in some prominent way; 2) show(s) a capacity to recognise and take advantage of opportunities to create that value ('envision'); 3) employ(s) innovation, ranging from outright invention to adapting someone else's novelty, in creating and/or distributing social value; 4) is/are willing to accept an above-average degree of risk in creating and disseminating social value; and 5) is/are unusually resourceful in being relatively undaunted by scarce assets in pursuing their social venture." (p. 64)
Perrini	2006	"Entailing innovation designed to explicitly improve societal wellbeing, housed within entrepreneurial organisations that initiate this level of change in society." (p. 247)
Weerawardena and Mort	2006	"Social entrepreneurship strives to achieve social value creation and this requires the display of innovativeness, proactiveness and risk management behaviour. This behaviour is constrained by the desire to achieve the social mission and to maintain the sustainability of existing organisation. In doing so social entrepreneurs are responsive to and constrained by environmental dynamics. They continuously interact with a turbulent and dynamic environment that forces them to pursue sustainability, often within the context of the relative resource poverty of the organisation." (p. 32)
Zhara, Gedajlovic, Neubaum and Shulman	2006	"Social entrepreneurship concerns the processes related to the discovery of opportunities to create social wealth and the organisational processes developed and employed to achieve that end." (p. 12)
Cochran	2007	"Social entrepreneurship is the process of applying the principles of business and entrepreneurship to social problems." (p. 451)
Haugh	2007	"Social entrepreneurship, the simultaneous pursuit of economic, social, and environmental goals by enterprising ventures [...] Social entrepreneurship is first and foremost a practical response to unmet individual and societal needs." (p. 743)
Martin and Osberg	2007	"We define social entrepreneurship as having the following three components: 1) identifying a stable but inherently unjust equilibrium that causes the exclusion, marginalisation, or suffering of a segment of humanity that lacks the financial means or political clout to achieve any transformative benefit on its own; 2) identifying an opportunity in this unjust equilibrium, developing a social value proposition, and bringing to bear inspiration, creativity, direct action, courage, and fortitude, thereby challenging the stable state's hegemony; and 3) forging a new, stable equilibrium that releases trapped potential or alleviates the suffering of the targeted group, and through imitation and the creation of a stable ecosystem around the new equilibrium ensuring a better future for the targeted group and even society at large." (p. 35)
Wei-Skillern, <i>et al.</i>	2007	"We define social entrepreneurship as an innovative, social value creating activity that can occur within or across the non-profit, business, or government sector." (p. 4)
Brock and Ashoka's Global Academy for Social Entrepreneurship	2008	"Innovative approaches to social change" or "using business concepts and tools to solve social problems." (p. 3)
CASE	2008	"Innovative and resourceful approaches to addressing social problems." (p. 1)
Zhara, Gedajlovic, Neubaum, Shulman	2008	"Social entrepreneurship encompasses the activities and processes undertaken to discover, define and exploit opportunities in order to enhance social wealth by creating new ventures or managing existing organisations in an innovative manner." (p. 118)

Source: Brouard and Larivet, 2009.

Table 5A.2. **Definitions of social innovation**

Source	Year	Definition
OECD /LEED Forum on Social Innovations	2000	<p>"The OECD working definition of social innovation implies conceptual, process or product change, organisational change and changes in financing, and can deal with new relationships with stakeholders and territories. 'Social innovation' seeks new answers to social problems by:</p> <ul style="list-style-type: none"> • identifying and delivering new services that improve the quality of life of individuals and communities; • identifying and implementing new labour market integration processes, new competencies, new jobs, and new forms of participation, as diverse elements that each contribute to improving the position of individuals in the workforce. <p>Social innovations can therefore be seen as dealing with the welfare of individuals and communities, both as consumers and producers. The elements of this welfare are linked with their quality of life and activity. Wherever social innovations appear, they always bring about new references or processes. Social innovation is distinct from economic innovation because it is not about introducing new types of production or exploiting new markets in itself but is about satisfying new needs not provided by the market (even if markets intervene later) or creating new, more satisfactory ways of insertion in terms of giving people a place and a role in production.</p> <p>The key distinction is that social innovation deals with improving the welfare of individuals and community through employment, consumption or participation, its expressed purpose being therefore to provide solutions for individual and community problems."</p>
<i>Centre de recherche sur les innovations sociales (CRISE/UQAM)</i>	2003	"A social innovation is an intervention initiated by social actors to respond to an inspiration, to provide for a need, to benefit from an opportunity to modify social relationships, to transform established patterns of behaviour, or to propose new cultural orientations."
Skoll World Forum on Social Entrepreneurship and Social Innovation	2007	Social innovation "can simply be understood as 'new ideas that work which address social or environmental needs'. It may occur as a result of addressing new needs, reframing circumstances to make unmet social needs clear and urgent, or changing organisational structures to grasp new opportunities to add social value. New programmes, models, or ways of thinking – sometimes a combination of all three – may be the result. Social innovation is more than just invention. Diffusion or the scale of ideas is an integral part of making its impact effective, as is co-ordinated action by a wide range of people and organisations spanning social, government and business sectors." (Skoll, in Westall, 2007)
EMES	2007	According to the EMES, social innovation can be seen "As arising from a new kind of entrepreneurship focused on social goals, new products or new qualities of products, new methods of organisation and/or production (often involving different partners and resources), new production factors such as atypical employment and involvement in governance, mixing voluntary and paid employment, as well as new market relations such as the changing welfare mix, or new legal forms such as the social co-operative in Italy which encourages entrepreneurial and commercial dynamics and formalising multi-stakeholding." (Westall, 2007)
	2007	<p>"Innovation is often given complex definitions. We prefer the simple one: 'new ideas that work'. This differentiates innovation from improvement, which implies only incremental change; and from creativity and invention, which are vital to innovation but miss out the hard work of implementation and diffusion that makes promising ideas useful. Social innovation refers to new ideas that work in meeting social goals. Defined in this way the term has, potentially, very wide boundaries – from gay partnerships to new ways of using mobile phone texting, and from new lifestyles to new products and services. We have also suggested a somewhat narrower definition:</p> <p>Innovative activities and services that are motivated by the goal of meeting a social need and that are predominantly developed and diffused through organisations whose primary purposes are social. This differentiates social innovation from business innovations which are generally motivated by profit maximisation and diffused through organisations that are primarily motivated by profit maximisation. There are of course many borderline cases, for example models of distance learning that were pioneered in social organisations but then adopted by businesses, or for-profit businesses innovating new approaches to helping disabled people into work.</p> <p>But these definitions provide a reasonable starting point (and overly precise definitions tend to limit understanding rather than helping it)" (Mulgan <i>et al.</i>, 2007)</p>
Mulgan <i>et al.</i>		
NESTA	2008b	<p>According to NESTA (2008) social innovation refers to</p> <ul style="list-style-type: none"> • "new ideas (products, services and models) developed to fulfil unmet social needs; • many of those supported by the public sector, others by community groups and voluntary organisations; • social innovation is not restricted to any one sector or field; • it can take the form of a new service, initiative or organisation, or a new approach to the organisation and delivery of services; • social innovation can either spread throughout a profession or sector – like education or healthcare – or geographically from one place to another."

Table 5A.2. **Definitions of social innovation** (cont.)

Source	Year	Definition
Stanford Social Innovation Review	2008	"A novel solution to a social problem that is more effective, efficient, sustainable, or just than existing solutions and for which the value created accrues primarily to society as a whole rather than private individuals. A social innovation can be a product, production process, or technology (much like innovation in general), but it can also be a principle, an idea, a piece of legislation, a social movement, an intervention, or some combination of them." (Phills, Deiglmeier and Miller, 2008)
EMES	2007	According to the EMES, social innovation can be seen "as arising from a new kind of entrepreneurship focused on social goals, new products of new qualities of products, new methods of organisation and/or production (often involving different partners and resources), new production factors such as atypical employment and involvement in governance, mixing voluntary and paid employment, as well as new market relations such as the changing welfare mix, or new legal forms such as the social co-operative in Italy which encourages entrepreneurial and commercial dynamics and formalising multi-stakeholding." (Westall, 2007)
Harris and Albury	2009	"Innovation that is explicitly for the social and public good; innovation inspired by the desire to meet social needs which can be neglected by traditional forms of private market provision or be poorly served or unresolved by services organised by the state. Social innovation can take place inside or outside of public services and can be developed by the public, private or third sector, users and communities; however, some innovations developed by these sectors do not qualify as social innovation because they do not directly address major social challenges."

ANNEX A

Policy Recommendations: Strengthening Innovation through SMEs and Entrepreneurship

A summary of the policy recommendations of the report is presented in the Box below.

Box A1. **Summary of Policy Recommendations**

Policies to strengthen entrepreneurship and increase the innovation capabilities of SMEs should be one of the main planks of government innovation strategies. These policies should address four main priorities:

1. Promote conducive entrepreneurship cultures and framework conditions

- Foster positive attitudes in society to business start up and growth including through education and the media.
- Ensure that the specific needs and conditions of entrepreneurship and SME activity are taken into account in framework conditions and regulations affecting business.
- Facilitate the inter-linked processes of firm dynamics, or the combined package of firm entry, growth, decline and exit.
- Tackle finance gaps affecting new and small firms, such as in the early stages of innovation.
- Secure conducive conditions for both high-employment-growth firms and innovation in the bulk of new and small firms.

2. Embed new firms and SMEs in knowledge flows

- Strengthen knowledge-based entrepreneurship by providing advice and training to start-up entrepreneurs with strong technological knowledge and developing programmes for corporate and university spin-offs, including proof-of-concept, pre-competitive research and seed funding support.
- Promote partnerships and collaboration activities within innovation systems that involve new and small firms, including provision of infrastructure for collaboration such as science parks, collaborative research programmes, services for knowledge transfer and joint technology foresight activities and responses.
- Stimulate local knowledge flows by involving SMEs in interactive learning networks, promoting the local entrepreneurship engagement aspects of university “third missions”, developing technology bridging institutions, strengthening the innovation absorption capacity of SMEs and promoting local mobility of labour into and out of new and small firms.
- Promote knowledge spillovers among “related variety” industries with related competencies and knowledge bases in order to facilitate the emergence of new cross-sectoral combinations of products, services and technologies with growth potential.

Box A1. **Summary of Policy Recommendations** (cont.)

- Encourage openness of innovation systems and their SMEs to global sources of knowledge by facilitating cross-border strategic alliances such as marketing and technology partnerships, securing better linkages between SMEs and foreign direct investment ventures and attracting highly-skilled labour from abroad.

3. Strengthen entrepreneurial human capital

- Build up entrepreneurship education in universities and higher education institutions by smartly scaling-up, shifting the teaching emphasis from business management to growth-oriented entrepreneurship, introducing interactive teaching methods that incorporate practical experience and linking into wider networks including alumni networks and external economic development organisations.
- Strengthen vocational education and training programmes for business founders, SME managers and SME workforces by changing the nature of vocational education and training to better fit the needs and motivations of entrepreneurs, offering short-duration training for SME owner-managers and increasing the flexibility of vocational education and training for SME workforces.
- Embed teaching of an entrepreneurial mindset in schools through changes in curricula and introduction of relevant teacher training and teaching materials designed for entrepreneurship.
- Reinforce training in SMEs by launching in-company projects, increasing SME apprenticeships and developing the training function of small business support programmes, such as for business succession, management development and business counseling.
- Increase the use of informal learning sources by facilitating collaborations with firms and consultants providing knowledge-intensive services activities, such as through innovation voucher programmes for SMEs.
- Strengthen the contribution of local skills ecosystems to entrepreneurship and SME development through greater engagement of employers, unions and individuals involved in new and small firms with local training programmes and development of integrated training strategies combining training in higher education, vocational education and training and formal and informal training.

4. Improve the environment for social entrepreneurship and social innovation

- Build financial, fiscal, legal and regulatory environments that enable social enterprises to meet their economic and social goals, including facilitation of a social investment marketplace, introduction of public procurement measures that include socio-environmental criteria and experimentation with innovative institutional arrangements between civil society, governments, financial institutions and social enterprise ventures.
- Undertake research into social entrepreneurship and social innovation and their main components in order to create clear definitions and understandings of how to develop them.
- Evaluate the impacts of social entrepreneurship and social innovation policies and programmes using appropriate methods such as Social Return on Investment measures and balanced scorecards.
- Provide training opportunities to social entrepreneurs and include social entrepreneurship in school and university curricula.
- Introduce social clauses in public procurement procedures to encourage involvement of social enterprises in provision of social goods and services.
- Establish social innovation funds in specific fields where social innovation is needed or to support promising experiments and models.
- Create incubators for social enterprises and social innovation intermediaries to bring together the skills and expertise necessary to help sustain and develop social projects, provide a space to experiment, support learning across a community of innovators and establish clear pathways for scaling up the most promising models.

Glossary

Absorptive capacity

The knowledge base that small firms need to interact with and learn from universities, research organisations and technologically-advanced companies. This is key to receiving external knowledge and avoiding technology lock-ins in innovation systems.

Advanced skills

Knowledge-intensive skills found in technical occupations or in management positions, but also social and communication skills related to team work and language skills.

Basic skills

Generic and routine skills found in occupations present in most industries and organisations. They include general IT user skills, oral and written communication, clerical competencies, etc.

Breakthrough innovation

A discontinuous innovation representing breaks with previous technologies and markets. This is sometimes considered to be the realm of innovative new and small firms.

Converging skills

Integration of different skills which can result in an ability or competence of high-knowledge-intensity content. For example, “entrepreneurship skills” combine generic skills related to communication, numeracy and general IT use, some advanced skills on business management and human resources and some specific skills related to risk assessment and warranting, strategic thinking and the ability to make the most out of professional and personal networks.

Cross-fertilising technologies

Generic technologies such as biotechnologies, nanotechnologies or materials sciences that have several possible industrial applications and therefore have a strong impact on productivity and growth.

Cluster

A geographic concentration of interconnected companies, specialised suppliers, service providers, firms in related industries, and associated institutions in particular fields that compete but also co-operate on common issues and objectives.

Entrepreneurship

The phenomenon associated with entrepreneurial activity, namely enterprising human action in pursuit of the generation of value through the creation or expansion of economic activity by identifying and exploiting new products, processes or markets. It may occur through new business creation or within SMEs, large firms and the public and non-profit sectors.

Entrepreneurship skills

The skills that an entrepreneur needs to start and operate successfully a new firm. They include small business management skills (such as business planning and accounting), strategic skills (such as decision-making and opportunity recognition) and entrepreneurial traits (such as leadership and creativity).

Green growth

Means by which the economy can make the transition to environmental sustainability. It involves promoting growth and development while reducing pollution and greenhouse gas emissions, minimising waste and inefficient use of natural resources, maintaining biodiversity, and strengthening energy security. It requires further “decoupling” of environmental impacts from economic growth, and greening of consumption and production patterns, while reducing poverty and improving health and job prospects. Green growth means making investment in the environment a new source of economic growth.

Green jobs

Jobs that contribute to protecting the environment and reducing the harmful effects human activity has on it (mitigation), or to helping to better cope with current climate change conditions (adaptation). Examples include jobs that tackle climate change, protect the ecosystem, encourage biodiversity, and reduce carbon emissions and the consumption of energy, materials and water.

High-tech manufacturing (HTM)

Manufacturing sectors that make intensive use of knowledge and technology, including aerospace, pharmaceuticals, computers and office machinery, electronics-communications, and scientific instruments.

Incremental innovation

An improvement on existing products or processes that is achieved through internal R&D, learning-by-doing or by acquiring knowledge from external sources. This is sometimes considered to be the realm of large firms that are constrained by the need to maximise profits on existing products and services.

Innovation system

The actors, institutions and relationships which interact in the production, diffusion and use of new and economically useful knowledge. Innovation systems can take a

national, regional or local dimension. They include firms, universities, finance suppliers and public sector agencies bound together by common sets of norms and routines.

Knowledge economy

An economic paradigm in which knowledge is widely regarded as the most important factor of production and driver of growth. Investment in knowledge creation, diffusion and exploitation are critical in this environment.

Knowledge flows

The flows of knowledge occurring when firms collaborate with each other or when they do so with external bodies (*e.g.* research organisations and technology institutions) especially on technology and market issues. Outward knowledge flows are often associated with an inflow of payments from licensing, fees and sales. Inward knowledge flows are critical in enabling firms to access new ideas. Both types of flows support innovation and competitiveness.

Knowledge-intensive service activities (KISA)

These are sources and carriers of knowledge in sectors such as research and development, legal services, computing and information technology and marketing. The engagement of SMEs with providers of KISAs supports their learning and innovation processes. This engagement may be through either formal (contractual) or informal (networking) activities. In the text, KISA also takes the meaning of a standard industrial classification including the following sectors: post and telecommunications; computer and related activities; research and development.

Learning failure

A type of systemic failure occurring when firms in an innovation system have not developed sufficient absorptive capacity to codify and introduce new knowledge in their business operations.

Lock-in

A type of systemic failure by which an innovation system is unable to move away from dominant technologies, markets, skills and policy approaches and hence benefit from new markets.

Non-technological innovation

Innovation that goes beyond science and technology to include organisational, marketing and design changes. It is particularly important in service industries and among SMEs, which are less R&D-intensive than large firms.

Open innovation

The purposeful use of internal and external knowledge by firms to accelerate the internal process of business innovation. External knowledge can be acquired through

relationships outside of the firm including licensing, spin-offs and informal research and knowledge transfer collaborations.

People climate

Societal factors other than mere economic opportunities able to influence the decision of skilled workers about where to live and work. These factors can include tolerance towards diversity, active cultural life, large green spaces, presence of recreational amenities, etc.

Related variety

Industries that are related through shared or complementary competences enabling the spill over of knowledge among sectors. The concept is used to explore how economies can grow by moving from mature existing specialisations into growing activities by combining knowledge in new ways.

Silver jobs

Jobs mainly in service sectors that provide care and assistance for the elderly.

Skills ecosystems

Self-sustaining concentrations of workforce skills and knowledge in industries or places. They involve multiple actors in interdependent relationships, include industry, universities, colleges, employment agencies, unions and training organisations/associations, and are supported by integrated policy approaches to skills development.

Small and medium-sized enterprises (SMEs)

Non-subsidiary, independent firms which employ less than a given number of employees. This number varies across countries. The most frequent upper limit designating an SME is 250 employees, as in the European Union. However, some countries set the limit at 200 employees, while the United States considers SMEs to include firms with fewer than 500 employees. Small firms are generally considered those with fewer than 50 employees and micro firms have at most 10 employees. Financial information on turnover or balance sheets can also be used to define SMEs.

Social economy

The ensemble of entities that explicitly have both an economic and a social mission. These can include associations, co-operatives, mutual organisations, foundations and more recently social enterprises. This type of economy is essentially regulated by the stakeholder principle, which stands in stark contrast to the notion of shareholder capitalism.

Social enterprise

Any private activity conducted in the public interest that is organised with an entrepreneurial strategy and whose main purpose is not the maximisation of profits, but the attainment of certain economic and social goals. For example, a social enterprise can

bring innovative solutions to problems such as social exclusion and unemployment through the production of goods and services. They come in a variety of legal forms. They often provide personal and welfare services and training and integration into employment of persons excluded from the labour market.

Social entrepreneur

A person who recognises a social problem and uses entrepreneurial principles to organise, create and manage a venture to make social changes. Social entrepreneurs are change-makers and move ideas.

Social entrepreneurship

A type of entrepreneurship that aims to provide innovative solutions to unsolved social problems and challenges. It often goes hand-in-hand with social innovation processes. Social entrepreneurs organise themselves across a wide spectrum of organisations which have an entrepreneurial approach and whose primary mission is to tackle social problems and generate radical or more limited social changes. Social entrepreneurship is therefore about solving social problems rather than exploiting market opportunities in order to maximise profits.

Social innovation

A type of innovation that answers to social problems by identifying and delivering new services that improve the quality of life and welfare of individuals and communities, both as consumers and producers. Social innovations can, for instance, concern new competencies, jobs and forms of participation in the labour market, each of which contributes to improving the position of individuals in the workforce.

Spin-off

A new firm that is created by a former employee of a company (i.e. corporate spin-off) or by researchers, teachers or students of a university (i.e. university spin-off). Corporate spin-offs are often established to outsource stages of production previously carried out in the parent company. University spin-offs often exploit technologies generated within the university.

Systemic failures

Systemic failures are problems in innovation systems that prevent the generation, circulation and exploitation of knowledge. Examples include technology lock-ins, learning failures and poor connections among the actors of an innovation system.

Talent

As opposed to skills, which are competences learned through formal or informal methods, talent indicates an innate ability to do something. Entrepreneurial talents may include leadership, creativity and self-motivation.

Third sector

Often used as a synonym for the non-profit sector, and more recently also for the “social economy”, particularly in European literature. The term reflects the idea that the sector sits between the public and private sectors. It is composed by a number of entities, including associations, charities, community-based organisations, etc.

Value chain

The different stages of production that turn a set of inputs into a final output sold in the market and through which firms create their profit margins and value for shareholders.

Vocational Education and Training (VET)

Formal education and training programmes that have a task orientation rather than an academic nature and that prepare people for jobs and activities closely related to a specific trade or occupation.

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Welcome to the entrepreneurial economy: small firms are playing an ever-increasing role in innovation, driven by changes in technologies and markets. Whilst some spin-offs and high growth firms are having remarkable success, however, the broad bulk of small firms are not capitalising on their advantages. This book explores how government policy can boost innovation by improving the environment for entrepreneurship and small firm development, and increasing the innovative capacities of enterprises. Policy findings and recommendations are presented in three key areas: embedding firms in knowledge flows; developing entrepreneurship skills; and social entrepreneurship. In addition, country notes present statistics and policy data on SMEs, entrepreneurship and innovation for 40 economies, including OECD countries, Brazil, China, Estonia, Indonesia, Israel, the Russian Federation, Slovenia and South Africa.

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Related reading

SMEs and Entrepreneurship in Poland (2010)

Clusters Innovation and Entrepreneurship (2009)

OECD Framework for the Evaluation of SME and Entrepreneurship Policies and Programmes (2007)

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