Development Centre Studies

Start-up Latin America

PROMOTING INNOVATION IN THE REGION

Argentina
Brazil
Chile
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Foreword

Supporting innovation and productive development is a key tool in the development strategies of open, global economies. Although developing countries still do not have the same capacities as OECD countries to introduce innovations into markets, they have become significantly more entrepreneurial over the last decade. This is partly because of their recent high economic growth, driven by China's entry into global markets and the growing demand of their new middle classes. Amid renewed interest in innovation, these countries are seeing an upsurge of new technology-based companies with a high growth potential, which is leaving its mark on both private-sector initiatives and public policies. Nevertheless, there is still little evidence showing the speed at which start-ups are being created in developing countries and how they are being supported by public policy.

This document is part of the OECD Development Centre's work on productive development and innovation and the initiatives to help boost a network to exchange experiences of innovation policies in Latin America. The document analyses existing support mechanisms and policies to support the creation of start-ups in Argentina, Brazil, Chile, Colombia, Mexico and Peru. Based on the experiences of Latin American and OECD countries, the document proposes guidelines to improve the design and implementation of such policies to help make them more effective.

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Editorial

Innovation and the creation of new firms are essential to sustain medium- and long-term growth. In the global knowledge economy, countries' capacity to grow sustainably while attending to the demands of the emerging "middle classes" depends largely on their ability to create new jobs, close the productivity gap and raise the competitiveness of domestic firms. Technology-based start-ups are essential to transform a country's production and can boost and diversify the economy. But they must overcome major hurdles to get up and running and to expand, especially in developing countries.

Latin American countries are currently moving policies to support productive development and innovation up their development agendas. In particular, they are creating new incentives and new forms of finance. Amid renewed interest in innovation, start-ups are an emerging topic in Latin American countries. This report shows that several Latin American countries are in the process of strengthening their existing instruments and designing new programmes to foster start-ups. Different countries in the region have adopted different support models. In Argentina, major research projects have given rise to successful spin-offs, but financing them is still a major hurdle that is holding back their creation and development. Brazil has the most dynamic private sector, in part due to the size of its economy. Chile has emphasised the international focus of new technology-based firms, striving to attract talent and expand Chilean start-ups internationally. Colombia and Peru are currently designing new finance and training schemes to support new entrepreneurs. In recent years, Mexico has invested in improving its regulatory framework to foster the development of start-ups. In many cases it is still too early to assess the impact of support for start-ups in these countries. However, a review of current government measures to foster new innovative firms reveals that the region is making progress. It has accumulated learning and achieved much, but it still faces many challenges.

How can governments efficiently support the creation of start-ups on the basis of new demands or scientific and technological advances? How can they generate synergies between emerging initiatives in the private sector and public policies? Access to finance is a determining factor, but effective policies require greater co-ordination among infrastructure policies, provision of services and policies to support skills and innovation. They also require a better regulatory framework to foster the creation and development of start-ups.

This report offers an overview of policies to support the creation of start-ups in Latin America, focusing on each country's strategic options and challenges. The report analyses the main policies of some OECD countries (Australia, Finland and Israel) then compares them with the mechanisms in six Latin American countries (Argentina, Brazil, Chile, Colombia, Mexico and Peru). How innovation can contribute to development in Latin America is currently the subject of discussion. This document is an important contribution to that debate, revealing the countries' accumulated learning in supporting the creation of start-ups and setting out policy options to advance in this area.

Countries in the region are rethinking their development strategies to take advantage of the present economic climate and move towards sustained, inclusive growth patterns. In this context, new firms are essential to ensure the new economic environment can be navigated successfully. Public policies can play an important role in generating incentives to create new firms and in promoting productive diversification. It is therefore important for countries in the region to share their experiences and to discuss policies when they are looking to improve their innovation policies. They can thus share their accumulated learning and reflect upon how to deal with emerging challenges. This report, which was compiled as part of the process to strengthen dialogue on innovation policies in Latin American countries, is a relevant contribution to the present debate on how to mobilise private-sector initiative and start-ups for development.

Mario Pezzini

Director,
OECD Development Centre

Acronyms and abbreviations

ANPCyT	Argentinean National Agency for the Promotion of Science and Technology
ANPEI	National Association of Research and Development of Innovative Companies in Brazil
ANPROTEC	National Association of Organisations to Promote Innovative Enterprises in Brazil
BANCOLDEX	Colombian Foreign Trade Bank
BNDES	Brazilian National Development Bank
CAF	Development Bank of Latin America
CNIC	National Innovation Council for Competitiveness of Chile
CNPq	National Council of Technological and Scientific Development of Brazil
COFIDE	Development Finance Corporation of Peru
COLCIENCIAS	Colombian Administrative Department of Science, Technology and Innovation
CONACYT	National Science and Technology Council of Mexico
CONCYTEC	National Science and Technology Council of Peru
CONICET	Argentinean National Scientific and Technical Research Council
CONICYT	National Research, Science and Technology Commission of Chile
CORFO	Chilean Production Development Corporation
ECLAC	United Nations Economic Commission for Latin America and the Caribbean

ESVCLP	Early Stage Venture Capital Limited Partnerships in Australia
FAPESP	São Paulo's Research and Development Support Foundation
FII	Finnish Industry Investment
FINCyT	Funding for Innovation, Science and Technology of Peru
FINEP	Brazilian National Innovation Agency
GDP	Gross domestic product
GEM	Global Entrepreneurship Monitor
ICT	Information and communications technology
IDB	Inter-American Development Bank
LAVCA	Latin American Private Equity and Venture Capital Association
MCTI	Ministry of Science, Technology and Innovation of Brazil
MINCyT	Argentinean Ministry of Science, Technology and Productive Innovation
NSF	National Science Foundation of the United States
OCS	Office of the Chief Scientist in Israel
OECD	Organisation for Economic Co-operation and Development
PRODUCE	Ministry of Production of Peru
R&D	Research and development
RYCIT	Ibero-American Network of Science and Technology
SBIR	Small Business Innovation Research in the United States
SMEs	Small and medium-sized enterprises
SOFOFA	Federation of Chilean Industry
TTOs	Technology Transfer Offices
UNCTAD	United Nations Conference on Trade and Development
UNECE	United Nations Economic Commission for Europe
UNESCO	United Nations Educational, Scientific and Cultural Organization
USD	United States dollar
VCLP	Venture Capital Limited Partnerships in Australia

Executive summary

Promoting the creation of start-ups is gaining momentum in OECD and non-OECD economies. Nevertheless, there is still little evidence revealing the speed at which these new companies are being created and how they are being supported by public policy in developing countries. With the aim of identifying good practices and promoting knowledge-sharing among countries, this study analyses the role of public policy in promoting the creation and expansion of start-ups in six Latin American countries: Argentina, Brazil, Chile, Colombia, Mexico and Peru.

Start-ups contribute to structural change by introducing new knowledge-intensive products and services and by improving productivity growth. Although there is no universal definition of a start-up, these firms are characterised by their dynamism and innovation orientation. While some countries define start-ups based on their performance (i.e. gazelles, high growth enterprises), others focus on their technological or innovation content. In general, start-ups tend to develop in specific sectors such as, among others, information and communication technologies (ICTs), health care and pharmaceuticals, biotechnology, renewable energies and clean technologies.

Start-ups face barriers in their creation and expansion stages in both OECD and Latin American countries. Often, the innovator or scientist lacks the specific entrepreneurial skills and/or access to financial resources needed to create and develop a business. Public policies therefore play an important role in promoting start-ups by facilitating access to finance, development of entrepreneurial skills and by setting up a business friendly regulatory framework. Since the 1990s, many OECD countries have been using a wide range of instruments to support start-ups. The experiences of Australia, Finland and Israel show the importance of offering adequate financing at all stages of firm development, such as seed funding in the creation stage and venture capital and business angels investments in the expansion stage. Seed capital

typically requires permanent public support. Venture-capital and business angels, however, mainly need support in the initial stages of their development. As the industry develops, direct public-sector support can be withdrawn while handing over control to private investment, as was the case in Australia and Israel.

Start-ups are an emerging phenomenon in Latin America's innovation strategies. Argentina has been successfully introducing performance-based management criteria in its business incubators and in its intermediate agencies facilitating access to public programmes. Brazil and Chile have accumulated knowledge in supporting start-ups since the 1990s. Over the past years, both countries have introduced new incentives to promote start-ups combining financing with business and training services. Mexico has improved its legal framework to facilitate start-up creation and expansion. Colombia and Peru are currently designing "new generation" support tools that combine seed capital with business training services for new entrepreneurs.

Latin American countries are highly heterogeneous and are implementing different support mechanisms. Yet, in the six countries analysed in this study, two common trends stand out: *i)* the increasing role of regional and local governments (such as the Ciudad de Buenos Aires in Argentina and in the States of Porto Alegre, Amazonia and Sao Paulo in Brazil); and *ii)* the emerging role of large companies that are increasingly involved in financing and coaching start-uppers as part of their new open innovation strategies. The case of Wayra in Peru is an example of a private sector initiative that is helping to bring dynamism to support start-ups.

Latin America is not the first region that comes to mind when thinking about start-ups. Nevertheless, the countries from the region are making an important effort to promote start-ups in order to advance in becoming relevant players within the global knowledge economy. From the analyses presented in this report it is possible to draw the following recommendations in order to progress in designing and implementing policy to support start-ups in the region:

- **Increasing co-ordination in strategy planning**. Start-up support programmes can only reach their full potential when they are set within broader productive transformation strategies that contribute to generate a favourable environment for these companies to develop.
- **Ensuring the availability of a balanced policy mix targeted to the different development stages.** Often, countries tend to focus on one particular tool, overlooking other important elements which are

critical for these firms to develop. For instance, while venture capital is essential for the expansion stages of start-ups, its effectiveness will depend on the existence of seed funding available for entrepreneurs in earlier development stages.

- **Designing and implementing more sophisticated support tools that are more in line with emerging global trends**. Despite the region's recent progress in promoting start-ups, Latin American countries still face important barriers that need to be overcome by: *i)* simplifying the regulatory framework to facilitate the creation and expansion of start-ups; *ii)* identifying opportunities to promote business angel networks; *iii)* investing in promoting an entrepreneurial culture, particularly among young people; *iv)* introducing performance-based management criteria in incubators and agencies that facilitate access to public development programmes; and *v)* designing integrated support programmes that simultaneously offer financing, business services and entrepreneurial skills learning.
- **Taking advantage of emerging private sector open innovation trends, corporate venture capital and knowledge-sharing** to foster the quantity and quality of innovative entrepreneurial projects in the region.
- **Evaluating programmes and adjusting incentive schemes based on performance.** This also requires investing in creating new, better metrics for measuring the dynamics of creation and expansion of start-ups in Latin America in order to improve the capacity to design better policies based on results.

Assessment and recommendations

Start-ups are important agents for change to create good-quality jobs, higher growth and innovation.

Recently, start-ups have moved further into the media spotlight, attracting growing attention from innovation experts and policy makers. The spread of information and communication technologies (ICTs) and transformation of the organisation of production throughout the world, where firms increasingly work in networks, have helped generate growing interest in start-ups both in OECD and in developing countries. Start-ups can contribute to structural change by introducing new knowledge-intensive products and services. They also help sustain innovation, drive productivity growth and create opportunities for good-quality jobs.

Although there is growing interest in supporting the creation of start-ups, there is no single, universal definition for this type of firm. They can be defined on the basis of their performance, i.e. their growth potential, or their innovative and technological focus. These firms are innovative and tend to provide solutions to emerging problems or create new demands by developing new types of businesses.

Different Latin American countries have different approaches in defining start-ups. Argentina and Brazil define them as new technology-based firms, Chile as potentially high-growth firms, and Colombia and Peru as ICT-based firms. This report uses the term "start-ups" to refer to new innovation-intensive or high-impact firms for which support mechanisms are being developed in Latin American countries.

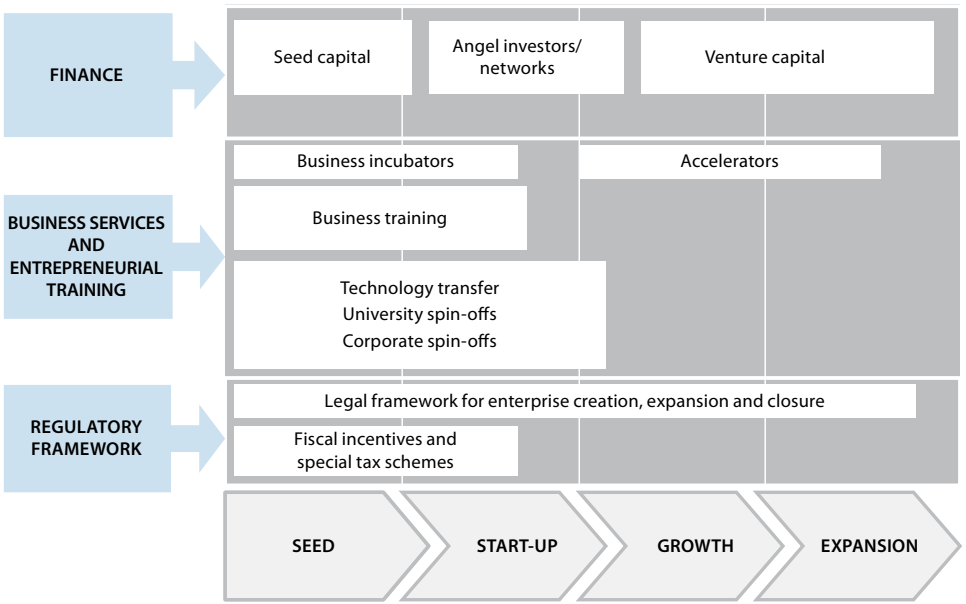
In both OECD and Latin American countries there are barriers to the creation and expansion of start-ups. Public policies can play an important role in promoting the creation of these firms and in supporting them through the seed and growth stages.

Start-ups face greater challenges than traditional firms because their business is risky and uncertain, particularly during the early phases. Public policies can support them through a policy mix targeted at each stage of development, offering finance, advice and training, in addition to promoting a favourable legal framework (see Figure 0.1). Each country supports start-ups through a different policy mix, depending on its institutional and regional structure and on its science and production base. The institutions in charge of start-up promotion include bodies responsible for innovation policy, productive development and competitiveness and the agencies focused on supporting start-ups, such as incubators, technology parks, angel investor networks and training institutions.

Start-ups need appropriate forms of finance for each stage of their development. In the seed and start-up phases, seed capital is vital. In the expansion phase, angel investors and venture capital act as bridges before successful firms can enter the capital markets. The experiences of OECD countries and some Latin American countries show how public policies can significantly affect the supply of seed capital and the development of angel investors and venture capital. Moreover, there are often legal barriers to the creation of these start-ups, especially in developing countries, and there are capacity gaps between researchers' and innovators' technical knowledge and their business-management skills. It is therefore important to simplify procedures, gradually improve legal frameworks, support training in business skills and provide infrastructure support (Internet access, access to physical premises to incubate innovative projects, etc.) to increase the number of start-ups in a particular production and innovation ecosystem.

Public policies can generate new forms of collaboration with the private sector to boost the impact of certain new market trends. Recently, for instance, some large firms have opted for open-innovation models in which they use corporate venture capital to support the creation of start-ups as part of their innovation strategy. A new challenge for public policies is to tap into these new trends and create incentives to increase public-private partnerships in this area to increase policy effectiveness.

Figure 0.1. **Taxonomy of targeted policy tools to promote start-ups**



Source: Based on: OECD (2011), *Financing High-Growth Firms: The Role of Angel Investors*, OECD, Paris; InnoGrips (2011), "Policies in support of high-growth innovative SMEs", *INNO-Grips Policy Brief* No. 2, June 2011; LAVCA (2012), *2012 Scorecard: The Private Equity and Venture Capital Environment in Latin America*, LAVCA, New York.

Over the past two decades most OECD countries have implemented a range of tools to promote start-ups. In Australia, Finland and Israel, supporting start-ups is an integral part of the national competitiveness and innovation strategies.

Most OECD countries promote the creation of start-ups. In recent years, due to the opportunities opened by the diffusion of ICTs and the search for new sources of growth in the aftermath of the 2008 economic and financial crisis, various OECD countries have made creating new businesses a central part of their strategy to boost growth, create jobs and sustain the competitiveness of domestic industries. A key feature of OECD countries is that they tend to promote access to finance at all stages of business development, from the seed stage to the expansion stage. Public policies influence the availability of seed capital and promote venture-capital funds and angel investors, often through public-private co-investment funds and

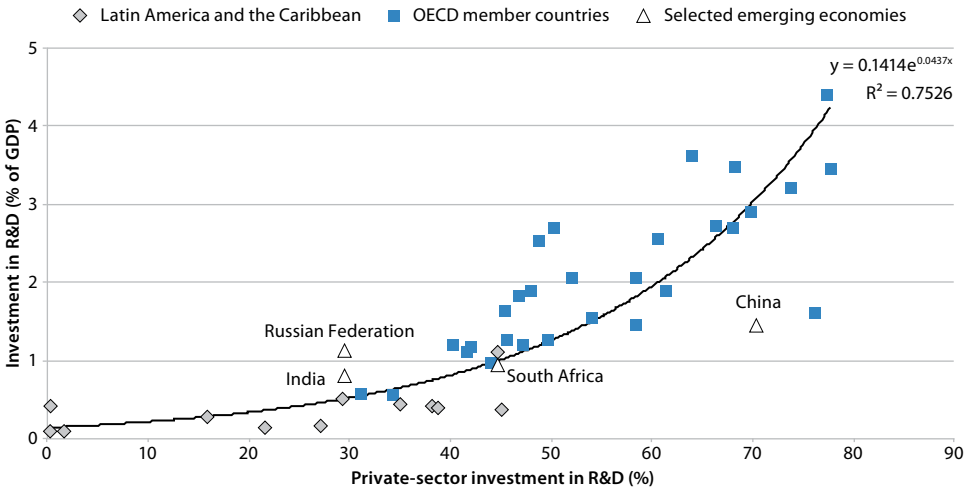
tax incentives. Some countries also have mechanisms to support knowledge transfer and the creation of spin-offs and foster the use of research results by new businesses. Schemes to support knowledge transfer in OECD countries usually include advisory services in knowledge transfer, intellectual property management and business development.

Australia, Finland and Israel offer interesting experiences related to the role that public policies play in supporting start-ups. These countries have different models and institutional structures. These experiences have shown that support mechanisms need to cover all the development stages of start-ups and that private investment in new start-ups requires targeted incentives. Seed capital typically requires permanent public-sector investment. Venture-capital investment and angel investors, however, mainly need support early on to help them move into the start-up phase. This was the role of the Yozma fund in Israel and the Venture Capital Limited Partnership scheme in Australia. As the sector develops, direct public-sector support can be withdrawn, while support for business training and the legal framework can persist.

The creation and expansion of start-ups faces higher barriers in Latin America than in OECD countries. This is due to a lack of appropriate financing mechanisms, scant dynamism of national innovation systems and a less business-friendly regulatory framework.

Innovation is growing more slowly in Latin America than in OECD countries. In Latin America, investment in research and development (R&D) grew from an average of 0.5% of gross domestic product (GDP) in 2004 to 0.63% in 2009, while in OECD countries it grew from 2.2% to 2.4% during the same period. In a context of low R&D investment resulting from the private sector being primarily specialised in natural resources or low-technology manufacturing, together with an adverse regulatory framework for business creation, it is not surprising that fewer start-ups are created in Latin America than in OECD countries (see Figure 0.2). Higher private investment in R&D along with greater and better public-sector support is necessary to boost innovation in Latin America. The countries in the region therefore face the challenge of designing incentives and policies to encourage private-sector investment in innovation, including the creation of technology-based firms.

Figure 0.2. **R&D investment and private-sector contribution, selected countries, 2009**



Source: Based on data from the United Nations Educational, Scientific and Cultural Organization (UNESCO), *Red de Indicadores de Ciencia y Tecnología Iberoamericana e Interamericana* (RICYT) and the OECD's Main Science and Technology Indicators (MSTI) database.

Start-ups in Latin America face higher barriers to access finance than their counterparts in more advanced countries. Latin America's financial markets are less mature and the region's banks are less inclined to finance start-ups, thus limiting their growth potential. In the United States, for instance, bank loans provide 15-30% of the initial finance of high-growth start-ups, well above the figure in Latin America (7% in Brazil and close to zero in Chile and Mexico). Similarly, in the United States start-ups obtain 20-47% of their finance from venture-capital funds and angel investors, compared to 23% in Brazil, 17% in Chile and 5% in Mexico. in Latin America, the venture-capital industry began to develop in the mid-1990s, supported by the Inter-American Development Bank and some public bodies such as the Chilean Production Development Corporation (CORFO). Brazil accounts for almost half of the venture capital industry in Latin America. Colombia and Chile follow in the ranking. In 2010, venture capital accounted for 0.27% of GDP in Brazil, 0.18% in Chile and 0.16% in Colombia. Venture capital is less developed in other countries, representing 0.05% of GDP in Peru, and 0.02% in Argentina and Mexico.

Various Latin American countries, including those examined in this report, are making start-ups a pivotal part of their innovation and productive-development strategies.

Although they are still well behind the OECD countries, Latin American countries are becoming increasingly aware of the importance of innovation for development. Over the past few years they have invested in improving the institutional structure for innovation and improving their support policies. They have also been strengthening the existing support mechanisms for start-ups and creating new ones.

Although incentives to provide access to finance are in place in many countries, a major challenge for countries in the region is to offer appropriate financing at the various stages of a business's development, from the seed stage to the expansion stage. Brazil and Chile offer the widest range of financial support mechanisms through all the stages of development. Mexico, on the other hand, still has much to do to help businesses in the early stages, while Argentina needs to improve its support during the expansion stage. Colombia and Peru are creating support mechanisms in the area of seed capital. Various countries in the region, especially Chile, Colombia and Mexico, have improved their legal framework in recent years, reducing the number of procedures, the costs and the amount of time needed to start up new businesses.

Nearly every country in Latin America has some sort of operational incentive for business training. Argentina, Brazil and Chile are notable for their business training tools, while such tools are still in the development phase in Colombia, Mexico and Peru. In addition, all countries in the region have business incubators and have accumulated considerable knowledge in the management of these schemes. The support mechanisms introduced in the 1990s suffered from significant performance limitations given the lack of results-based conditionalities for incubator management. Countries have learned they need to establish performance-based evaluation mechanisms and accredit intermediary bodies involved in the process of project selection and resource allocation. For instance, based on programme evaluations, Argentina and Chile have recently improved their incubator-support programmes. However, incubators and accelerators in Latin America still tend to work more closely with universities and research centres than with the leading innovative companies.

Latin American countries support start-ups in various ways, with different approaches and through diverse institutional arrangements. Some, like Brazil and Chile, have been accumulating experience since the 1990s; others, like Colombia and Peru, have only recently begun introducing programmes devoted to start-ups (see Figure 0.3).

Figure 0.3. **Targeted policy tools to promote start-ups in Latin America: A comparison between countries, 2012**

Category	Tool	Argentina	Brazil	Chile	Colombia	Mexico	Peru
Financing	Seed capital	In development	Implemented	Implemented	Recently created	Need to be created or reformed	Recently created
	Angel investors	Need to be created or reformed	Implemented	In development	Recently created	Need to be created or reformed	Need to be created or reformed
	Venture capital	Need to be created or reformed	Implemented	Implemented	Recently created	In development	Need to be created or reformed
Business services and entrepreneurial training	Incubators	Implemented	Implemented	Implemented	In development	In development	Recently created
	Accelerators	In development	In development	In development	Need to be created or reformed	In development	Need to be created or reformed
	Corporate spin-offs	Need to be created or reformed	Need to be created or reformed	Need to be created or reformed	Need to be created or reformed	Need to be created or reformed	Need to be created or reformed
	Tecnology transfer and university spin-offs	In development	Implemented	In development	Need to be created or reformed	Implemented	Need to be created or reformed
	Business training	Implemented	Implemented	Implemented	In development	In development	In development
Regulatory framework	Ease of creating or clsoing down businesses	Need to be created or reformed	Need to be created or reformed	In development	In development	In development	In development
	Taxation and special legislation	Need to be created or reformed	In development	In development	Need to be created or reformed	In development	Need to be created or reformed

Implemented · In development · Recently created · Need to be created or reformed

Note: This table is not meant to present an international classification. It is based on qualitative information gathered in the country case studies in Chapters 4 to 9 of this report. The goal is to summarise visually the variety of tools created to support start-ups and how developed they are in the countries in the region.

Source: Based on the country case studies in Chapters 4, 5, 6, 7, 8 and 9 of this document.

Argentina offers support for seed and start-up phases; however, the financial and regulatory tools for expansion and acceleration are less developed. The introduction of sectoral technology funds and a good scientific and research base in sectors with a high dynamism in relation to the creation of new firms such as software, design and biotechnology, are relevant assets that the country could leverage on.

Brazil has a fairly comprehensive range of tools to finance start-ups from the seed to the expansion stage. It is worth highlighting the increasing role of state and local governments in supporting start-ups and the positive results of several science parks that have acted as bridges between scientific research and business generation. Nonetheless, the regulatory framework, infrastructure (such as Internet access and physical spaces for incubating innovative projects) and a low propensity for entrepreneurship among much of the society are still significant barriers to having start-ups become a relevant source of growth in the country.

Chile has accumulated relevant learning in the establishment of its framework to support start-ups. Its experience shows that it is essential to have a chain of instruments that support business at different levels (finance, management skills and legal framework) and target the different phases of their development. Lately Chile has placed a growing focus on start-ups, reforming its existing support systems to match the country's new vision, with a greater focus on the global economy. Among the challenges that Chile still faces we highlight the mobilisation of a high critical mass of innovative business projects and the need to scale up the venture capital and angel investor industries.

In 2012 Colombia designed a new policy tool, iNNpulsa Colombia, which offers seed money and training to new entrepreneurs. Colombia's regional governments are playing an ever-growing role in supporting start-ups as a stimulus for growth and employment in their territories. The national development bank (BANCOLDEX) is also showing a growing interest in sustaining the venture capital industry to facilitate start-up expansion in Colombia.

Promoting the creation of new innovative firms is a growing priority in Mexican innovation policy. The country has improved its legal framework to facilitate the founding and expansion of businesses. However, access to credit, especially in the seed and start-up phases, is still a relevant barrier to fostering start-ups in Mexico.

Peru is developing a public support mechanism for start-ups. The founding of Wayra, an initiative by a major private corporation, which supports young entrepreneurs as part of its open innovation strategy, has generated considerable stimulus in the country, and has induced the accumulation of management skills in incubation programmes. The country is working to create a new Start-up Peru programme to offer seed money and advisory services to new firms. It is also adding new seed money budget lines in the national fund for innovation. Strengthening these initiatives, better co-ordinating them with other existing public and private initiatives, and supporting the regions as they develop their own programmes for innovative entrepreneurship are some of the future challenges the country faces.

The experience of the OECD and Latin American countries shows that start-ups need a system of incentives targeted at finance, business training and a regulatory framework in line with the stages of start-up development (seed, start-up, growth and expansion).

The creation and expansion of start-ups require finance, business training and a regulatory framework, that take into account the different stages of the businesses' development. No matter how well developed some components may be (e.g. the venture-capital industry, seed money, technology transfer offices, specialised advisory services or the regulatory framework), the absence or weakness of any component affects the overall system's performance. Poor co-ordination and synchronisation among various initiatives and the difficulty in giving potential entrepreneurs a clear view of regulatory conditions and the available incentives are some of the main barriers that hinder the development of start-ups.

In the OECD countries, it has become clear that besides direct-support mechanisms, it is paramount to incentivise the scientific and technological base and the development of the business environment to generate a relevant flow of knowledge, technologies and linkages, of high enough quality and quantity that they might translate into innovations with market impact. This requires talent, infrastructure, finance and private-sector investment in R&D and innovation, as well as a favourable regulatory framework. In OECD countries, the programmes targeting start-ups are complemented by a good level of early entrepreneurial activity with a critical mass of highly innovative entrepreneurs; availability of seed money and sufficient angel investors to generate an attractive potential flow of investment; a large enough venture-

capital industry (with ideal practices and regulation); and relatively developed capital markets.

The experience of Latin America provides lessons about public policy's role in fostering start-ups in developing countries. The lessons learned in Brazil and Chile show the importance of having a policy mix targeting the various stages of business development. Argentina shows the potential impact of major scientific research projects and public–private partnerships to create new businesses and the need to have appropriate financial and regulatory mechanisms in place to support their expansion. Mexico reveals the importance of reforming the legal framework to facilitate the founding and expansion of businesses that favour knowledge transfer between research centres and the private sector. Colombia and Peru offer interesting experiences in designing new programmes which aim to combine finance and business training services.

To progress in designing and implementing policy to support start-ups in Latin America, it is important to:

Increase co-ordination between policies for start-ups and those on innovation and productive development.

Supporting start-ups is important, especially in the new global economic context. However, fostering these companies needs to be part of a broader development and economic transformation strategy.

Provide incentives to promote development of an entrepreneurial culture and spirit, especially among young people.

Beyond the growing interest in start-ups, many countries in the region have a low propensity for productive investment and for creating high-potential businesses. Therefore the programmes that foster an entrepreneurial culture and the spaces where young entrepreneurs can gather and exchange experiences are vital. Starting and developing businesses involves successes, but also failures and it is important to know that one advances and learns only by trial and error.

Ensure the availability of financing for all the stages of development of new companies.

The experience of the OECD countries and Latin American countries shows the importance of setting up a system where finance is available for

start-ups at their different development stages. The needs in terms of the scale and types of investment vary from stage to stage. Latin American countries have strengths and weaknesses in this area. Some are weaker in seed money while others need incentives to develop venture capital, making it possible to scale up the activities of the more successful businesses. In many cases, public policy in Latin American countries pays little attention to the existence of angel investors. This is an area in which the countries could make progress with no need for heavy public investment, and which could have a positive impact in terms of finance and advising new businesses.

Take advantage of the new trends of "open innovation" and corporate venture capital that are emerging in the private sector in the region.

The dynamism of innovative start-ups also depends on the context in which they develop. It is vital to quickly recognise new trends and opportunities that may arise in the domestic or international innovation system so existing support mechanisms can be adjusted to increase their impact. In some countries, such as Brazil and Peru, the existence of large companies that opt for open-innovation models and which can finance or incubate start-ups may represent an opportunity to bolster the scope and impact of the public support system. Hence the relevance of identifying these new trends and creating spaces for public-private discussion in this sphere.

Introduce performance-based management criteria in incubators and in the agencies that facilitate access to public development programmes.

The public sector often lacks the skills and information needed to directly select beneficiaries of start-up support programmes. Often intermediaries raise young entrepreneurs' awareness of current support mechanisms and get them to apply for the programmes are often needed. Latin American countries have learned the importance of setting up performance-based support mechanisms for incubators and for the facilitating agencies, to increase their effectiveness. In the absence of such mechanisms, these entities can often end up capturing rents and operating with low effectiveness.

Design increasingly integrated tools that combine financing with advisory and business training services.

The next-generation of policy tools tends to combine availability of financial support with specialised advisory services and training, as well as infrastructure provision. This allows to offer the beneficiaries integrated support. It can be achieved by building co-ordination among the various agencies and programmes or by designing new integrated support programmes.

Simplify the legal framework for starting a new business.

Though many Latin American countries have improved their regulatory framework to ease the financing and expansion of firms, all the countries in the region are lagging behind more advanced countries regarding time lags for opening a business and legal frameworks to favour investment in companies' different phases of development. Simplification of bureaucratic procedures is, in fact, one of the great challenges facing Latin America, both in facilitating the creation of new firms and in promoting a more dynamic business environment.

Invest in creating new, better metrics for measuring the dynamics of creation and expansion of start-ups.

Given the growing relevance of start-ups, it is necessary to create new, better indicators to monitor the progress of this phenomenon and help improve the design and targeting of public policies for Latin America. This is an area where it is important to advance and where there is room to make a contribution to the international debate, since the issue is arising in many countries and there is a lot of leeway to create new indicators to support public policy decision making.

Evaluate programmes regularly and ensure feedback mechanisms between evaluation results and the design of incentives.

Evaluation and monitoring are needed for each public policy. In the case of support for start-ups, this is particularly important given the high uncertainty in which the policies operate. Start-ups' characteristics change and evolve very quickly, so policy makers should stay alert to new trends and then adjust the ways that development measures are applied. In some cases, as with incentives to support business angel networks and venture capital, public support should be allocated for enough time to generate a critical mass of operations in the private sector, which would then take up investment leadership.

Each country faces specific opportunities and challenges in supporting start-ups. However, in this as in other policy areas, knowledge sharing of accumulated experience is a useful exercise that can help improve the design and effectiveness of policies.

Support for start-ups is becoming a new element in the innovation and productive development strategies of Latin American countries. Creating opportunities for policy dialogue and knowledge-sharing can help to

promote learning and design more effective policy mechanisms. It can also help identify supranational programmes that can sometimes help overcome barriers of size and scale that prevent start-ups from becoming a major source of growth. To that end, international organisations such as the Inter-American Develoment Bank (IDB), the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) and the OECD Development Centre, can play a fundamental role in supporting the creation of these discussion spaces, in response to a growing demand among countries in the region.

Introduction

Innovation and the capacity to introduce new products, processes, services and business models are recognised to be increasingly relevant to sustaining productivity and gross domestic product (GDP) growth in the medium and long term. Start-ups can help boost innovation in the economy and vitalise productivity (OECD, 2005, 2010a and 2010b; Stangler, 2010; Endeavor and GEM, 2011; INNO-Grips, 2011). The most advanced countries show a strong correlation between a solid base of innovative entrepreneurs, greater leverage of the scientific and technological base, and productivity growth (OECD, 2005).

New, innovative firms help change the structure of an economy by introducing new products and services and by promoting the development of knowledge-intensive sectors, including information and communication technologies (ICTs), health care and the pharmaceutical industry, new materials, aerospace and automotive, renewable energies and clean technologies. Start-ups' competitive advantages tend to stem from innovations resulting from research and development (R&D) conducted by universities and research centres. Start-ups facilitate technology transfer, help bolster the density of the innovation system and foster the development of a dynamic business environment.

Most Latin American countries feature less dynamic and innovative business environments than OECD countries, and therefore new innovative firms generally face higher barriers to their business development. The creation and expansion of start-ups is conditioned by the learning opportunities available in the innovation system, by how business-friendly the local economy is and by the specialisation of the production structure. In Latin America, however, the context does not particularly favour the emergence of start-ups. Nevertheless, in recent years, as innovation has moved up in Latin American countries' development agendas alongside a more widespread use of ICTs in the region, various countries have gradually begun to show interest in fostering start-ups.

This study contributes to the current debate over how to improve the innovation dynamics in Latin American countries, with emphasis on how public policy can support the creation and expansion of start-ups. Does the policy mix include incentives to open and expand such businesses? If so, how? What are the strengths and weaknesses of the current support systems in countries in this region? What can be done to improve conditions for developing innovative start-ups in Latin America? This report assesses the importance of these businesses in the region, comparing Latin American countries' experiences with those of selected OECD countries and identifying guidelines to increase the impact of public policy.

The document is divided into two parts. Part I presents the various definitions of start-ups, underscoring their potential to become a major source of long-term growth, as well as their contribution to boosting a country's productivity and innovation. It then presents a taxonomy of instruments of direct support to start-ups, including mechanisms that facilitate access to finance, and which support training and business services, in addition to regulatory reforms and tax incentives. After describing the nature of these support mechanisms, Chapter 2 examines the state of start-ups in OECD member countries, drawing on specific examples from three countries: Australia, Finland and Israel. Chapter 3 focuses on the present state of support for start-ups in Latin America, comparing the policy mix in the six countries. Part II presents country notes for Argentina, Brazil, Chile, Colombia, Mexico and Peru. For each country, it gives an overview of the main trends in innovation policy and specific policy tools implemented to promote start-ups.

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Part I

Why and how to promote start-ups

Chapter 1

What can public policies do to promote start-ups?

In OECD and Latin American countries there is a growing interest in start-ups. This chapter presents the different definitions of "start-ups". It highlights the challenges for the creation and expansion of these businesses and discusses the rationale for public policy. It presents a taxonomy of instruments to promote start-ups, focusing on financing, business services and the appropriate legal framework. Based on the experience of OECD and Latin American countries, it presents a taxonomy of direct-support instruments to promote start-ups, based on the firm's development stage and on the type of support (financing, business training and legal framework).

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

Introduction

Technology-based start-ups can be an important factor in determining how dynamic innovation will be in a given country. These new companies help bring new products and services to market based on scientific discoveries or new applications of existing knowledge. They bolster competition for innovation and foster development of a dynamic business environment. The emergence and growth of start-ups depends on several factors, including a solid scientific base, a business-friendly environment, and a financial sector willing to make medium-term investments in high-risk projects. These conditions are hard to find in developing countries, making public policy a central instrument to help generating the right conditions for innovative entrepreneurship development.

Though there is growing interest in supporting start-ups, both in OECD and in Latin American countries, there is no single definition for such businesses. This chapter initially presents the various definitions in use and specifies that in this report, "start-up" refers to the new technological or innovation-intensive businesses for which support mechanisms are being designed in Latin American countries. Then it defines the market failures in creating start-ups and the role of public policy in addressing them. It then focuses on new trends, including the role of large firms in promoting start-up development and the new trends of open innovation strategies.

What do we mean by "start-ups"?

Mentioning start-ups instantly evokes images of the youthful, creative, high-tech environment of Silicon Valley. The spread of information and communication technologies (ICTs) and the successes flowing from the concentration of human and financial capital, universities and companies in the area south of the San Francisco Bay in the United States have helped generate growing interest in the phenomenon of founding and expanding start-ups. However, these types of innovative firms are not unique to that location, and have also started to appear in other contexts with different approaches. But often the emergence of new start-up hubs has been associated with the existence of some basic conditions, including the availability of finance for firm creation and expansion as well as services for business development and access to scientific and technological base.

The phenomenon of start-ups has increasingly attracted the attention of the media, innovation experts, and policy makers (IDB, 2009; Kantis and Federico, 2012; UNECE, 2012). As the organisation of production continues to transform itself on a global scale, this phenomenon has begun to spread into emerging economies as well, and to a lesser extent into some developing countries. For example, South Africa, Kenya, Ghana and Nigeria have a growing number of start-ups as represented in a recent *Forbes* magazine ranking of the top 20 start-ups in Africa (Forbes Africa, 2012).

However, there is no single definition of what counts as a start-up. Table 1.1 summarises some of the definitions being used to define them. In general, these businesses are identified using two different criteria:

1. Most of the definitions focus on the businesses' performance, using terms such as "high-impact", "high-growth" and "gazelles". For instance, the OECD defines high-growth enterprises as those with an average annualised growth greater than 20% in employees or sales over a three-year period, with ten or more employees at the beginning of the observation period. The so-called gazelles are the youngest of these enterprises, in existence for up to five years (OECD, 2011a).

2. In other cases, start-ups are defined based on their innovation content, regardless of their market performance; for instance, start-ups arise from a business opportunity for industrial application of scientific, technical or process-related advances. Many of these enterprises provide solutions to emerging problems, create new demand and develop new business models.

Latin American countries take different approaches to defining start-ups. For example, Argentina and Brazil focus on technological start-ups and Chile concentrates on promoting high-impact enterprises, while Colombia and Peru are designing instruments targeting start-ups, meaning new businesses related to ICTs. Besides the differences among the criteria used in defining these enterprises and choosing beneficiaries for the support instruments, the common denominator among these countries is the need for a set of instruments to facilitate the creation of start-ups that help foster a dynamic business environment. In this document, the term "start-up" refers to the innovation-intensive or high-impact new enterprises for which support mechanisms are being designed in Latin American countries.

Table 1.1. **Some definitions of start-ups**

Definition	Main features	Source
Performance-based definitions		
High-growth enterprises	Enterprises whose number of employees increased by more than 20% a year over a three-year period, with ten or more employees at the beginning of the observation period.	OECD (2009), *Measuring Entrepreneurship. A Collection of Indicators*, 2009 Edition, OECD-Eurostat Entrepreneurship Indicators Programme, Paris.
	They make a significant contribution to job creation. They enter the market combining their factors of production with new technologies in innovative ways. They also tend to experiment more easily with new organisational structures to take advantage of new ICTs. High-growth firms constitute a very small share of the total number of start-up firms.	OECD (2005), *Micro-Policies for Growth and Productivity: Final Report*, OECD, Paris.
Innovative start-ups	They build their competitive advantage on innovations arising from research and development. These businesses are often spin-offs from other enterprises or from research centres or universities. Converting their ideas into commercial applications depends largely on co-operation among research centres, universities and the private sector, as well as a set of support measures put in place by government agencies.	UNECE (2012), *Fostering Innovative Entrepreneurship: Challenges and Policy Options,* New York and Geneva.
Gazelle enterprises	These account for a large share of job creation. High-growth young firms (less than 1% of all companies in the United States), generate 10% of new jobs in any given year (in the United States).	Stangler, D. (2010), *High-Growth Firms and the Future of the American Economy*, Kauffman Foundation, Kansas City, Mo.
	Gazelles form a subset of the group of high-growth enterprises; they are high-growth enterprises born five years or less before the end of the three-year observation period.	OECD (2011b), *Entrepreneurship at a Glance*, OECD, Paris.
Dynamic entrepreneurship	This term refers collectively to new enterprises whose growth lets them move beyond the world of microenterprise within a few years to become competitive small and medium enterprises (SMEs) with the potential and scope to continue growing. This definition includes gazelle enterprises but also others that, without matching the growth pattern of gazelles, help broaden the production base in Latin America.	Kantis, H., J. Federico and C. Menéndez (2012), "Políticas de fomento al emprendimiento dinámico en América Latina: Tendencias y desafíos", *CAF Working Papers*, August, Caracas.

Table 1.1. **Some definitions of start-ups** *(continued)*

Definition	Main features	Source
Performance-based definitions *(continued)*		
High-impact entrepreneurs	Individuals that launch and lead companies with above-average impact in terms of job creation, wealth creation and the development of entrepreneurial role models. High-impact entrepreneurs tend to start their businesses to increase their incomes, tend to work in partnerships with other co-owners and are more likely than average to have international customers. They are also more likely to become angel investors.	Endeavor and GEM (Global Entrepreneurship Monitor) (2011), *High-Impact Entrepreneurship Global Report*, Center for High-Impact Entrepreneurship, New York.
Innovation content-based definitions		
Start-ups	A start-up is a human institution designed to deliver a new product or service under conditions of extreme uncertainty.	Ries, E. (2010), "What is a startup?", *Startup Lessons Learned*, blog, www.startuplessonslearned.com/2010/06/what-is-startup.html.
	Young enterprises promoted by first-time entrepreneurs. The entrepreneur or team of entrepreneurs/professionals having expertise/experience, knowledge or know-how, etc. are usually the driving force behind such ventures and usually have a high degree of entrepreneurial skills and risk-taking capacity. Such start-ups, especially high-tech start-ups, need support and encouragement from various perspectives during the initial stages and subsequently the growth phase until they become competitive enough.	Indian Institute of Foreign Trade (2007), *A Pilot Study on Technology-Based Startups*, New Delhi.
	Recently founded or growth-stage enterprises that carry out R&D activities, with low overheads and a potential for fast growth. Technology-based start-ups have innovative business models and seek to invest quickly to boost growth in the short term.	Governo do Brasil (2012), "Primeiros Passos", online directory of the Government of Brazil, www.brasil.gov.br/empreendedor/primeiros-passos/startup.

Challenges in founding and expanding start-ups, and the role of public policy

Start-ups require an innovation system that favours the creation, circulation and adoption of new knowledge (whether local or external). Knowledge-based firms need a strong entrepreneurial base and a research and development (R&D) system able to generate a significant flow of knowledge and technology. There also must be incentives for knowledge transfer between universities, research centres and enterprises; these include intellectual-property regulations, including rules about contracts and distribution of R&D results from projects funded with public resources, as well as technology transfer offices.

Start-ups face greater challenges than traditional firms given the high risk and uncertainty involved, especially in the earliest stages of their development.[1] Innovative entrepreneurs are challenged by three inter-related gaps:

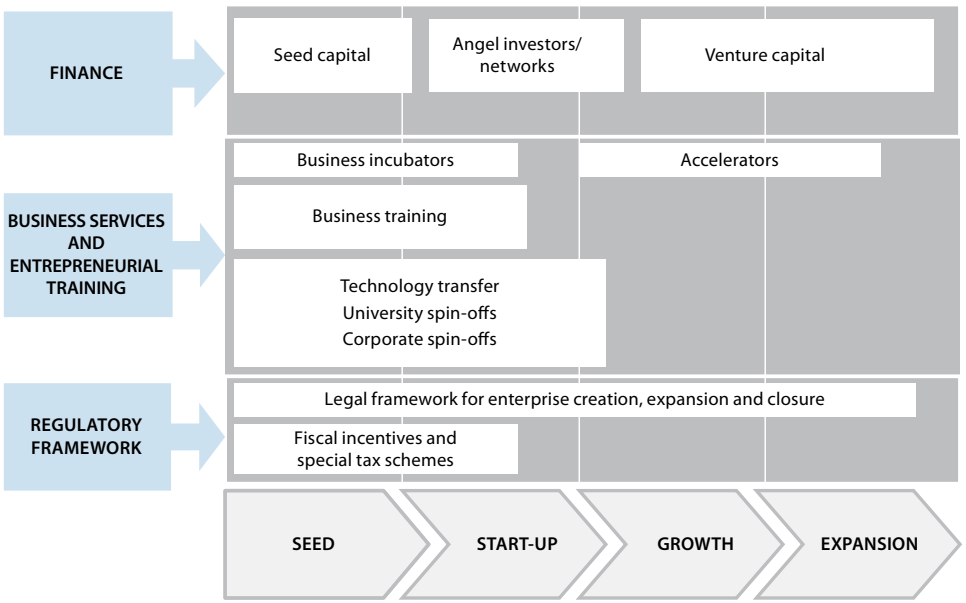
- The information asymmetry between the entrepreneur-innovator, investors and customers. The innovator knows what is technically feasible; the investor knows how to introduce and leverage new products in the marketplace and track consumer demand. A dynamic business environment with strong confidence among entrepreneurs, investors and consumers is a decisive factor in the process of starting a business and facilitates the flow of information. The quality and density of the innovation system and the institutions governing formal and informal innovation networks affect the dynamics and the success of start-ups.
- The knowledge and skills gap. For an invention to become an innovation it requires a business plan that resolves issues related to the functionality, quality and feasibility of production and distribution. Often innovators lack business skills (management, negotiation, finance, marketing, etc.) needed to launch an enterprise.
- The funding gap between the entrepreneur's initial resources, including any received from public agencies or corporate funding to research and develop an idea with commercial potential, and the financial and infrastructure investment needed to turn that idea into an industrial prototype. A financial system able to dialogue with innovative entrepreneurs is key to supporting the development of these enterprises.

Public policy plays a decisive role in generating incentives to overcome these barriers, via direct and indirect support. Direct support involves financial mechanisms for implementing innovative business ideas based on

knowledge, business training and the regulatory framework. Indirect support includes professional development and technical training programmes, support to development of the scientific and technological base and creation of infrastructure to facilitate the launching of businesses.

Based on the experiences of OECD and Latin American countries that have most actively promoted start-ups, incentives can be classified by type (financial, business skills training and regulatory framework) and by the targeted development stage of the firm (seed, start-up, growth or expansion) (see Figure 1.1).[2]

Figure 1.1. **Taxonomy of targeted policy tools to promote start-ups**



Source: Based on: OECD (2011a), *Financing High-Growth Firms: The Role of Angel Investors*, OECD, Paris; INNO-Grips (2011), "Policies in support of high-growth innovative SMEs", *INNO-Grips Policy Brief*, No. 2, June 2011; LAVCA (2012), *2012 Scorecard: The Private Equity and Venture Capital Environment in Latin America*, LAVCA, New York.

Financing

Access to finance is a key factor in the creation, survival and expansion of firms. It is even more critical for start-ups, given the greater risks and uncertainty (in terms of both technology and the market) inherent in the

innovation process, and given banks' and investors' difficulty in assessing the innovation's potential in advance. Additionally, because these are new firms whose assets are primarily intangible, they cannot put up enough collateral. Traditional bank financing through loans also involves a greater risk of insolvency, since it requires regular payments regardless of the flow of income the start-up generates.

There are three main forms of financing for these firms: *i)* debt; *ii)* grants or government support, and *iii)* capital contributions (see Box 1.1). In general, start-ups rely less on bank debt than high-growth enterprises and are more likely to be financed by capital contributions rather than by angel investors. Compared to high-growth enterprises, technology-based start-ups use more capital in their incubation phase. Banks are hesitant to offer credit for the founding of new innovative companies. The economic and financial crisis of 2008 helped deepen this trend. Banks have had to prioritise the bailout of existing firms, and venture-capital funds have refocused their funding on the later developmental stages, investing more in larger enterprises engaged in lower-risk activities (OECD, 2011a; OECD, 2011c; Robb and Robinson, 2008).

Box 1.1. **Forms of financing for start-ups**

1. Debt

Bank debt is one of the most important sources of finance, both in the early and expansion stages of start-up development, aside from the initial capital provided by the founder. In the United States, bank debt represents 15% to 30% of initial funding for high-growth, knowledge-intensive start-ups (Wadhwa *et al.*, 2009; Robb and Robinson, 2008).

2. Grants

National and regional government agencies offer direct finance in the form of non-repayable contributions; sometimes they require the beneficiaries to put up an equal amount in a matching-funds programme. Government support covers feasibility studies, proofs of concept, development of business plans and official procedures to start a new business. This government contribution is essential in the seed and start-up stages. This initial funding for start-ups is in addition to the funding available from other government programmes that promote collaborative R&D as well as the transfer and commercialisation of technologies from universities and research centres.

Box 1.1. **Forms of financing for start-ups** *(continued)*

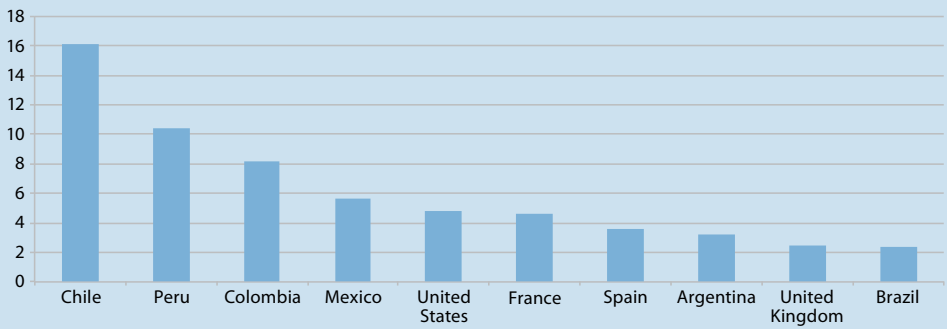
3. Capital contributions

"The three Fs"

Most of the resources used in founding and launching these companies come from the personal assets of "the three Fs": friends, family and fools, in addition to the contribution of the founder. These personal contributions generally cover 40% to 70% of the total investment and are acquired through personal networking, often for relatively small amounts (Bustamante, 2012). Note that owing to their informal, familial nature, these capital contributions are particularly hard to measure (see figure below).

Prevalence of informal investors in selected countries, 2011

Percentage of the population aged 18-64 who contributed personal funds to an enterprise founded by another individual in the past three years



Source: Based on GEM (2012), *Entrepreneurs and Entrepreneurial Employees Across the Globe*, 2011 Extended Report, Global Entrepreneurship Research Association, London.

Angel investors

Angel investors are typically entrepreneurs or business people who, besides capital, bring their expertise and their contact networks to the business (hence the term "smart money") at an early stage of its development. These investors operate on the middle ground between informal funding from founders, friends or family and formal venture-capital funding. They generally make investments ranging from USD 25 000 to USD 500 000 per company. Angel investors have greater flexibility in terms of maturity horizons and expected return on investment. They are less risk-averse in early stages and in start-ups. Broadly speaking, they contribute capital to young enterprises that are not yet ready to attract venture-capital investment. They play a key role by advising and helping the entrepreneur improve the quality of the investment proposal

Box 1.1. **Forms of financing for start-ups** *(continued)*

(design, business model, presentation). The formation of groups and networks of angel investors, which let them share risk and make larger investments, is a recent phenomenon. They have been developed mainly in the United States and the European Union, where the number of angel groups and networks has tripled in the last decade (OECD, 2011a; GEM, 2010).

Venture capital

Venture capital refers to specialised or "professional" formal investment funds that provide capital for high-growth innovative enterprises in intermediate or expansion stages, before they enter the capital market. In some economies, such as the United Kingdom, the United States and Israel, there is a variety of organisations devoted to these funds: independent organisations, bodies affiliated with financial institutions, government organisations, and angel-investor networks (Teubal and Luukkonen, 2006). Venture-capital funds make investments ranging from roughly USD 3 million to USD 5 million per company (though the limits can vary considerably by country and over time). For example, from 1998-2005, the per-investment average fluctuated between USD 6 million and USD 13 million in the United States, between USD 1 million and USD 1.5 million in Europe, and between USD 2 million and USD 6 million in Israel (Ben Ari and Vonortas, 2007). In the United States, the capital from venture-capital funds and angel investors tends to account for 20% to 50% of funding for new high-growth, knowledge-based enterprises (Wadhwa *et al.*, 2009). Venture capital is a subset of private equity, which also includes growth capital, which focuses on funding medium-sized and large firms, before they begin public trading (or accepting government funding).

Venture capital is a major source of funding in the intermediate stages of the development of young, knowledge-intensive enterprises. This type of capital contribution has been vital in industries such as ICTs, biotechnology, and life sciences, and more recently in the emerging clean-technology industry and green venture-capital funds. Venture-capital funds provide more than just funding: they support management and the development of innovative enterprises, playing an active role in their boards of directors, advising them on recruitment and facilitating business networking. However, given the need for diversified investment in order to reduce risk, this industry requires a critical mass (Branscomb and Auerswald, 2002; Ben Ari and Vonortas, 2007; OECD, 2011a).* To be effective, the venture-capital industry therefore needs the right environment, a minimum threshold of early-stage start-ups, a solid scientific and technological base, and a relatively mature innovation system.

Box 1.1. **Forms of financing for start-ups** *(continued)*

Crowdfunding

Recently a new form of funding has developed, via multiple small capital contributions, known as crowdfunding. "Classic" crowdfunding provides access to seed capital at a relatively low cost (Kantis, 2012). Funders are compensated for their contribution. This compensation ranges from preferred offers on the goods or services to acknowledgement for their participation in the project. However, this funding model faces the difficulty of coming up with compensations that are attractive enough for investors. By contrast, equity crowdfunding lets funders recoup their initial investments or share in future profits of the enterprises being founded. Given their preliminary nature and potential to mobilise resources while minimising investment risk, this type of finance could become an important part of the funding model for future innovative entrepreneurs.

* The venture-capital funds that achieve good results are those that manage their investment portfolio in a way that lets them focus on firms with greater potential, since most of them fail because of their high risk, with only a few managing to grow in a nearly inverse relationship. On average, an estimated 65% of a fund's investment generates only 3.8% of the returns, while 4% of the investment generates more than 60% of the returns (OECD, 2011a).

Table 1.2. **Funding of high-growth enterprises, United States, 2008**

Funding source	High-growth enterprises (% by funding source)	Knowledge-based high-growth enterprises (% by funding source)
Equity capital (entrepreneur)	34	34
Bank debt	40	31
External capital (venture capital and angel investors)	9	23
Other sources	17	12
Total	100	100
Capital required for start-up stage (USD thousands/enterprise)	78	137

Source: Based on Robb and Robinson (2008), *The Capital Structure Decisions of New Firms*, Kauffman Foundation.

Evidence shows that the needs for access to funding vary based on the firm's various stages of development: seed, start-up, growth and expansion. The most common types of funding in the start-up stages are personal resources, from family and friends, in addition to bank debt (via loans and credit lines

or cards), sometimes supplemented by soft loans and grants from government agencies. According to Branscomb and Auerswald (2002), the main sources of funding in the early technological-development stage in the United States are: in 32% of the cases, financing from large corporations to promote spin-offs and outsource R&D; 30%, government programmes (federal and state); 28%, angel investors; 8%, venture capital; and 3%, universities. In the expansion stage, depending on the size and scope of the start-up, entrepreneurs will seek other sources of capital such as angel investors and venture capital. Funding sources participating in the business's life cycle do not necessarily follow a linear progression. Various kinds of funding often coexist in different stages of the enterprise's development. Public policy plays an important role in ensuring there are resources and financial options for these firms in their different stages. Several countries have public funding for seed capital (see Chapter 2 for examples among the OECD countries, and Chapters 4 to 9 for Latin American countries). At the same time, public policy in some countries has supported generation of a venture-capital industry and angel investors (see Chapters 2 and 6).

Learning and accumulating entrepreneurial skills to do business

Various studies highlight the importance of prior experience for entrepreneurs to succeed in their subsequent start-ups (Endeavor and GEM, 2011; IDB, 2009; Wadhwa et al., 2009). Entrepreneurship is a learning process involving trial and error. By starting a business, expanding it and then reinvesting in a new start-up, entrepreneurs build their skills, know-how and experience and thus improve their performance. Kato, Okamuro and Hanjo (2011) study the impact of an entrepreneur's human capital on his/her capacity to innovate in Japan. They highlight the importance of "specific" human capacity, such as prior experience in innovation, in determining the success of subsequent start-ups. Similarly, Oe and Mitsuhashi (2012) show that start-ups run by people with prior experience in the same industry are able to recover their initial investment much more quickly. Inventors in university and corporate spin-offs, meanwhile, tend to lack commercial and market experience and therefore need advice and training. Prior experience is also vital for spin-offs. For example, in their analysis of corporate spin-offs in Brazil, Hirakawa, Muendler and Rauch (2010) show how these firms inherit a greater productive capacity from their parent companies through the knowledge brought by their founders. This includes greater knowledge of the technology used, experience related to their clients and suppliers, and greater knowledge of the skills and preferences of their co-workers. The quality and variety of skills acquired in formal and informal learning affect entrepreneurial capabilities.

Entrepreneurial skills are acquired through cumulative learning processes and require hands-on experience (learning by doing), but policies can help to enhance learning processes and skills development. In many countries, central and local government provide various services to help firms in the seed and growth stages, including specialised advisory services. A common instrument is business incubators. They provide infrastructure as well as tangible and intangible services for a limited period of time, usually two to five years, to help the entrepreneur access other forms of finance once the business is up and running. Incubators often support collaboration with research centres and universities, facilitating knowledge transfer and technology transfer. Incubators that focus on supporting training for knowledge-intensive firms usually have ties with universities and research centres. They are often located in science and technology parks and offer services in intellectual-property management and the commercialisation of technologies. Incubators often maintain ties with angel-investor groups and venture-capital funds to make them accessible to firms once they move out of the incubation stage. Incubators can reduce barriers and lower the cost of access to services and knowledge that are essential for start-ups to emerge. They lower distribution costs and share out fixed costs (staff, infrastructure). They also help develop the business environment by fostering synergies and the creation of economies of networks among incubated firms (positive externalities of the demonstration and imitation effect). Business accelerators can help highly innovative, high-growth-potential firms to expand internationally.

Technology transfer offices (TTOs) support students and researchers in setting up new businesses (see Chapter 3 for examples of technology-transfer channels in Latin American countries). These offices provide integrated services to potential entrepreneurs and support exploiting the results of research commercially. They provide technical consultancy and management services and facilitate access to seed capital. There are also incentives for creating corporate spin-offs: new companies started by researchers and experts from existing companies. The "parent" company can arrange initial contracts and applications for public programmes and occasionally even take a minority share in the new company through corporate venture-capital funds, which can be leveraged with public capital (co-investment funds). These measures can help make the start-up more viable (see Chapter 9 for an example of the role of large firms in creating start-ups).

Some institutions are specialised in providing business training services. These services include grants and tax incentives for training programmes, awareness initiatives and education by universities, technical schools and

associations linked to innovative entrepreneurship, such as chambers of commerce. Some countries also have capacity-building programmes and programmes to enable venture-capital fund managers to sharpen their specialist skills. Angel investors and venture-capital funds not only provide capital but also play an important role in incubating new firms by providing them with specialist consultancy services in high-growth business management, sharing their management experience and technical know-how.

Regulatory framework

Various national, regional and local regulatory and administrative measures influence business start-up costs and barriers, affect development and growth in later stages and determine the conditions for close-down and re-entrepreneurship. Business-friendly reforms include simplifying and harmonising administrative procedures, providing provisional initial permits, creating softer tax regimes specifically for start-ups, reducing the requirements to shut down a firm or declare bankruptcy (non-fraudulent) and streamlining the process of doing so, providing financial support for the orderly closure of bankrupt firms to reduce the financial cost and the time needed. Another issue influencing the creation and development of start-ups is the legislation regarding the listing of start-ups on the stock market and mergers and acquisitions. This legislation can, for instance, reduce the cost of submitting the necessary information.

Regulatory measures to encourage the transfer and exploitation of knowledge and technology resulting from research projects are also important. Such measures include intellectual-property management schemes, regulations setting the conditions for disseminating the results of publicly funded R&D projects and defining agreements on sharing out the profits generated when the results of R&D projects are exploited commercially. Defining these kinds of rules is important to channelling more private-sector resources towards creating technology-based firms.

Supporting start-ups requires not just specific instruments but a whole policy mix

Supporting the creation of start-ups requires a complex, articulated system of instruments covering finance and business training. Often the support to start-ups is managed by targeted institutions or branches of innovation-specialised institutions (such as Tekes in Finland; Small Business

Innovation Research [SBIR] in the United States, which operates through 11 federal agencies; the Department for Business Innovation and Skills in the United Kingdom; and the Office of the Chief Scientist [OCS] in Israel). Regional and provincial agencies are also often active in fostering start-ups (in the United States, for example, where the states manage venture-capital funds,[3] and in Finland, where Finnvera invests in regional funds). The last decade has also seen the creation of global institutions such as Endeavor and its support network for high-potential start-ups, with subsidiaries in different countries, and the various international investment and venture-capital funds that finance technology-based companies around the world.

The governance of the support to start-ups depends on each country's institutional and regional structure. The institutionality is often composed by a set of institutions including organisations responsible for innovation, productive development and capacity-building agencies, business incubators, technology parks and investor networks, among others.

Creating and expanding start-ups requires a dynamic innovation system in which public support focuses on aspects in which the country or region is lagging behind and where market-based incentives would not be enough. It depends not so much on the effectiveness of individual programmes or institutions as it does on the impact of the science and technology system and the integrated support package. No matter how developed some of the components are, such as the venture-capital industry, incubators, R&D centres and the regulatory framework, if other components are weak or non-existent, this affects the performance of the whole support system overall. In addition, the development of technology-based firms is held back, among other reasons, because there is little co-ordination and synchronisation among different initiatives and because it is difficult to provide potential entrepreneurs with a clear overview of regulations and incentives they may encounter.

Also, in addition to direct support mechanisms, a system to support the development of science and technology and the business environment is essential to fuel a steady flow of good-quality knowledge, technologies and linkages that can potentially lead to innovations with high impact on the market. Such a system requires talent, infrastructure, finance and private-sector investment in R&D and innovation, and favourable regulatory conditions. Other important factors are a good level of early-stage business activity with a critical mass of highly innovative entrepreneurs, the availability of seed capital, a sufficient angel-investor base, an effective venture-capital industry, the necessary complementary services (legal and other specialist services) and well-functioning capital markets.

The role of large firms in supporting innovative start-ups

Large firms are increasingly involved in promoting the creation of start-ups (see Box 1.2). Some large firms are developing mechanisms to foster start-ups as part of their open innovation strategies and set up corporate venture-capital programmes to invest in innovative start-ups with high growth potential (Gompers and Lerner, 1998; MacMillan et al., 2008).

Box 1.2. **Open innovation and the role of large firms in supporting start-ups**

Large firms are increasing how much they invest in creating innovative start-ups. These resources present a new opportunity that should be seized upon by developing countries, which should increase the synergies between start-ups and policies to support innovation and start-ups.

Johnson & Johnson Development Corporation. Since its inception in 1973, this venture-capital fund created by Johnson & Johnson has become a major venture-capital fund in the health sector. It is run by various experts and leading figures in the field of health and technology who identify strategic investment opportunities for the company. The fund invests in companies involved in technology and life sciences in the area of health care, helping to create and develop spin-offs and innovative start-ups.

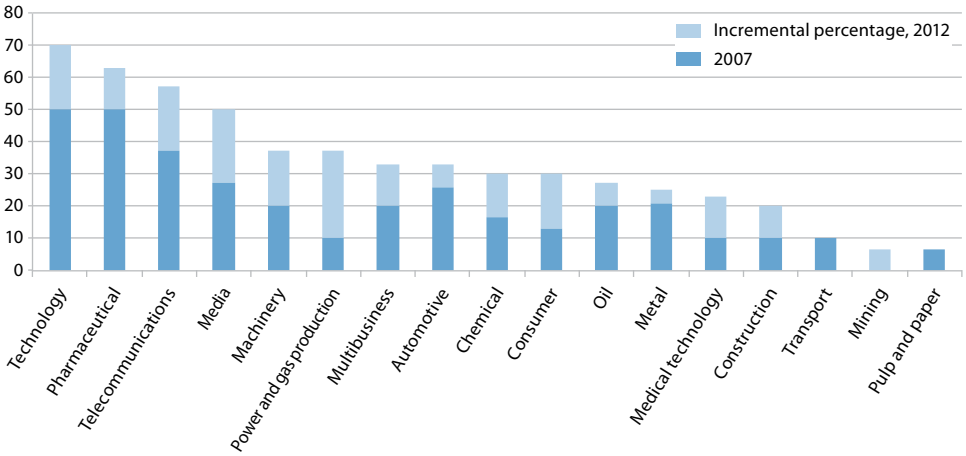
Telefónica's Wayra. Telefónica created the Wayra business accelerator to support young entrepreneurs in creating start-ups in the ICT sector. Today, Wayra operates in Latin America (Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela), the United Kingdom, Ireland, Germany and the Czech Republic. Wayra provides access to technology, finance (in exchange for a 10% stake in the business), technical experience and a place to develop ideas and products. Currently it supports new entrepreneurs working in various fields, including e-health, cloud computing, social innovation and e-commerce.

Source: e-Volución (2012), Johnson & Johnson (2012) and Telefónica (2012).

Between the 1960s and the early 2000s, corporate venture capital grew to 12% of the US venture-capital industry (PriceWaterhouseCoopers, 2006). Today, an estimated 750 large firms have units dedicated to corporate venture capital, including Intel, Microsoft, General Electric and Google (BCG, 2012; Chesbrough, 2002; Dushnitsky and Lenox, 2005). Corporate venture-capital funds invest

mainly in the technology, pharmaceutical, biotechnology, telecommunications and semi-conductor sectors (MacMillan et al., 2008) (see Figure 1.2).

Figure 1.2. **Percentage of companies with dedicated corporate venture capital activity by sector, 2007 and 2012**



Note: Data and sector classification are based on *Global Corporate Venturing*'s CVC-unit database, ThomsonONE and Boston Consulting Group.

Source: Boston Consulting Group (2012), *Corporate Venture Capital: Avoid the Risk, Miss the Rewards.*

Corporate venture capital differs from traditional venture capital because it seeks not only a return on investments, but more importantly it aims at generating new solutions and innovations that will benefit the company (Dushnitsky and Lenox, 2005 and 2006; MacMillan et al., 2008; Weber and Weber, 2007). Corporate venture-capital investments are therefore believed to bolster the innovativeness of the investing company, increase its market value and improve its financial performance (Wadhwa and Kotha, 2006; Dushnitsky and Lenox, 2006; Allen and Hevert, 2007). Start-ups, meanwhile, benefit from the investing company's financial support and its commercial experience and network of contacts.

Corporate venture capital can be internal or external. Internal corporate venture capital searches investment opportunities within the company, working with the R&D department and operational business units to launch new business projects or corporate spin-offs. External corporate venture capital, on the other hand, looks for potential sources of innovation outside the company, whether through collaboration with university research or strategic

partnerships with other companies or new entrepreneurs (MacMillan et al., 2008). Sometimes the two kinds of corporate venture capital are intertwined.

In advanced countries, more and more companies are investing a growing amount of resources in corporate venture capital. According to the Boston Consulting Group (BCG 2012), large corporations are increasing the share of R&D resources they direct towards corporate venture-capital management units as they begin to adopt open-innovation models. As they become more experienced in managing this type of investment they become more willing to invest in earlier stages of the development cycle of start-ups, realising the greater benefits of this type of investment and no longer perceiving it as too risky with little chance of success.

Conclusions

Entrepreneurs drive innovation by bringing new products, services, processes and technologies on to the market or improving those that already exist. Start-ups help improve productivity, increase innovation and create good-quality jobs, making them a major source of long-term growth in today's economies. Technology-based start-ups can help spread knowledge and commercially exploit ideas. They often grasp opportunities discarded by existing firms, bridging the gap between research centres and knowledge markets.

However, start-ups need to overcome major hurdles during the seed and growth stages. Public policies can play an important role in providing incentives to create and expand start-ups (for instance, providing finance through seed capital) and encouraging the private sector to invest in developing finance mechanisms to help start-ups expand, such as angel-investor networks and venture capital. Public policies can also help create the right conditions for start-ups by providing direct incentives for entrepreneurial capacity building, services and infrastructure and by shaping innovation and business-friendly regulatory frameworks. They can also promote new forms of public-private collaboration to forge new synergies with emerging market trends such as corporate venture capital and open-innovation models.

Notes

1. Branscomb and Auerswald (2002) talk about "Valleys of Death" and "Darwinian Seas" in reference to the challenges these enterprises must face in order to be founded and grow. See also, among others: Ben Ari and Vonortas., 2007; IDB, 2009; Wadhwa et al., 2009; OECD, 2010; Endeavor and GEM, 2011; INNO-Grips, 2011.
2. In Chapters 4 to 9, this taxonomy will be used to show which instruments are available to support start-ups in Argentina, Brazil, Chile, Colombia, Mexico and Peru.
3. For instance, New York State manages the New York Venture Capital Association, Maryland manages the Maryland Venture Capital Trust, Massachusetts manages the Massachusetts Technology Development Corporation and Michigan manages the Michigan Investment Fund.

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Chapter 2

The experience of OECD countries in fostering start-ups

OECD countries promote innovative start-ups. These countries facilitate access to finance for start-ups, promote the creation of spin-offs from universities and research centres, and favour the commercial exploitation of innovations and the development of business skills. This chapter presents specific examples of start-up support programmes in Australia, Finland and Israel.

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

Introduction

Most OECD countries implement a wide range of instruments and programmes to support start-ups (OECD, 2010a and 2011a; INNO-Grips, 2011). In Australia, Finland and Israel, supporting start-ups is an integral part of national competitiveness and innovation strategies. The 2008 economic and financial crisis has raised interest in how to boost business start-up as a means of bolstering economic growth, diversifying sources of growth and supporting the creation of skilled jobs. In OECD countries, programmes and instruments to support start-ups generally have three main objectives:

- To facilitate access to finance both in the early stages of development and in the roll-out and scaling-up stages.
- To support the creation of university and research-centre spin-offs and facilitate the commercial exploitation of innovations by providing assistance with intellectual-property management and knowledge and technology transfer.
- To foster the development of business skills and the innovative environment by increasing the density of local innovation systems.

This chapter briefly outlines the main characteristics of the incentives to promote the creation and expansion of start-ups in OECD countries. It focuses on incentives to facilitate access to finance and knowledge transfer between universities and businesses. It includes a brief description of support for start-ups in Australia, Finland and Israel.

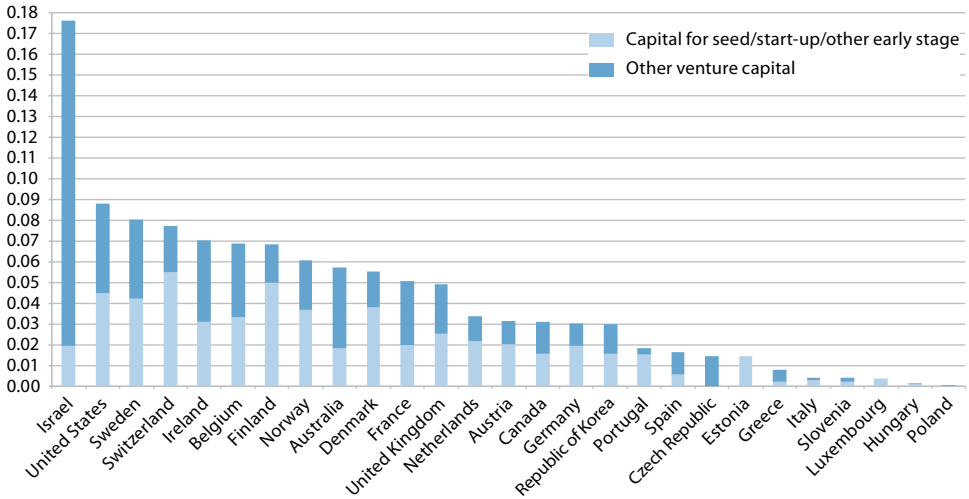
Financing the creation of start-ups

The availability of credit for innovative activity contributes to determining the propensity to starting up a new, innovative business. Most OECD countries implement schemes to increase the availability of bank loans and guarantees targeted to new and small businesses. They also offer incentive schemes to support seed capital, venture capital and angel investors' networks (see Figures 2.1 and 2.2 and Tables 2.1 and 2.A1.1).

The mechanisms to channel financing to the start-uppers include public finance through soft or long-term loans and tax incentives. Seed capital co-finances business start-up costs through subsidies, for which there is a

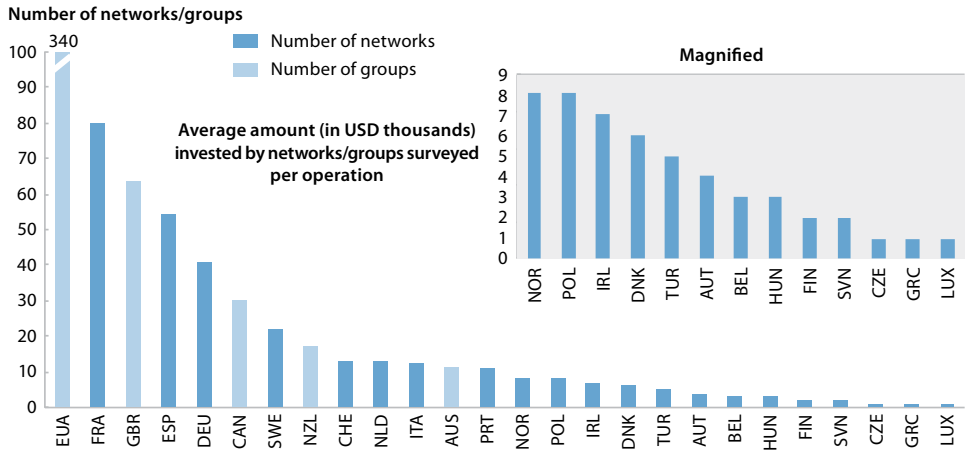
Figure 2.1. **Investment in venture capital, OECD countries, 2009**

Percentage of GDP



Source: OECD (2011b), *Entrepreneurship at a Glance 2011*, OECD, Paris.

Figure 2.2. **Angel-investor networks and groups, OECD countries, 2009**



Note: Estimates based on EBAN (European Trade Association for Business Angels), ACA (Angel Capital Association), NACO (National Angel Capital Organization), AANZ (Angel Association New Zealand) and OECD (2011a), *Financing High-Growth Firms: The Role of Angel Investors*, OECD, Paris.

Source: OECD (2010b), *OECD Science, Technology and Industry Outlook 2010*, OECD Publishing, Paris. doi: 10.1787/sti_outlook-2010-en.

Table 2.1. **Angel-investor and venture-capital markets, OECD countries, 2009**

USD million

Country	Size of the "visible" angel-investor market	Estimated size of the angel-investor market	Size of the venture-capital market
United States	469 (3%)	17 700	18 275
Europe	383 (7%)	5 557	5 309
United Kingdom	74 (12%)	624	1 087
Canada	34 (9%)	388	393

Note: The venture-capital market here includes the seed, start-up, growth and expansion stages. The value in brackets represents the share of total market.

Source: OECD (2011a), *Financing High-Growth Firms: The Role of Angel Investors*, OECD, Paris.

maximum amount per firm. OECD countries are opting for mixed financing systems, developing private investment funds through direct investment in venture-capital funds (fund of funds) or co-investment in new firms (e.g. through matching-fund schemes). This has been the case in Australia, Canada, Denmark, Finland, the Netherlands, New Zealand, Norway and the United Kingdom.

In the United States and the European Union, public finance provides between USD 5 million and USD 20 million per fund for six to ten years through contingent loans or capital that is payable at the end of the period. In several OECD countries, support mechanisms for start-ups are managed by sub-national bodies. For example, the governments of the German *Länder* and US states play a pivotal role in supporting development of the local venture-capital market. New York State manages the New York Venture Capital Association, Maryland manages the Maryland Venture Capital Trust, Massachusetts manages the Massachusetts Technology Development Corporation, and Michigan manages the Michigan Investment Fund.

Over the last decade, some countries have begun to help develop the angel-investor industry. In certain cases public policies contribute even up to 100% of the cost of setting up and managing an angel-investor network or association (see Box 2.1).

OECD countries also have put in place incentives to develop the venture capital industry and the and angel investors networks, both in terms of the number of investments and the amount invested (see Table 2.2). OECD countries

Box 2.1. **The Scottish Co-investment Fund**

The Scottish Co-investment Fund (with a total capital of USD 114 million) invests in new small and medium-sized enterprises (SMEs) with capital contributions from USD 160 000 to USD 1.6 million per transaction. It operates in association with private venture-capital funds and angel-investor groups. Private investors identify opportunities, negotiate with entrepreneurs or start-ups, and invest their own capital. If the business requires it, private partners of the Scottish Co-investment Fund can call on the fund to co-invest on equal terms. SMEs with fewer than 250 employees and assets of less than USD 25 million can apply. The Scottish Co-investment Fund is managed by the Scottish Investment Bank and is part-funded by the European Regional Development Fund. Some recent assessments indicate that the Scottish Co-investment Fund has had a positive impact on the development of start-ups and has helped to strengthen the venture-capital industry and local angel investors (OECD, 2011a).

Source: OECD (2011a).

offer tax reductions of 20-30% for individuals who invest in venture-capital funds and in technology-based young firms, and for profits reinvested in start-ups. Sometimes they also offer tax deferrals for capital gains reinvested in businesses or tax exemptions on capital gains from investment in funds or start-ups. National tax-incentive programmes exist in Australia (Venture Capital Limited Partnerships and Early Stage Venture Capital Limited Partnerships), France, Ireland (the Business Enhancement Scheme), Israel, Italy, Japan and the United Kingdom (the Enterprise Investment Scheme), among others. Canada and the United States offer incentives through sub-national schemes. Other countries, such as Switzerland and New Zealand, do not tax capital gains.

Table 2.2. **Tax incentives for venture capital and angel investors, OECD countries, 2011**

Country	Type of capital	Main features
Australia	Venture capital	**Capital-gains tax deductions:** Foreign investors are exempt from tax on investment in venture-capital funds registered with Venture Capital Limited Partnerships or Early Stage Venture Capital Limited Partnerships
United States (state incentives) National Angel Capital Tax Credit	Angel investors	**Capital-gains tax deductions:** 20 states have tax credits of 10-15% for early-stage investments

Table 2.2. **Tax incentives for venture capital and angel investors, OECD countries, 2011**
(continued)

Country	Type of capital	Main features
France	Venture capital	**Capital-gains tax deductions:** Deduction of up to 25% (USD 26 400 to 52 800 per year) for investments in venture-capital funds (*fonds communs de placement pour l'innovation*)
	Angel investors	**Capital-gains tax deductions:** 50% wealth-tax reduction (up to USD 66 000)
Israel	Angel investors	**Capital-gains tax deductions:** Angels' Law (2011) Tax deduction on investments in high-tech start-ups (USD 6 600 to 2.6 million)
Italy	Angel investors	**Capital-gains tax deductions:** If reinvested in start-ups within 24 months of the capital gain
Portugal	Angel investors	**Capital-gains tax deductions:** 20% (no more than 15% of income)
United Kingdom	Venture capital and angel investors	**Capital-gains tax deductions:** 30%, on a maximum of USD 1.6 million in 2012

Source: OECD (2011a), *Financing High-Growth Firms: The Role of Angel Investors*, OECD, Paris; Bendis, R.A. (2011), *European Technology Forum 2011: Pre-Commercial Procurement, an Instrument for Creating Innovation*, Alpbach, Austria, 26 August.

Promoting knowledge transfer and spin-offs

Several OECD countries have taken measures to foster the creation of university and corporate spin-offs. The support of university technology transfer offices, business incubators and accelerators, science and technology parks, and angel-investor networks and associations can play a determinant role in favouring knowledge sharing (see Tables 2.3 and 2.A1.2).

Spin-off support schemes include services to develop skills in knowledge-based business management, such as specialist advice in knowledge and intellectual-property management and training in dealing with investors and improving business models and plans. One scheme is the Small Business Innovation Research Program (SBIR) in the United States. Launched in 1982 to promote the commercial exploitation of technology and knowledge generated by government-funded research and development (R&D), in 30 years it has invested USD 26.9 billion in over 112 000 start-ups and small technology-based firms. Several evaluations, including one recently undertaken by the National Science Foundation (NSF), have confirmed the impact of the programme and its contribution to generating a considerable flow of investment opportunities, thus supporting the development of the venture-capital industry in the United States (Lerner, 1999; Bendis, 2011).

Table 2.3. **Programmes to support the creation of university and R&D centre spin-offs, OECD countries**

Programme/ Country	Eligibility	Finance method	Budget	Maximum funding per project
Australia Pre-Seed Fund (2002)	Spin-off businesses and projects of universities and public research agencies	Equity stake. Four fund managers	USD 111.4 million	USD 1.07 million
Commercialisation Australia (2010)	Researchers, entrepreneurs and companies looking to commercialise intellectual property	Co-financing	USD 298 million per year for 5 years to 2014. USD 88 million per year after 5 years	USD 54 000 to 2.1 million depending on the funded activity
Norway Proof of Concept – FORNY2020 (2011-20)	R&D projects run by technology transfer offices that receive core funding from FORNY2020	Co-financing	2012 estimate: USD 4.3-5.2 million	
Denmark Proof of Concept (2007)	Universities, hospitals and public research agencies	Co-financing	USD 10.6 million, initial stage USD 13.3 million, 2010-12	USD 133 000
Netherlands TechnoPartner-SKE	Spin-offs and start-ups of academic institutions	Co-financing Soft loans	Up to USD 3.3 million per project	

Source: Based on national government sources.

Support for start-ups in Australia

Since the 1980s, Australia has rolled out a set of programmes to support start-ups, especially in their early stages. Australia also has support programmes for all the stages of the innovation cycle, as well as tax incentives for R&D expenses since the 1980s and various instruments to promote the commercial exploitation of innovations and the development of the venture-capital industry.

Commercialisation Australia programme

The 2010 Commercialisation Australia programme provided support for the commercial exploitation of R&D results by entrepreneurs, researchers and small businesses that have created intellectual property that can be commercialised. It co-finances the different stages of commercialisation and facilitates access to networks of experts in the commercial exploitation of intellectual property. The programme subsidises the cost of expert advisory services in developing business plans, conducts market research and analyses export strategies, manages intellectual property and raises venture capital. The programme also has a second component, called "Experienced Executives", which subsidises the hiring of executives for exploiting innovations in production (50:50 finance of USD 380 000 per company for 24 months). It also finances the development of proof of concept, providing inputs of USD 54 000 to USD 270 000 per company on a 50:50 basis. Grants are also available for early-stage commercialisation, such as pilot tests (between USD 54 000 and 2.16 million per company on a 50:50 basis). The programme has a USD 298 million budget for five years until 2014 and USD 88 million a year after that.

Venture-capital funds

Australia offers several tax incentives for venture capital, including Venture Capital Limited Partnerships (VCLP) and Early Stage Venture Capital Limited Partnerships (ESVCLP). The VCLP programme, created in 2002, aims to promote foreign investment in the Australian venture-capital industry. Fund managers eligible to register for the tax-incentive programme need to raise a new venture-capital fund of at least USD 8 million to invest in local start-ups with assets of up to USD 195 million. Foreign investors are exempt from tax on capital gains on profits made from the registered fund. The programme has led to venture-capital fund investments in 175 companies totalling almost USD 2.1 billion. The ESVCLP programme was created in 2007 to replace the Pooled Developed Funds programme. This programme offered similar incentives to the VCLP programme, but was geared towards investment in start-ups in the early stages.

The Innovation Investment Fund promotes the Australian venture-capital industry. It began operating in 1998 and has helped create 16 private venture-capital funds with a total capital of USD 690 million. These funds have invested in 100 innovative firms in various sectors, including manufacturing, clean technologies, life sciences and ICTs.

Support for start-ups in Finland

In the last two decades Finland has developed one of the most active policies of any OECD country in stimulating start-ups. The policy is driven by the Ministry of Employment and the Economy, in conjunction with various agencies, such as Tekes, Finnish Industry Investment Ltd. (fund of funds) and the Finnvera subsidiary Veraventure Ltd. Finland's policy to support start-ups comprises a set of programmes aimed at supporting innovation in companies in collaboration with research centres and universities, helping entrepreneurs patent and commercialise their innovations, improving high-potential start-ups' access to finance in the early stages, strengthening networks and angel investors, strengthening the operational venture capital during growth stages, and helping high-potential start-ups to expand internationally (Maula, Murray and Jääskeläinen, 2007).[1]

Funding for Young Innovative Enterprises programme

The Funding for Young Innovative Enterprises programme is operated by Tekes, Finland's main innovation-support agency. Since 2008 it has offered seed and venture capital for young highly innovative companies (less than six years old, fewer than 50 employees and more than 15% of expenditure on R&D). Funding is limited to USD 1.3 million per company. In addition, Tekes provides various lines of financing for innovation projects. In the initial phase, the programme offers financial support for planning, global market assessment and business plans. Financial support is limited to USD 66 000 for no more than six months. In the second phase, the programme provides up to USD 924 000 to help companies expand abroad.

Finnvera

Finnvera is a public agency that provides loans and guarantees to set up Finnish companies and to develop and internationalise them. Through one of its subsidiaries, Veraventure Ltd. (established in 2003), Finnvera invests in private, regional venture-capital funds and manages InvestorExtra, a network of private angel investors. Another private network, FiBAN, promotes informal private investment in start-ups and helps improve the skills of local angel investors. Through another subsidiary, Seed Fund Vera Ltd., Finnvera invests in early-stage innovative companies. In 2010, Finnvera helped create more than 3 600 companies.

Finnish Industry Investment Ltd. (FII)

Opened in 1994, Finnish Industry Investment Ltd. is a state investment bank that injects capital into firms in the growth stages both through co-investment with private funds (up to 50%) and through a fund of funds. In 2009, FII invested USD 890 million in 440 companies.

Vigo accelerator programme

The Vigo accelerator programme was launched in 2009 by the Ministry of Employment and the Economy, co-ordinated by Tekes, with the participation of Seed Fund Vera Ltd. It is inspired by similar programmes in Israel. The programme aims to attract experienced, world-class investors and venture capitalists to co-invest in and advise innovative Finnish start-ups. The programme provides seed capital, advice and access to networks. Total public funding for the first three years of the Vigo programme is approximately USD 63 million (including Tekes grants and Seed Fund Vera Ltd. loans and capital).

Support for start-ups in Israel

Israel stands out for its leadership and performance in terms of start-ups. The "Start-up Nation" currently has one of the most advanced venture-capital industries in the world. Israel's support for innovation goes back to 1976, when it created the Office of the Chief Scientist. Today, the country has a series of programmes covering all stages of an innovative company's development, from start-up to international expansion.

The Yozma Fund and the creation of Israel's venture-capital industry

The Yozma Fund was introduced in 1993 as part of a government programme to attract private venture capital investment. Between 1993 and 1997, ten new Yozma venture-capital funds were created, with public investment of USD 100 million. Each fund had to bring together three parties: *i)* Israeli venture capitalists, *ii)* foreign venture capitalists, and *iii)* an Israeli investment company or bank.

The Yozma Group has invested around USD 170 million in more than 40 high-tech companies. Some of these were successfully listed on European

and American stock exchanges, while others were taken over by leading corporations such as Agilent, America Online, Cisco, Computer Associates, ECI Telecom, General Instruments, Johnson & Johnson, Medtronic, Microsoft, Sequoia Capital and Terayon. The government would assume the risk and leave profit opportunities to the private sector. It retained 40% of the equity in the new funds, giving private partners the option to buy the shares after five years if the fund was successful. It also withdrew from the programme once the country had developed a high quality, sustainable local venture-capital industry.

Israel also has tax incentives to help develop an angel-investor market through its new Angel Law. This law allows tax deductions for three years on any income from investments of USD 6 600 to USD 2.6 million in high-tech start-ups registered in Israel, with a limit of USD 1.3 million per company invested in.

Israel's Technological Incubators Program

In Israel, the Technological Incubators Program was created in 1991 and is run by the Ministry of Industry, Trade and Labour. Its goal is to help transform ideas into start-ups that are able to raise private capital and grow. The programme also promotes technology transfer from research centres to industry.

Often the incubators are private, for-profit entities that provide services, including connections with potential partners, clients, investors and sources of funding for up to two years. The government covers 85% of the cost of incubation (about USD 600 000 per incubated firm)[2] with a soft loan to the incubator that is repayable only if the incubated firm is successful. The incubator invests in the project. The remaining 15% is provided by the entrepreneur, who must repay the government through 3% royalties on the revenue generated. The incubator receives about 5% of equity provided to the company to cover operational costs. The programme has 26 incubators operating in Israel, of which 23 are technological, two are incubators of technology-intensive industries and one is dedicated to biotechnology. At any given time, around 200 projects in various areas and stages of R&D are being incubated. Between 1991 and 2012 the government helped create around 1 700 highly innovative companies through this programme, investing more than USD 650 million. Total private investment in these incubated companies has reached USD 3.5 billion, about five to six times the size of the initial government investment.

Conclusions

Most OECD countries foster the creation and expansion of start-ups. In recent years, because of the diffusion of information and communications technologies (ICTs) and in response to the search for new sources of growth following the economic and financial crisis of 2008, various OECD countries have made creating new businesses a central part of their strategy to boost growth, create jobs and sustain the competitiveness of domestic industries. A key feature of OECD countries is that they promote access to finance at all stages of business development. Public policies influence the seed capital available and have created incentives for venture-capital funds and angel investors, often through public-private co-investment funds and tax incentives for venture-capital investments. Public policies also address the angel-investor market. Moreover, some countries have effective mechanisms to support knowledge transfer and the creation of spin-offs, thus fostering the use of research results by new businesses. OECD countries support knowledge transfer by specialised services in intellectual-property management and business-model development. The schemes thus stimulate entrepreneurship and innovators' management skills.

Among OECD countries, Australia, Finland and Israel have had interesting experiences related to the role of public policies in supporting start-ups. All three countries have different support models and institutional structures, but all three have effective support mechanisms. These countries' experiences have shown that it is important to design support mechanisms that are comprehensive and that cover all the development stages of start-ups, and measures must be taken to stimulate private-sector investment. Seed capital typically requires permanent public-sector investment. Venture-capital and angel investors, however, need support early on to help them move into the start-up stage. As the sector develops, direct public-sector support can be withdrawn, with support shifting more towards business training and addressing the drawbacks of an arduous regulatory framework.

Notes

1. For a more complete analysis of policies and instruments developed in this field in Finland, see Maula et al. (2007).
2. For biotech, the maximum finance is USD 2.3 million per firm and the maximum incubation time is three years.

Annex 2.A1. Tools to promote finance and technology transfer in OECD countries

Table 2.A1.1. **Seed capital, venture capital and angel investors, OECD countries**

Country	Fund	Type of support	Stage/Focus	Beneficiary	Amounts
European Union	**European Investment Fund (1994)**	**Fund of funds** Since 2007, the fund has had two lines: GIF1: Investment in funds focused on early-stage innovative SMEs GIF2: Investment in funds focused on high-growth-potential expansion-stage SMEs	Start-up and expansion	Funds focused on technology-based SMEs	• GIF1: Investment of 10-25% of the fund's total capital (up to 50% in certain cases) • GIF2: Investment of 7.5-15% of the fund's total capital (up to 50% in certain cases) • 2007-13 GIF budget: USD 721.5 million • End of 2010: 116 SMEs supported by GIF1 at an average cost of USD 394 000, and 26 by GIF2 at an average cost of USD 787 000

Table 2.A1.1. **Seed capital, venture capital and angel investors, OECD countries** *(continued)*

Country	Fund	Type of support	Stage/Focus	Beneficiary	Amounts
Australia	**IIF Program (1998)**	**Co-investment in funds**	Start-up	Funds focused on early-stage companies that commercialise the results of local research capabilities	• Co-investment with at least 50% private capital • Finances new investment funds for 10 years: maximum contribution of USD 21.5 million per fund • In rounds 1 and 2, USD 236.8 million were invested in nine funds. Private capital was USD 142.5 million. In round 3 (2007–12), an additional USD 214.5 million was invested. To date, the IIF Program has financed 16 funds and supported more than 100 companies
	Smart SMEs ICP Program	**Direct support to enterprises** This programme operates through organisations offering specialist technology-commercialisation services (coaching, mentoring)	Technology-based SMEs		

Table 2.A1.1. **Seed capital, venture capital and angel investors, OECD countries** *(continued)*

Country	Fund	Type of support	Stage/Focus	Beneficiary	Amounts
Canada	**Alberta Innovates**	**Co-investment in funds**	Start-up and expansion	Venture-capital funds focused on fast-growth technology start-ups in specific sectors	• USD 100.2 million investment budget
	BDC Venture Capital	**Co-investment in funds and direct investment through venture-capital funds** BDC Venture Capital has four investment funds in specific technology areas	Start-up and expansion	*Investment in funds:* Management organisation with at least five years' successful experience *Investment in enterprises:* Innovative technology-based firms with high growth potential Focus on specific sectors	*Investment in funds:* • Funds with capital of at least USD 100 million. Focus on all stages of funding *Investment in enterprises:* • USD 500 000 to USD 3 million per company with a financing cost of USD 1-3 million • Requires participation on the board • Does not acquire more than a 49% stake in a company
Denmark	**Vaekstfonden (1992)**	**Co-investment in funds**	Start-up	Technology-based SMEs	• Since 1992, Vaekstfonden has invested in 3 700 firms through 20 funds, with a total investment of USD 1.7 billion • Companies financed since 2001 have a combined sales revenue around USD 4.7 billion and employ about 22 000 people in the country
	Accelerance (2008)	**Loans** Model: Coaching, training and resources for selected innovative entrepreneurs with a high growth potential for five months through a loan	Commercial exploitation of innovations and internationalisation	Technology-based SMEs	• Twice a year it selects 10 to 15 companies to support

Table 2.A1.1. **Seed capital, venture capital and angel investors, OECD countries** *(continued)*

Country	Fund	Type of support	Stage/Focus	Beneficiary	Amounts
Scotland	**Scottish Co-Investment Fund (2003)**	**Direct co-investment in enterprises**	Start-up	Firms with sales of up to USD 3.1 million	• Fund budget: USD 113.5 million • Investment per company of USD 158 000 to USD 1.6 million • Investment on a 50:50 basis with private investors
	Scottish Seed Fund	**Direct investment in enterprises**	Seed stage and seed capital	Start-ups and young, growing businesses	• Investment per company of USD 31 500 to USD 394 000
	Scottish Venture Fund	**Direct investment in enterprises** In conjunction with private-sector investment partners	Shares, debt	Companies with contracts worth USD 3.1 million to USD 15.7 million	• Investment per company of USD 788 500 to USD 3.1 million
Finland	**Finnish Industry Investment, FII**	**Investment in fund of funds, co-investment in funds and direct investment in enterprises**	All stages. Distribution of support: seed (21.4%), growth (38.5%), purchase (21%), fund of funds (9.6%).	Funds and enterprises. All sectors.	• Co-investment, max. 50:50 basis • Along with pension companies, invests in the FoF Growth fund of funds, with capital of EUR 135 million (40% from FII, 60% from pension companies) • Invests an average of EUR 30-50 million per year in 2-4 Finnish venture-capital funds • Manages capital totalling USD 866.2 million • Investments in funds reached USD 712.8 million as of September 2011, with 87 funds managed by 37 fund management organisations • Direct investment in 40 companies • Currently in the process of withdrawal from 26 companies

Table 2.A1.1. **Seed capital, venture capital and angel investors, OECD countries** *(continued)*

Country	Fund	Type of support	Stage/Focus	Beneficiary	Amounts
Finland *(continued)*	**Finnvera (2003)**	**Fund of funds, direct investment in enterprises and management of an angel network** Venture-capital investment through its subsidiary, Seed Fund Vera Ltd. Angel network: *InvestorExtra* Fund of funds: *Veraventure Ltd.*	Start-up and expansion	**Support for small, technology-based innovative firms** with a maximum of 50 employees or maximum sales of USD 13.2 million **Support for funds** focused on SMEs **Support for angels** interested in investing in early-stage companies that are growing and are seeking to expand internationally	• SeedFund Vera: maximum investment of USD 600 000 per company. • Additional funding of no more than USD 1.8 million per company • Also offers capital loans • Fund of funds (50%)
	Vigo (Tekes) (2009)	**Direct support to enterprises** Operates as an incubator through accelerators (currently six) composed of experienced entrepreneurs	Start-up	Young start-ups with high growth potential	• Provides seed capital, advice and access to networks • Acceleration lasts 18-24 months • Commission charged per accelerator can be subsidised by Tekes
	Tekes Finance Programme	**Direct support to enterprises**	Start-up	Young innovative SMEs with high growth potential	• Maximum finance per company of USD 1.3 million

Table 2.A1.1. **Seed capital, venture capital and angel investors, OECD countries** *(continued)*

Country	Fund	Type of support	Stage/Focus	Beneficiary	Amounts
Norway	**National Seed Capital Scheme (2005)**	**Fund of funds and co-investment in funds**	From the start-up stage to an advanced stage.	Investment funds	• Loan for up to USD 114.4 million to investment funds located in four university cities (National Seed Capital Scheme) • Loan for up to USD 120 million to investment funds (Regional Seed Capital Scheme) • The Argentum fund of funds with USD 1.1 billion. Focus on venture capital and private-equity investments • Venture-capital firm (investor) with capital of USD 377.3 million. In addition to providing venture capital it also plays an active role in the start-up enterprises.
	High Growth Programme	**Direct support to enterprises** Operates through support services, monitoring, training, financing and access to networks. Services provided for at least two years	Start-up	Start-ups with potential for high growth and international expansion. Companies must have high growth ambition	

Table 2.A1.1. **Seed capital, venture capital and angel investors, OECD countries** *(continued)*

Country	Fund	Type of support	Stage/Focus	Beneficiary	Amounts
New Zealand	**Seed Co-investment Fund (2005)**	**Direct investment in enterprises** In conjunction with co-investment partners	Seed stage, seed capital and start-up	SMEs with high growth potential	• Fund budget: USD 33 million over 12 years • Provides finance alongside co-investment partners on a 50:50 basis • 50% private-sector contribution • Maximum investment per company: USD 207 000. Subsequent finance of up to USD 620 000 per company • As of February 2012: 70 companies funded with total committed capital (seed and private-sector) of USD 84.3 million
Netherlands	**TechnoPartner Seed-Facility**	**Co-investment in funds**	Start-up	Funds geared towards high-risk start-ups (or "technostarters")	• Up to USD 5.2 million in investment over six years and six further years of divestment • 22 funds financed between 2005 and 2008 with contributions of USD 98.3 million by the programme USD 197.2 million committed by the funds • Resources returned in stages

Table 2.A1.1. **Seed capital, venture capital and angel investors, OECD countries** *(continued)*

Country	Fund	Type of support	Stage/Focus	Beneficiary	Amounts
United Kingdom	**Regional Growth Fund (2011)**	**Direct investment in enterprises**		SMEs	• Fund budget: USD 3.7 billion • Duration: 2011-15 • Grants and loans to eligible businesses • USD 2.2 billion invested in rounds 1 and 2.
	Innovation Investment Fund, UKIIF (2009)	**Fund of funds**	Start-up	Technology-based SMEs Focus on specific sectors	• Two funds of funds created with a USD 236.7 million investment
	Enterprise Capital Funds, ECFs (2006)	**Co-investment in funds** Geared to address the funding gap, providing small amounts of capital investment	Start-up	SMEs	• 10 funds created since 2006
	University Enterprise Capital Fund (2010)	**Co-investment in funds**	Start-up	Foster university innovation and spin-offs	• USD 59.2 million budget (1/3 from the private sector and 2/3 from the government)
	National Endowment for Science, Technology and the Arts (NESTA) (1998)	**Direct support to enterprises** Independent body that combines capital investment with non-financial support	Start-up	Technology-based start-ups in specific sectors	• Invests between USD 791 000 and USD 1.6 million per company as a lead investor or co-investor • Companies must devise a clear exit strategy in 3-5 years

Source: Based on official data and interviews with experts.

Table 2.A1.2. **Support for knowledge transfer and commercial exploitation, OECD countries**

Programme/ Country	Eligibility	Budget	Maximum funding per project	Project timeframes, financing
United States Small Business Innovation Research Program (SBIR) (1982)[1]	Innovative firms with up to 500 employees involved in R&D of federal interest (federal departments or agencies) with commercial potential	USD 1.1 billion and more than 4 200 beneficiary innovative small businesses (1998) Another source (Bendis, 2011) indicates a combined SBIR/STTR budget of USD 2.5 billion for 2011	Phase I: up to USD 150 000 to assess technical and economic feasibility (proof of concept) and innovative potential Phase II: up to USD 1 million to continue R&D	Six months (phase I) to two years (phase II)
United States Small Business Technology Transfer Program (STTR) (1992)[2]	Innovative small businesses (up to 500 employees) involved in R&D of federal interest (federal departments or agencies) with commercial potential, in collaboration with R&D centres	USD 67 million and 320 beneficiary companies (1998)	Phase I: up to USD 100 000 to assess technical and economic feasibility and innovative potential Phase II: up to USD 750 000 to continue R&D	One (phase I) and two years (phase II)
Australia Enterprise Connect[3] (2008)	SMEs in specific sectors (with sales limits)	USD 269 million over five years	USD 21 400 to 54 000 (depending on the activity)	Depends on activity
Denmark Innovation consortia[4] (2002)	Consortia consisting of at least two companies, one public academic institution and one technology transfer office	Average annual investment of USD 21 million	Average funding of 40% (USD 1.3 million to 4 million)	Collaboration should extend 2-4 years
Netherlands Innovation vouchers scheme[5] *(2006-11)*	SMEs can exchange vouchers for knowledge in universities or public research organisations.	USD 34.2 million	Small voucher: USD 3 300 Large voucher: USD 9 900	Vouchers can be redeemed for their value up to 12 months after being issued

Table 2.A1.2. **Support for knowledge transfer and commercial exploitation, OECD countries** *(continued)*

Programme/ Country	Eligibility	Budget	Maximum funding per project	Project timeframes, financing
United Kingdom Knowledge Transfer Networks (KTNs)[6]	People in companies, universities or technical institutions who want to belong to a KTN	Funded by the government, industry and academia		
United Kingdom Knowledge Transfer Partnerships (KTPs)[7] *-2003*	Private organisations and companies wanting to participate in a knowledge-transfer partnership	Committed budget in 2009/10 of USD 66.4 million.	Co-financing of 40-67%. Average cost per project: USD 95 000	
United Kingdom Collaborative Research and Development[8] *-2004*	Collaborative R&D project must have at least two people (at least one of whom must be from a company)	Combined government-business investment in 2007 of USD 1.5 billion	Co-financing of 25-75% of the cost of R&D	Types of projects: from short feasibility studies to longer projects
Canada Business-Led Networks of Centres of Excellence (BL-NCE)[9] *-2007*	Private sector-led networks that include universities, businesses, etc.	Launched in 2007 at a cost of USD 46.3 million for four years USD 2.8 million exclusively for SMEs	Up to 50% of research costs (salaries, equipment). Up to 75% of network-creation, commercialisation and admin costs	Funding for four years
Canada Natural Sciences and Engineering Research Council of Canada (NSERC) Engage Grants for partnerships and innovation[10]	Business/university connection that did not previously exist. Grants for researchers running a project.		Up to USD 25 000	No more than 6 months

Table 2.A1.2. **Support for knowledge transfer and commercial exploitation, OECD countries** *(continued)*

Programme/ Country	Eligibility	Budget	Maximum funding per project	Project timeframes, financing
Canada NSERC Strategic Project Grants (SPG) for partnerships and innovation[11]	Collaborative R&D projects in the early stages in one of the seven strategic areas. At least one academic researcher and a supporting organisation (company or public research organisation)			Funding for 1-3 years
Canada NSERC Idea to Innovation grants I2I	Academic researchers with an idea that can be transferred to industry (pre-competitive research)		Up to USD 125 000 for Phase IIa and up to USD 350 000 over two years for Phase IIb Company contribution: Phase IIa, 1/3 of project costs in monetary support; phase IIb, 1/2 of project costs in monetary support and in kind	Phase IIa, 6-18 months; phase IIb, two years maximum

Source: Based on official data and interviews with experts.

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Chapter 3

Latin America's experience in promoting start-ups

Latin American countries invest a lower proportion of gross domestic product (GDP) in research and development (R&D) than OECD countries. At the same time, the private sector invests little in innovation and there is little co-operation between universities and enterprise. Founding a start-up in Latin America means overcoming greater regulatory barriers and financial obstacles than in OECD countries. However, this chapter shows that innovation policies are gradually becoming more prominent in the development strategies of countries in the region, and that start-ups are gaining momentum. The chapter compares the policy mix to support start-ups in six Latin American countries, based on the country notes of Argentina, Brazil, Chile, Colombia, Mexico and Peru, presented in the second part of this report.

Introduction

Innovation policies are gaining momentum in Latin America, with several countries in the region increasing their investment in innovation and fine-tuning their support instruments. But the innovation gap with OECD countries persists (OECD/Economic Commission for Latin America and the Caribbean, 2012). Investment in R&D is low, with the private sector specialised mainly in natural resources, with little propensity to invest in innovation, and regulations that make it difficult to start innovative businesses. It is therefore no surprise that fewer start-ups are founded in Latin America than in OECD countries. However, Latin American countries have accumulated learning and are introducing new mechanisms to support the creation of start-ups.

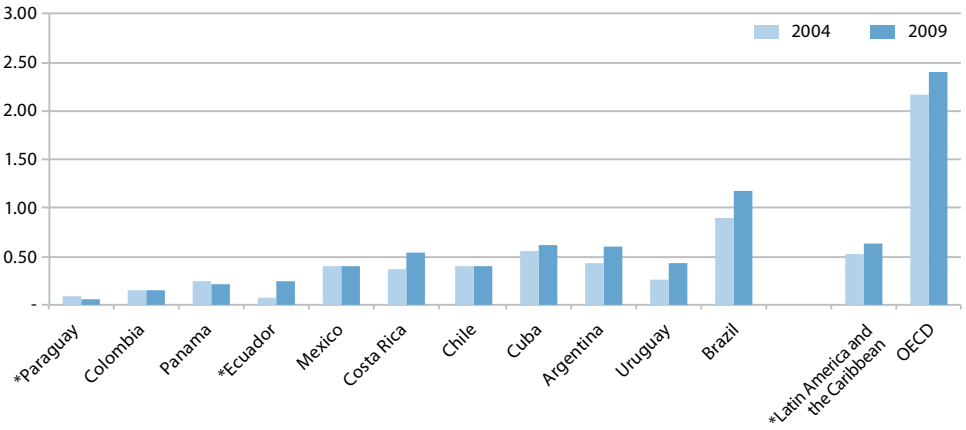
This chapter presents a brief summary of policies to support start-ups in Latin America. It shows the persistency of the innovation gap between Latin America and OECD countries. Next, it analyses the difficulties in creating start-ups in Latin America. The chapter then briefly describes the growing prominence of innovation policies in the region and the new mechanisms to promote start-ups. It compares the policy mix in Argentina, Brazil, Colombia, Chile, Mexico and Peru based on the country notes presented in the second part of this report.

The innovation gap between Latin America and OECD countries persists

Investment in research and development (R&D) in Latin America grew from an average of 0.5% of GDP in 2004 to 0.63% in 2009, while in OECD countries it grew from 2.2% to 2.4% during the same period. Brazil is the country in the region that invests the highest proportion of GDP in R&D, followed by Uruguay, Argentina, Cuba and Chile (see Figure 3.1).

Unlike in developed countries, in Latin America the private sector contributes little to the investment in innovation (see Figure 3.2). There are high disparities among countries in the region, with Argentina, Brazil, Chile, Colombia, Mexico and Peru investing different amounts of resources in innovation and harvesting different results (see Table 3.1). Substantially higher private investment in R&D along with greater and better public-sector support is needed in the region to boost innovation. Latin American countries need to incentivise private-sector investment in innovation, also by promoting the creation of start-ups.

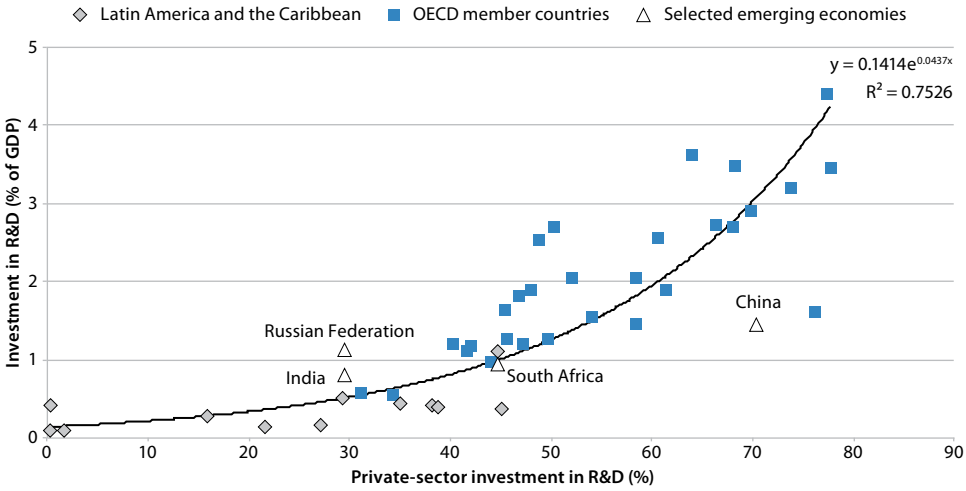
Figure 3.1. **Latin America, R&D investment as a percentage of GDP, 2009**



Note: Data marked with an asterisk (*) are for 2008.

Source: Based on data from the United Nations Educational, Scientific and Cultural Organization (UNESCO), *Red de Indicadores de Ciencia y Tecnología Iberoamericana e Interamericana* (RICYT), the OECD's Main Science and Technology Indicators (MSTI) database, Brazil's Ministry of Science and Technology, Mexico's National Institute of Statistics and Geography (INEGI), Chile's Ministry of Economy, Development and Tourism, the World Bank database, and Cuba's National Office for Statistics.

Figure 3.2. **R&D investment and private-sector contribution, selected countries, 2009**



Source: Based on data from UNESCO, *Red de Indicadores de Ciencia y Tecnología Iberoamericana e Interamericana* (RICYT) and the OECD's Main Science and Technology Indicators (MSTI) database.

Table 3.1. **Innovation indicators, OECD countries and Latin America, 2010**

Country	R&D as % of GDP	Private-sector investment in R&D (%)	Researchers per 1 000 employees	Scientific publications in 2009	Cumulative number of patents granted by the USPTO in 2008-10	High-tech exports (% of total manufactured exports in 2010)
Argentina	0.62	21.4*	2.38*	3 665	153	7
Brazil	1.16	45.4	1.35	12 306	486	11
Chile	0.5	43.7*	0.80*	1 868	70	5
Colombia	0.16	22.1	0.34*	608	30	5
Mexico	0.40*	43.2*	0.90*	4 128	265	17
Peru	0.15*	-	-	159	10	7
Australia	2.37*	62*	8.10*	18 923	5 142	12
Finland	3.88	66.1	15.37	4 949	3 091	11
Israel	4.4	51.6*	-	6 304	4 576	15
United States	2.90*	61.6*	9.01*	208 601	301 436	20

Note: Data marked with an asterisk (*) are the most recent available.

Source: Prepared by the authors based on data from the UNESCO Database, RICYT, OECD Main Science and Technology Indicators, World Development Indicators, USPTO Annual Reports, UN Comtrade.

The relatively poor global innovation performance of Latin American countries depends largely on their specialisation pattern. Natural resource-intensive sectors still account for 60% of total manufacturing value added, while in the United States, knowledge-intensive sectors have experienced strong growth and now represent 60% of total manufacturing value added. Latin American firms therefore concentrate their science and technology activities on acquiring machinery and equipment, except for Brazilian firms, which invest relatively more in R&D (OECD, 2011a). The specialisation in labour-intensive sectors and natural resources is one of the reasons why innovation systems in Latin America have few linkages and private-sector innovation shows sluggish growth. Meanwhile, national innovation surveys indicate that Latin American businesses seldom engage in collaborative innovation projects, particularly with national scientific and technological research institutes. In Mexico only 4.5% of innovative firms collaborate with these institutes on R&D projects, and even where this percentage is higher, such as in Argentina and Uruguay, it is not above 12% (Primi and Rovira, 2011). This stems mainly from sectoral specialisation (with most companies operating in low-knowledge-intensity sectors) and the lack of innovation culture

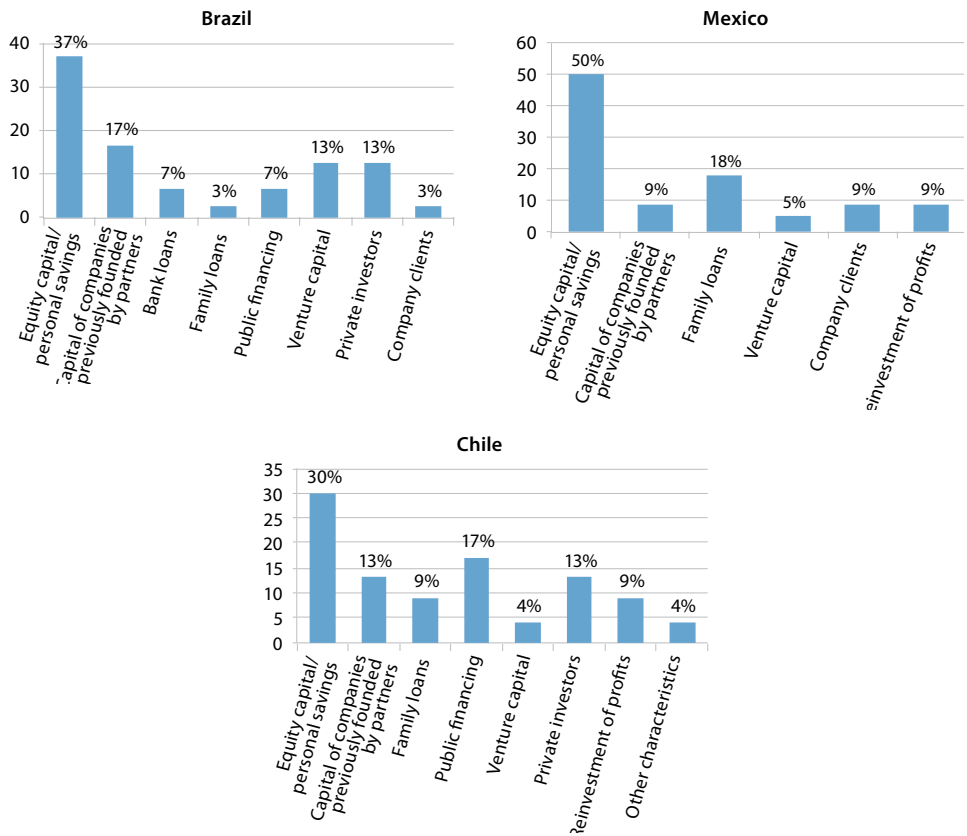
and targeted incentives to promote greater collaboration between research institutes and the private sector.

Start-ups struggle to access finance

Latin American start-ups face more restricted access to finance than their counterparts in more advanced countries (see Figure 3.3). In the United States, bank loans provide 15-30% of the finance of start-ups, well above the figure in

Figure 3.3. **Forms of finance for high-growth companies, Latin America, 2009**

Percentage for each source of finance



Source: IDB (2009), *High Growth SMEs, Innovation, Entrepreneurship and Intellectual Assets: Study of High Growth SMEs in Brazil, Chile and Mexico*, Multilateral Investment Fund Science & Technology Division, Inter-American Development Bank, Washington, DC.

Latin America (7% in Brazil and close to zero in Chile and Mexico) (IDB, 2009). Similarly, in the United States start-ups obtain 20-47% of their finance from venture-capital funds and angel investors, compared to 23% in Brazil, 17% in Chile and 5% in Mexico.

Latin America's financial markets are less mature and banks tend to be less inclined to finance start-ups. The venture-capital industry began to develop in the mid-1990s, supported by the Inter-American Development Bank and some public institutions such as the Chilean Production Development Corporation (CORFO). By 2010 the venture capital industry had grown to USD 8 billion in Latin America (LAVCA, 2012). Brazil accounts for almost half of Latin America's venture-capital industry; Colombia and Chile follow in importance (see tables 3.2 and 3.A1.1). Venture capital accounts for 0.27% of GDP in Brazil, 0.18% in Chile and 0.16% in Colombia. It is less developed in other countries, representing 0.05% of GDP in Peru, and 0.02% in Argentina and Mexico (see Table 3.2).

Table 3.2. **Private equity and venture capital as a percentage of GDP, selected countries, 2010**

Country	Private equity and venture capital as % of GDP
Brazil	0.27
Chile	0.18
Colombia	0.16
Peru	0.05
Mexico	0.02
Argentina	0.02
Israel	0.73
United Kingdom	0.46
Spain	0.18

Source: LAVCA (2012), *2012 Scorecard: The Private Equity and Venture Capital Environment in Latin America*, LAVCA, New York.

According to the Latin American Venture Capital Association (LAVCA), the Economist Intelligence Unit and the Latin American Development Bank (CAF), Chile and Brazil have the environments most conducive to development of the venture-capital industry, followed by Mexico and Colombia (see Table 3.A1.2). The main barriers in the countries of the region are related to legislation for setting up and operating venture-capital funds (Mexico), taxation on venture-capital funds and investments (Colombia), bankruptcy procedures (Colombia and Mexico), the development of capital markets (Colombia and

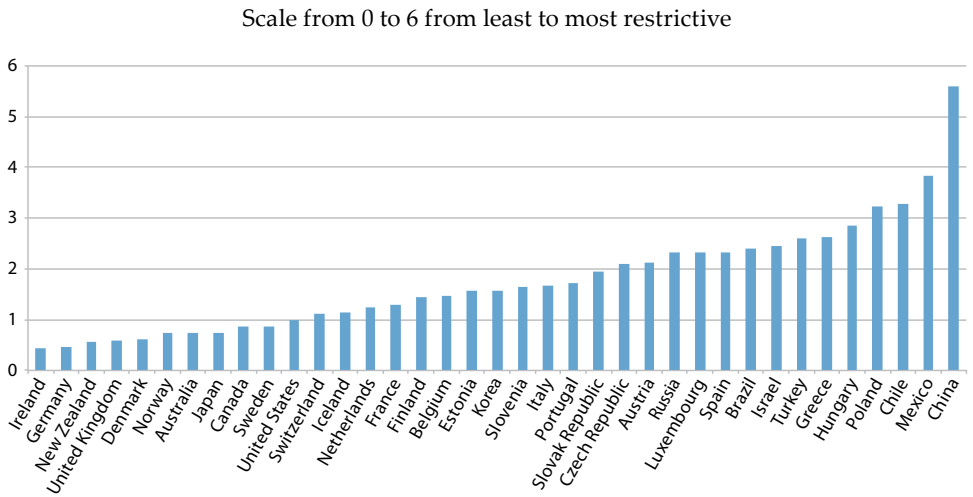
Mexico), weaknesses in the judicial system (Brazil, Colombia and Mexico) and perception of corruption (Brazil, Colombia and Mexico) (LAVCA, 2012).[1] At the same time, the venture-capital industry in the region focuses on the growth and expansion stages of medium-sized and large firms, rather than on the seed and start-up stages. In 2010, more than half of venture-capital operations were geared towards growth and expansion, with only 18% targeted towards the seed and early stages (see Table 3.A1.4). Two-thirds of seed-capital investments in the region were in Brazil and Chile (Endeavor and LAVCA, 2012) (see Table 3.3).

Table 3.3. **Venture capital, Latin America, selected countries, 2010**

Country	Number of investments	% of all investment in Latin America and the Caribbean
Argentina	3	9
Brazil	12	38
Chile	9	28
Colombia	1	3
Mexico	3	9
Other countries in the region	4	13
Total	32	100

Source: Endeavor and LAVCA (2012), *Prospects for Private Equity & Venture Capital in Latin America: The Year Ahead*, 2011 Americas Venture Capital Conference.

Figure 3.4. **Administrative and regulatory barriers to start up a new business, selected countries, 2008**



Source: OECD (2011b), *Entrepreneurship at a Glance 2011*, OECD, Paris.

In Latin America start-ups face higher regulatory and administrative barriers than in most OECD countries (see Figure 3.4). In the World Bank's *Doing Business* report, Brazil, Mexico and Colombia rank lower than the OECD average in facility to starting a business (see Table 3.4).

Table 3.4. **Starting a business and resolving insolvency, Latin America and OECD countries, 2013**

Country	"Starting a business" rank	Number of procedures to start a business	Time (days) to start a business	Cost (% of per capita income)	Resolving insolvency rank
Argentina	154	14	26	12.3	94
Brazil	121	13	119	4.8	143
Chile	32	7	8	4.5	98
Colombia	61	8	13	7.3	21
Mexico	36	6	9	10.1	26
Peru	60	5	26	10.6	106
Australia	2	2	2	0.7	18
Finland	49	3	14	1	5
Israel	41	6	21	4	47
Italy	84	6	6	16.5	31
Spain	136	10	28	4.7	20
New Zealand	1	1	1	0.4	13
United Kingdom	19	6	13	0.7	8
United States	13	6	6	1.4	16

Source: World Bank (2013), *Ease of Doing Business Index*, The World Bank.

Innovation policies are gaining momentum in national development strategies

Latin American countries' experience in designing and implementing innovation policies goes back to the 1950s. At that time, although there was no explicit innovation policy, governments laid the foundations for scientific and technological development and created the institutional infrastructure to manage

policies. During this period, governments created research institutes and science councils to develop their national scientific capacities and thus supporting national industrialisation strategies. These countries aimed at moving away from the peripheral condition through technical progress. Institutions focused their innovation policies on supply and knowledge production in strategic sectors for national development (ECLAC, 2002). In the late 1980s, structural reforms opened up trade. During this period, public policy played a marginal role, and the main instruments were demand-focused incentives to boost the private sector. More recently, countries in the region have moved towards more sophisticated policy models focused on the interactions between science and industry and on public-private partnerships (Cimoli et al., 2005, 2009). Access to information and communications technologies (ICTs) and their role in modernising public-sector management and public service delivery have also been key priorities in many innovation strategies in Latin American countries (see Table 3.5).

Table 3.5. **Evolution in innovation policy models, Latin America**

	Linear supply model	**Linear demand model**	**Combined supply and demand model**	**Towards a new model?**
Period and national development strategy	Industrialisation by import substitution	Washington Consensus, structural reforms, export-led growth model	Post-Washington Consensus and growth supported by the spread of new technological paradigms and led by export of natural resources	Phase of growing prices for natural resources, and post-2008 search for new sources of growth, green economy and growing role of domestic demand
Innovation policy framework	Structuralist	Market failures	National innovation systems	Sectoral innovation systems
Basic assumption	Public sector is principal provider of scientific knowledge	Private sector is the main engine for technological change and innovation	Recognition of the complementarity between public and private sectors in the generation and dissemination of knowledge	
Sectoral focus	Yes	No	No	Yes
Pattern of knowledge dissemination	From top to bottom	From bottom to top	Two-way	Systemic

Table 3.5. **Evolution in innovation policy models, Latin America** *(continued)*

	Linear supply model	Linear demand model	Combined supply and demand model	Towards a new model?
Main policy approach	Centralised and selective policies in support of efforts to create a national manufacturing industry	Horizontal policies and demand-oriented incentive mechanisms (absence of industrial policy)	Support for the generation of consortiums and networks for innovation and focus on technology transfer policies (absence of industrial policy)	Incentives for innovation with participation of the private sector and new forms of sectoral focus (return of industrial policies)
Governance and management criteria for STI institutions	Centralised model oriented towards scientific research The scientific agenda and the academic sector predominate	Minimalist policy approach and prevalence of market mechanisms and efficiency criteria	Modernisation of the management of institutions (rationalisation and modernisation), gradual transition towards systems of open and participatory management, development of mechanisms for collaboration between the public and private sectors	More sophisticated governance models, emphasis on mechanisms and incentives for dialogue among levels of government (horizontal and vertical) and between the public and private sectors

Source: Primi, A. (forthcoming), "Learning in Science, Technology and Innovation Policies and Development: The Case of Latin America", draws on and updates Cimoli et al., 2005, 2009.

Recently, most countries have improved their institutions and governance for innovation policies. In 2008, Argentina created the Ministry of Science, Technology and Productive Innovation to promote productive development and support greater collaboration between science and business. In the mid-2000s, Chile created the National Innovation Council for Competitiveness, a major step forward that enabled innovation to become a government priority through the Committee of Ministers for Innovation. Innovation has a different positioning in the government structures of the countries in the region. Only five countries in the region have an innovation ministry: Argentina, Brazil, Costa Rica, Cuba and Venezuela. In other countries there are national innovation councils directly under the presidency, as in Chile and Nicaragua, or national councils under different

ministries, such as industry or education, as in Mexico and Peru.[2] Countries also follow different institutional models, with different levels of complexity and density of interactions among the various actors of the national innovation system. Brazil has the most articulated institutional setting in the region, with the Ministry of Science, Technology and Innovation and the Ministry of Development, Industry and Foreign Trade, as well as the Brazilian Development Bank (BNDES) highly engaged in designing and implementing the innovation policy. In addition, various agencies are responsible for implementing programmes, such as the Brazilian Innovation Agency (FINEP), and the National Council for Scientific and Technological Development (CNPq), which fund business innovation and research programmes. In Brazil states have also local foundations to support innovation. Other countries have simpler institutional models, some more decentralised (such as Mexico) than others (such as Chile) (Primi, forthcoming).

Since the 2000s, the "national innovation system" has emerged as the framework of reference for designing and implementing innovation policies. This approach conceives innovation as a complex, non-linear and non-deterministic phenomenon that requires interaction among the different actors (businesses, universities and research centres) and the public institutions in charge of innovation policies. This envisages a policy model with new incentives to promote collaboration between the public and private sectors. Institutions responsible for innovation policy therefore need new competences and new spaces for dialogue to find consensus among groups with different interests, such as academia, the private sector and the civil society (Primi, forthcoming).

The financial and economic crisis of 2008 revealed the limitations of current growth models and underlined the need to find new sources of growth that take into account environmental and social sustainability (ECLAC, 2010; OECD, 2010). This was underlined further by the persistence of the 2008 financial and economic crisis in several OECD countries. Sustained and sustainable growth requires finding effective forms of interaction between the private and public sectors to support the introduction of new processes, products, business models and ways of organising production. Innovation policies need to move towards models that support the generation of scientific and technological capabilities in frontier sectors and promote at the same time the modernisation of production and also the adoption of marginal innovations to improve the competitiveness of businesses. These models require a high institutional capacity at different levels of government for their implementation.

Benchmarking start-up promotion in six Latin American countries

Latin American countries are introducing new programmes to support start-ups. There is no single optimal mix of incentives. The appropriate mix of instruments depends on factors including each country's strategic and technological priorities, tax system, fiscal situation and technological capacities, and how developed its financial markets are. Technical progress and innovation also require designing and implementing innovative and flexible instruments to harness new opportunities. Given the complexity of innovation and technical change, it is not enough to design mechanisms offering financial incentives for innovation; it is also necessary to support collaboration and facilitate the application of knowledge in productive systems.

The dynamics of innovation depend not only on the efforts of individual firms, research centres and universities, but also on the interaction among them. Mechanisms to support technology transfer are important, and influence the linkages among different institutions, the channels for technology transfer and the prevalence of specific forms of relationship among different institutions. The forms, intensity and channels of interaction between universities and firms are diverse and changing, and depend largely on each country's institutional and production structures. Latin American countries are increasingly concerned about the need to create incentives to support knowledge transfer and strengthen collaboration between universities and businesses (see Table 3.6). Knowledge and technology transfer takes place through different channels, including those related to human-resource flows (such as student business placements and the hiring of new professionals), informal and/or professional networks, joint activities (lectures and publications), specific projects, consultancy services and technology support (technical assistance and equipment), and technology licensing (patents and university technology transfer offices).

Based on the country analyses in Chapters 4 to 9 of this report we can take a comparative look at the mechanisms supporting start-ups in Latin America (see Figure 3.5). Today, nearly every country in Latin America has some sort of support mechanism for business training. Argentina, Brazil and Chile are notable for their more established training instruments, while these are still in the development stage in Colombia, Mexico and Peru. In addition, all countries in the region have business incubators and have accumulated considerable knowledge in the management of these institutions. The support mechanisms

Table 3.6. **Knowledge transfer: Policies and experiences in Latin America**

Type of inter-relationship	Channels for the transfer of knowledge	Policy instruments	Experiences in the region
Human-resource flows	Internships, student training, hiring of graduates	Human resources training; access of firms to skilled human resources who enable them to generate competitive advantages	Multinationals and universities in Costa Rica, the Science and Technology Development Fund (FONDEF) in Chile, and Funding for Innovation, Science and Technology (FINCyT) in Peru.
Informal contacts among professionals	Professional networks, exchange of information	Innovation fairs and prizes; technical and professional training	Eaton Trucks Corporation and Unicamp (Brazil), innovation fairs (Brazilian states, Peru and other countries), design fairs (São Paulo, Buenos Aires)
Activities for the communication and dissemination of knowledge	Events, seminars, conferences, publications and joint publications	Funding for the spread of scientific-technical knowledge	Biotechnology science and business meeting with the participation of various institutions (Mexico)
Services	Consultancy services, technical assistance, use of teams	Diversification of sources of university funding; development and updating of capacities of researchers and firms in applied science and technology (use of equipment); provision of solutions to businesses' specific problems	Provision of technology services by: Uruguay's University of the Republic (UDELAR) and the Technical Laboratory of Uruguay (LATU); Argentina's National Industrial Technology Institute (INTI); and Brazil's National Industrial Learning Service (SENAI) and Brazilian Support Service for Micro and Small Enterprises (SEBRAE)

Source: Primi A. and S. Rovira (forthcoming), *Nuevos mecanismos de financiamiento y de apoyo a la transferencia tecnológica en América Latina: una revisión crítica.*

introduced in the 1990s suffered from significant performance limitations given the lack of results-based conditionality criteria for incubators' management. Countries have learned they need to establish a system to evaluate results and accredit intermediary bodies involved in the screening of potential beneficiaries and resource allocation. For example, in recent years Argentina, Brazil and Chile have introduced innovative schemes to support incubators and accelerators. However, the region's incubators and accelerators tend to work more closely with universities and research centres than with the leading innovative companies.

Figure 3.5. **Targeted policy tools to promote start-ups in Latin America: A comparison between countries, 2012**

Category	Tool	Argentina	Brazil	Chile	Colombia	Mexico	Peru
Financing	Seed capital	●	●	●	▨	○	▨
	Angel investors	○	●	●	▨	○	○
	Venture capital	○	●	●	▨	●	○
Business services and entrepreneurial training	Incubators	●	●	●	●	●	▨
	Accelerators	●	●	●	○	●	○
	Corporate spin-offs	○	○	○	○	○	○
	Tecnology transfer and university spin-offs	●	●	●	○	●	○
	Business training	●	●	●	●	●	●
Regulatory framework	Ease of creating or clsoing down businesses	○	○	●	●	●	●
	Taxation and special legislation	○	●	●	○	●	○

● Implemented ● In development ▨ Recently created ○ Need to be created or reformed

Note: This figure is not meant to present an international classification. It is based on qualitative information gathered in the country case studies in Chapters 4 to 9 of this report. The goal is to summarise visually the variety of instruments created to support start-ups and how developed they are in the countries in the region.

Source: Based on the country case studies in Chapters 4, 5, 6, 7, 8 and 9 of this report.

Although there are mechanisms to support access to finance in Latin American countries, start-ups still face great difficulties in this respect. Brazil and Chile offer finance for all stages of development. In Argentina there are few mechanisms to support the expansion stage. Colombia and Peru are creating new tools for seed capital. Various countries in the region, especially Chile, Colombia and Mexico, have made progress in recent years, reducing the number of procedures, the costs and the amount of time needed to start a new business.

The experience of Latin American countries can provide important lessons on how public policies can foster start-ups. The lessons learned in Brazil and Chile show the importance of having a policy mix targeted to the various stages of business development. The effectiveness of each instrument, whether seed money or support for venture capital, depends on the availability of finance for successful businesses in their different development phases. Argentina shows the potential offered by major scientific research projects and public-private partnerships to create new businesses and the need to have appropriate financial and regulatory mechanisms in place to support the expansion of such businesses. Mexico reveals how important it is to reform the legal framework to facilitate business start-up and to create the right conditions to favour knowledge transfer between research centres and the production structure. Colombia and Peru are designing new programmes that match financial services with training, in order to generate a culture of innovative entrepreneurship in contexts where it is not as well developed as in other countries.

Supporting start-ups is an emerging issue in the innovation and productive development strategies in Latin America. Creating opportunities for international dialogue and sharing of experiences with countries inside and outside the region can help promote learning and design more effective mechanisms. It can also help identify supranational programmes that can help overcome the barriers of size and scale that keep start-ups from becoming a major source of growth in the countries of the region. To that end, international organisations can play an important role in supporting policy dialogue to foster knowledge sharing among countries.

Conclusions

Innovation is growing more slowly in Latin America than in the OECD countries. Nevertheless, the countries of the region are becoming increasingly aware of the importance of innovation for development. Over the past few years they have invested in improving the institutional infrastructure for innovation and improving their innovation policies.

In the region, there is growing interest in supporting start-ups. While it is true that in Latin America there are greater barriers to the creation and expansion of start-ups, these countries have made progress in recent years. Several countries have improved their regulatory framework to make start-up

and expansion easier. Meanwhile, some countries, including Chile, Colombia and Peru, have created new mechanisms to support start-ups. A major challenge for countries in the region is to ensure there is appropriate financing from the seed to the expansion stage. Brazil and Chile offer the widest range of financial support mechanisms through all the stages of development. Mexico, still faces challenges in financing start-ups in their early stages, while Argentina faces barriers in financing companies in their expansion stages.

The following chapters review the direct support mechanisms for start-ups in Argentina, Brazil, Chile, Colombia, Mexico and Peru. The experiences of these countries show that the region is evolving; it has already achieved much compared to the last decade but has many challenges lying ahead.

Notes

1. These results are consistent with the study by García-Robles and Corvalán (2011), which argued that the countries can be classified into two groups according to the level of development of their venture-capital industry (see Table 3.A3.4). Brazil, Chile, Colombia and Peru have more developed ecosystems, while Argentina, Costa Rica, Mexico and Uruguay are working towards creating the legal frameworks needed to encourage innovative entrepreneurship.
2. For an overview of innovation policies and governance models in Chile and Mexico see OECD (2007 and 2009).

Annex 3.A1. Venture capital in Latin America

Table 3.A1.1. **Private equity and venture capital, Latin America, 2006-10**
In millions of USD

Country	2006	2007	2008	2009	2010
Argentina	299.7	339	342.9	61.4	67.1
Brazil	653.4	1 912.4	2 391.5	1 730.3	4 565.6
Chile	220.2	213.6	230.6	229.1	309.9
Colombia	16.3	82.9	80.1	117	390.6
Peru	9.2	21.5	64.6	78.2	70.9
Mexico	-	-	-	-	184.6

Source: ACAFI (2011), *Reporte de Venture Capital y Private Equity en Chile*, ACAFI, Santiago, Chile.

Table 3.A1.2. **Development of the environment for venture capital, 2012**

Country	Overall venture capital and private equity score, 2012	Regional ranking (Latin America and the Caribbean)
Argentina	42	10
Brazil	72	2
Chile	75	1
Colombia	60	4
Mexico	65	3
Peru	49	8

Note: The score uses a scale of 1-100, where 100 is the best score.

Source: LAVCA (2012), *2012 Scorecard: The Private Equity and Venture Capital Environment in Latin America*, LAVCA, New York.

Table 3.A1.3. **Venture capital by development stage, Latin America, 2010**

Stage	Number of investments	% of all investment in Latin America and the Caribbean
Early stage	26	15
Expansion stage	44	25
Increase in finance	59	33
Incubator	6	3
Other	43	24
Total	178	100

Source: Endeavor and LAVCA (2011), *Prospects for Private Equity & Venture Capital in Latin America: The Year Ahead,* 2011 Americas Venture Capital Conference.

Table 3.A1.4. **Assessment of the development of venture-capital systems in Latin America**

Moving towards conducive business and/or regulatory environment (Mexico, Uruguay, Argentina, Costa Rica)	Most developed venture-capital ecosystems (Brazil, Chile, Colombia, Peru)
Entrepreneurship is flourishing	Most promising venture-capital ecosystems
Angel group starting	Acceptable legal, tax and regulatory frameworks in place
Entrepreneurs starting to understand venture capital	Fund managers with track records
Corporate governance and accounting standards receiving attention	Local capital markets and strategic exits possible
Few capable local venture-capital fund managers	Entrepreneurship culture
Funds with experience in private equity only	Still room for improvement
Some government actions are not investor-friendly	Private equity is most developed in Brazil, but early-stage venture capital, seed and angel investing needs to be developed further

Table 3.A1.4. **Assessment of the development of venture-capital systems in Latin America** *(continued)*

Moving towards conducive business and/or regulatory environment (Mexico, Uruguay, Argentina, Costa Rica)	**Most developed venture-capital ecosystems (Brazil, Chile, Colombia, Peru)**
Venture capital laws need to be improved or put in place (Argentina, Mexico)	
Tax treatment of venture-capital investments needs improvement	
Exit options are limited	
Pension funds do not invest in venture capital or are not permitted to do so	
No organised government support to venture capital	
Minority shareholder protection rights are ambiguous	

Source: García-Robles, S. and C. Corvalán (2011), "The Multilateral Investment Fund: Lessons learned building a local venture capital industry in Latin America and the Caribbean", *Latin American Law & Business Report*, Vol. 19, No. 6, June.

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Part II

Country profiles

Chapter 4

Promoting start-ups in Argentina

This chapter presents an overview of public policies recently introduced in Argentina to support start-ups. It highlights the growing role of innovation policies in the country and the creation of the Ministry of Science, Technology and Productive Innovation. It then looks at specific policies to promote start-ups. Argentina offers support for the seed and start-up stages; however, financing and the regulatory framework for start-ups' expansion and acceleration are less developed. The country's sectoral technology funds and solid scientific and research base in sectors such as software, design and biotechnology are important assets whose impact on start-up creation could be strengthened.

Innovation policy in expansion

Argentina created the Ministry of Science, Technology and Productive Innovation (MINCyT) in 2007. This reflected the growing importance of innovation in Argentina's development agenda. The MINCyT is responsible for formulating innovation policies and programmes and supervising the bodies responsible for financing and implementing policies (the National Agency for the Promotion of Science and Technology [ANPCyT] and the National Scientific and Technical Research Council [CONICET]). The ministry is charged with supporting and steering scientific and technological development and productive innovation, thus contributing to shape a new production model to make the national economy more competitive. CONICET is responsible for financing and promoting scientific research and training human resources. The ANPCyT manages funds for science and technology, including the Scientific Research and Technology Fund (FONCyT) and Argentine Technology Fund (FONTAR), both set up in 1996, the Trust Fund for the Promotion of the Software Industry (FONSOFT), set up in 2004, and the Argentine Sectoral Fund (FONARSEC), set up in 2009. The Ministry of Industry, meanwhile, operates programmes through the Small and Medium-Sized Enterprise Secretariat (SePyME) to support start-ups, providing entrepreneurs with access to seed capital through non-repayable grants and business services to promote entrepreneurial skills.

Argentina has increased its budget for science, technology and innovation activities in recent years. In 2012 the MINCyT had a budget of ARS 3.70 billion (Argentine peso) (USD 732 million). Since 2003, Argentina has been increasing its investment in research and development (R&D). In 2004, investment represented 0.44% of gross domestic product (GDP); in 2011, this had risen to 0.65%, thus closing the gap to the regional leader, Brazil, which in 2010 invested 1.16% of GDP in R&D. Argentina stands out for its long history of government measures to support domestic capacities in the field of science and technology. This has helped generate research capacities in sectors such as nanotechnology, cardiology and biotechnology. For instance, Argentina was Latin America's first producer of recombinant proteins and has fourth-generation nuclear power stations and a public nuclear energy company (INVAP).

Argentina is improving the co-ordination among public policies to increase the impact of the national innovation agenda. The new initiatives include:

- Increasing the role of the Science and Technology Bureau (GACTEC) and the Inter-Institutional Council for Science and Technology (CICyT) as co-ordinating bodies.

- Making the ANPCyT responsible for the management of funds for scientific research and business innovation, thus reducing duplication of efforts and increasing the synergies among projects.
- Creating new financing mechanisms focusing on priority sectors. FONSOFT finances software production by issuing loans and grants through public competitions. FONARSEC finances R&D in priority sectors (health, social development, energy, agribusiness and the environment) and general-purpose technologies (nanotechnology, biotechnology, and information and communication technologies [ICTs]). Managing these funds requires institutional capacities to stimulate and support collaboration between the public and private sectors.
- Placing greater emphasis on the provinces as an integral part of the implementation and management of innovation policies. The government has thus identified 34 Strategic Socio-Productive Hubs (*Núcleos Socio Productivos Estratégicos*). These hubs aim to use general-purpose technologies (nanotechnology, biotechnology and ICTs) in certain production sectors to make the sector more competitive and improve the living conditions of the people in each region. New mechanisms are also being introduced to reduce the concentration of resources in the Federal Capital District. In recent years there has been an improvement in the distribution of resources with an increase in the participation by central regions of the country (ANPCyT, 2012; Chudnovsky et al., 2006 and 2007). Provincial governments, meanwhile, have been accelerating the implementation of business-development and innovation measures.

A growing interest in supporting start-ups

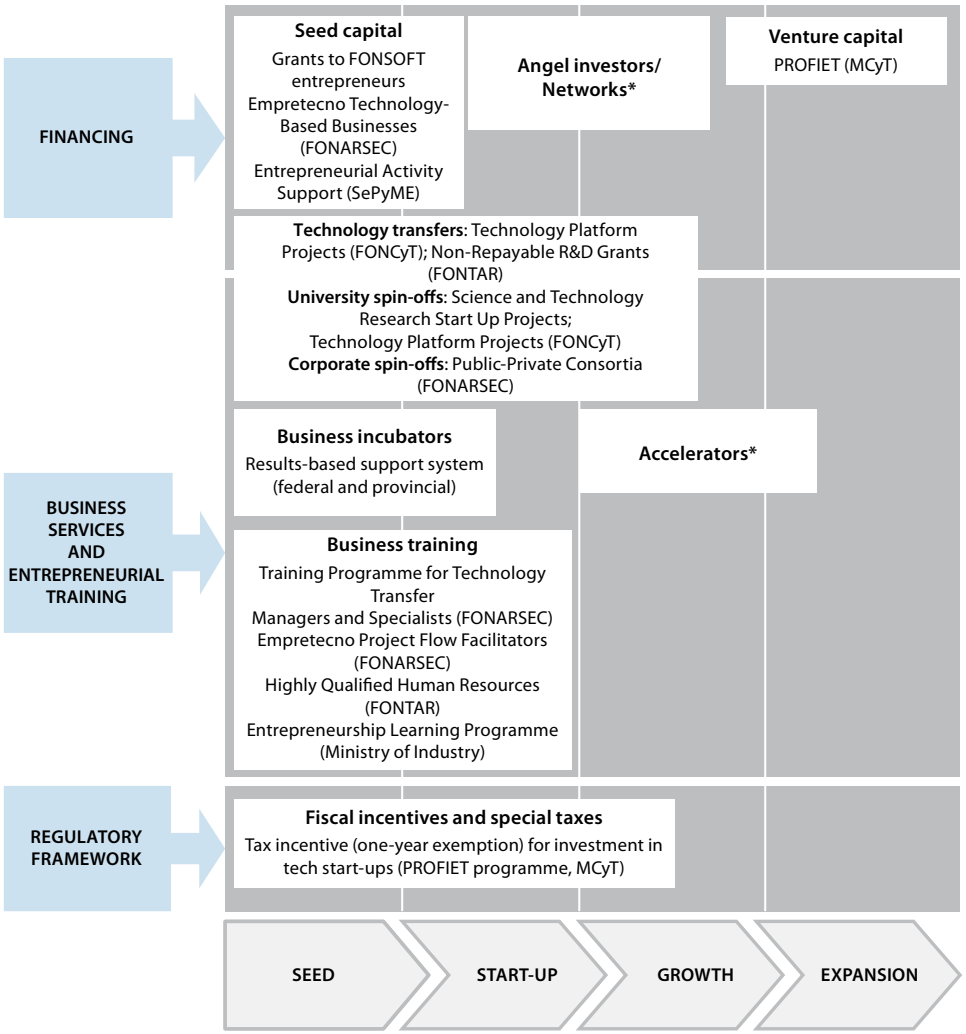
Supporting start-ups is becoming an important part of innovation policy in Argentina, in a similar vein to what is happening in other countries in the region. Argentina has technology platforms geared towards facilitating knowledge transfer and university spin-offs. However, the availability of angel-investor and venture-capital financing for companies in the development and expansion stages seems to be fairly limited, and there are not yet any public support mechanisms to spur their development.

The ANPCyT, the Ministry of Industry's SePyME and some provincial governments provide support to create start-ups in Argentina. One such mechanism is Impulsar EBT, which combines various consultancy and financing lines geared towards: *i)* supporting start-ups (for example, through the Empretecno Technology-Based Business Start-Up instrument); *ii)* promoting project development (the Empretecno-FFP instrument is geared towards making private and public-private entities act as project flow facilitators to help form technology-based firms); *iii)* modernising equipment (through the Infrastructure and Technological Equipment Projects [PRIETEC] instrument); and *iv)* protecting intellectual property and innovative results (through non-refundable grants, patents and technology consultancies in intellectual property management). Impulsar EBT is geared more towards supporting early-stage and start-up phases, while other instruments, such as FONARSEC's Training Programme for Technology Transfer Managers and Specialists (*Programa de Formación de Gerentes y Vinculadores Tecnológicos*) and FONTAR's Highly Qualified Human Resources programme (*Recursos Humanos Altamente Calificados*), are geared towards the growth and expansion stages (see Figure 4.1).

In Argentina there are three main funds providing seed capital. FONARSEC covers 75% of a project's cost, up to a maximum of USD 532 000, through the Empretecno programme. In 2011, the ANPCyT helped start 27 companies through the programme, injecting a total of USD 10.4 million (ANPCyT, 2011). Since 2011, these grants are managed through project flow facilitators (FFPs). These FFPs are accredited bodies (mainly business incubators) that operate as intermediaries and second-tier financiers. They receive support and resources from the ANPCyT based on performance and the scope of their results. Initially they receive 5% of the budget assigned to the project they are supporting; subsequently they receive a further payment if they obtain additional angel-investor or venture-capital financing and/or financing from commercial banks. FONSOFT provides a non-repayable grant covering up to 50% of the project's total cost for a maximum of USD 57 000 for firms that are less than two years old that provide software and information technology services. In 2011 the programme financed 202 projects for a total of USD 5.2 million. In the software sector there are also private funds. One example is the private-equity and acceleration fund NXTP Labs, which invests up to USD 25 000 per enterprise in exchange for a 2-10% minority stake in the company.[1]

The Ministry of Industry's SePyME also provides seed capital to cover up to 85% of business start-up costs, up to a maximum of USD 23 000, through the Entrepreneurial Activity Support programme (PACC Entrepreneurs).

Figure 4.1. **Argentina: Targeted policy tools to promote start-ups, 2012**



Note: * To date there are no direct support mechanisms for innovative entrepreneurs through angel investors or business accelerators.

Source: Based on official information from Argentina and interviews with experts and policy makers.

Financing for the expansion stages of start-ups is still quite limited. The Programme for the Development of Entrepreneurial Investment in Technology (PROFIET) was introduced in 2009,[2] and operations began in late 2012. The programme was introduced in response to the lack of financing in the growth and expansion stages of start-ups. It also provides tax incentives (up to 50% of the total investment) for investors who finance start-ups. There is no direct public support for angel investors in Argentina. The private sector is also advancing slowly, with just one private network, the IG Business Angels Club, which is linked to the *Universidad Austral*'s IAE Business School. This network of 60 investors injects between USD 100 000 and USD 300 000 in projects with high growth potential.

The ANPCyT manages several programmes to support the development of entrepreneurial skills. FONTAR's Highly Qualified Human Resources programme, for instance, provides technology-based firms with financing for hiring human resources specialising in R&D. FONARSEC, meanwhile, uses its Training Programme for Technology Transfer Managers and Specialists to support educational institutions that provide training for professionals who establish linkages between R&D centres and the production sector. Beneficiaries receive a grant covering 50% of the total cost of the project for four years, which must be spent on hiring teachers, awarding grants and developing exchange networks or similar items. The Ministry of Industry SePyME manages the Entrepreneurship Learning Programme (*Programa Aprendiendo a Emprender*), which provides free classroom and distance courses and workshops to 18- to 35-year-olds. The programme provides basic training in undertaking projects, identifying business opportunities and obtaining financing. Some provinces and cities have recently prioritised supporting start-ups as a tool to boost local development and create new jobs (see Box 4.1).

Argentina has weaknesses in terms of developing business angel networks and its venture-capital industry. At 0.01% of GDP, its venture-capital industry is one of the least developed in Latin America as a percentage of its economy (LAVCA, 2012). The greatest obstacles to improving the venture capital industry include the lack of an adequate regulatory framework for the venture-capital and private-equity industry, a complex tax system for investments and venture-capital funds, and restrictions on local institutional investors wishing to invest in the funds.

The ANPCyT also manages support programmes for technology transfer and commercial exploitation of R&D. FONTAR's Non-Repayable R&D Grants Programme and FONCyT's Technology Platform Projects provide non-repayable grants to companies, including start-ups, to hire groups of researchers and experts to help develop their business. FONCyT finances the

Start-Up Science and Technology Research Projects programme, which since 2005 has promoted the commercial exploitation of R&D results and technology-based start-ups as spin-offs of R&D centres and universities. The programme finances projects for up to USD 85 000 for three years. Projects are submitted by teams consisting of researchers and public and private R&D centres wishing to become entrepreneurs. According to estimates by Kantis and Federico (2012), the programme has funded 58 projects since 2005 for a total of USD 4 million.

Box 4.1. **Promoting local start-up hubs: The City of Buenos Aires.**

Since the mid 2000s, the government of the City of Buenos Aires has invested in promoting start-ups locally through its Undersecretariat for Economic Development (SSDE).

The **Buenos Aires Emprende** (BAE) programme was launched in 2008 to facilitate the development of innovative firms with high growth potential. It provides funding to entrepreneurs located in the Autonomous City of Buenos Aires who set up businesses that have been operating for less than two years. The programme provides seed-capital co-financing for up to 40% of a project's total cost in non-repayable grants (up to a maximum of USD 15 000) and financing for tutoring and capacity-building services for 12 months. Beneficiaries receive financing through agencies certified by the city government to act as intermediaries. The intermediary agencies provide tutoring and technical-support services and manage non-repayable grants, delivering them to each beneficiary. In 2012, the programme had 14 sponsoring agencies, including Endeavor Argentina, FUNDES Argentina, the Institute of Science and Technology Enterprises (IECyT), the University of Buenos Aires Faculty of Economics, the association Emprear and Polo IT Buenos Aires. Between 2008 and 2011 a total of 291 projects were submitted, of which 171 were selected to receive support. According to the evaluation by Cristini and Bermúdez (2012), the programme increases the likelihood of participating entrepreneurs to be successful and experience sales growth.

The **Entrepreneur Development Programme** was introduced by the SSDE in 2009. This programme aims to promote the development of a local business culture. The programme has a larger scope than BAE as it is not only focused on innovative or high growth potential firms. It operates through non-governmental organisations accredited to provide training, technical support, guidance and linkages with potential investors. The programme offers courses and workshops for entrepreneurs. As of 2012, more than 8 000 entrepreneurs have taken part in the programme's activities and more than 50 business plans have been completed (Kantis, 2012).

Source: Based on official data and interviews conducted in Argentina with experts and policy makers.

FONARSEC finances technological public-private consortia to develop cutting-edge solutions in areas with a high potential impact on the competitiveness of the industry. In 2013 it invested nearly USD 34 million in financing 13 projects undertaken by technology-based firms (ANPCyT, 2012).

Box 4.2. **Technology-based biotech start-ups in Argentina: PharmADN and BioSidus**

Argentina has a highly developed biotech sector. The country has good research capacities and various companies have become major players in the sector throughout Latin America. Some spin-offs have been generated from large corporations or research projects.

BioSidus is a pioneering biotech company specialising in producing biosimilars of recombinant proteins. The firm is a spin-off of the Sidus pharmaceutical group and today ranks as the industry leader in Argentina. Since its first products were launched in 1990, it has sold more than 60 million units in emerging markets and more than 75% of its income comes from exports (figures refer to 2008). The company controls 85% of the Argentine market and 50% of the Latin American market in terms of sales of erythropoietin (EPO), a hormone that increases the number of red cells in the blood and has become one of the most widely sold biopharmaceuticals in the world. BioSidus has gone on to generate spin-offs of its own. In the early 1990s, BioSidus researchers founded the company Genergen, which along with Laboratorios Pablo Cassará established the company PC-GEN in 1995. PC-GEN helped found Rhein Americana to develop the recombinant vaccine for hepatitis B. Other firms in the chain of BioSidus spin-offs include Zelltek, the Amega Biotech Group, Immunotech, Incubatech and Protech Pharma.

PharmADN is another good example of a spin-off firm resulting from a research project. It was founded by researchers with academic experience as a result of innovations generated by a public-private R&D consortium that benefited from the ANPCyT's Sectoral Funds instrument. PharmaADN produces monoclonal antibodies for treating cancers including breast, lung and colorectal, as well as autoimmune diseases such as rheumatoid arthritis. It now operates as part of a consortium with the University of Quilmes, the Argentine National Institute of Industrial Technology and a major foreign firm. The co-operation with the foreign firm is essential for acquiring new know-how that was unavailable in the domestic market. PharmaADN's experience has proved it can produce monoclonal antibodies in Argentina while complying with the international pharmaceutical industry's quality standards.

Source: Interviews with specialists, business founders and Gutman and Lavarello (2011).

In Argentina, thanks to the critical mass of industrial and research capabilities in areas such as biotechnology, there are opportunities for spin-offs from large companies or large research projects (see Box 4.2). In this sense, the projects carried out within the framework of the Sectoral Funds financing could help start-ups to emerge. However, start-ups wishing to expand are limited by their lack of access to financing and a complex regulatory framework.

Nevertheless, Argentina's regulatory framework still poses major barriers for the emergence and development of start-ups. Starting a business requires many procedures, takes a long time and is expensive.[3] Argentina is ranked 154th out of 185 countries for "starting a business", below the Latin American average (World Bank, 2012). The government is trying to overcome these problems by introducing fiscal reforms – through the PROFIET programme – that provide incentives to promote investment in start-ups.

Main challenges ahead

Argentina has a lively entrepreneurial landscape that, in some sectors, has good linkages with R&D, science and technology. Although the shortage of financing in the expansion stages (angel investors and venture-capital) and the rigidities of the regulatory framework still limit the development of start-ups, the government's new policies aim to overcome these barriers. Argentina's main challenges include strengthening young people's entrepreneurial skills, fostering linkages between enterprise and academia, raising a capital industry that is able to finance projects in their various stages, especially growth and expansion, and developing a regulatory framework that better supports enterprise. The MINCyT's policies aim to strengthen and expand the Impulsar EBT programme so it can broaden the coverage of its instruments, and to scale up support in the expansion stages to increase the number of innovative entrepreneurs in the market.

Meanwhile, to boost priority sectors such as biotechnology, agribusiness and pharmaceuticals, the authorities need to be able to certify compliance with international quality standards. They also need to create incentives to overcome the gap between the requirements of market and scientific research times. Public-private consortia are a good solution to achieve the right balance between the specificities of scientific research and market needs. Innovation policies ought therefore to aim not only to incubate and support innovation processes but also to generate industrial platforms in priority sectors,

thus fostering the development of a dynamic business environment with specialised competences and boosting capacities for research and productive application. The Sectoral Funds and the Technology Platform Projects that Argentina has recently introduced contribute to these efforts.

Notes

1. Table 4.A1.2 in the Annex to this chapter shows some of the main private initiatives to support start-ups in Argentina.
2. Argentina has at least 11 private venture-capital funds. Some of these funds focus on early stages, such as the Pymar Fund, managed by AX Ventures. Others, such as the Aconcagua Ventures fund, also focus on early-stage high-tech companies, but invest throughout Latin America, not just in Argentina. The fund managed by Módena focuses on early-stage financing of small and medium-sized firms with high growth potential in sectors linked to e-commerce, software and financial services, among others.
3. Setting up a business requires 14 procedures, an average of 26 days and a cost of 74.3% of per capita income (World Bank, 2013).

Annex 4.A1. Policy tools to promote start-ups in Argentina

Table 4.A1.1. **Argentina: Targeted policy tools to promote start-ups, 2012**

a. Financing

Instrument/ Programme	Objectives	Beneficiary	Additional information
Grants to FONSOFT-ANPCyT entrepreneurs (introduced in 2005)	Promote an entrepreneurial culture in the software and IT services sector, help set up new commercial enterprises in the sector and strengthen existing eligible firms	Individual persons, sole traders and companies that are less than 24 months old	ARS 270 000 (USD 57 000) grant Grant for up to 50% of the project's total cost **To finance:** • Hiring staff • Technical support • A proportion of the entrepreneur's salary

Table 4.A1.1. **Argentina: Targeted policy tools to promote start-ups, 2012** *(continued)*

Instrument/ Programme	Objectives	Beneficiary	Additional information
FONARSEC-ANPCyT **Empretecno-EBT** (introduced in 2009)	Foster the development of new technology-based start-ups This instrument is part of the ANPCyT's IMPULSAR EBT programme, which aims to generate technology-based start-ups	Individual people with a proven capacity in developing science, technology and innovation research; public and private institutions involved in science and technology; and companies in the production sector Since October 2011, beneficiaries must use a FONARSEC-approved project flow facilitator	Maximum financing: ARS 2.5 million (USD 532 000) Grants may not exceed 75% of the project's total cost; the beneficiary must provide at least 25% **To finance:** • Consultancy and studies on the viability of the technology-related business opportunity • Strengthening intellectual property • Purchasing proof-of-concept services • Activities and supplies for developing prototypes and other R&D activities • Attending international fairs and other important events for the project
PACC Entrepreneurs SePyME (Ministry of Industry)	Stimulate start-ups that contribute to creating value added, increasing the scale of production, creating jobs, industrialising regional economies and using technological innovations and/or R&D	Entrepreneurs who have a business plan and start-ups that made their first invoiced sale less than two years ago whose business activity is eligible for the programme. Projects that are not innovative or do not aim to generate value added or employment are excluded, particularly financial intermediation services, insurance services and other professional services	Reimbursement of 85% of business start-up costs, up to a maximum of ARS 110 000 (approximately USD 23 000)

Table 4.A1.1. **Argentina: Targeted policy tools to promote start-ups, 2012** *(continued)*

Instrument/ Programme	Objectives	Beneficiary	Additional information
PROFIET MCyT (introduced in 2009)	Promote venture-capital investment for technology-based start-ups or existing companies' R&D projects	• Investors willing to assume part of the risk of implementing an innovative firm's business plan • Operators willing to co-ordinate investments in companies by managing trust funds as a suitable contractual framework for working towards the objectives • Entrepreneurs willing to start and develop high-tech companies • Agencies and institutions keen to participate in a joint action programme to tackle specific problems requiring innovative solutions	**To finance:** • Direct investment of public funds to acquire stakes in start-ups • Loans and grants for key players in the system whose **Tax incentives:** • Tax benefits for investment in start-ups that are part of the programme **Results to date:** The regulatory procedures for the programme to begin operating were completed in 2011. A Ministerial Order authorised four companies to operate in the PROFIET programme: Zeller S.A., Leco Technology Trust S.A., Capital para Pymes S.A. and BMR Mandatos y Negocios S.A. These companies must propose innovative projects to investors, who must decide in which projects they wish to invest In 2012, Bioceres S.A. presented a project called Development of Drought and Salinity Tolerant Crops, which was evaluated and approved. A number of projects are also being put together for submission to PROFIET

Table 4.A1.1. **Argentina: Targeted policy tools to promote start-ups, 2012** *(continued)*

b. Business services and entrepreneurial training

Instrument/ Programme	Objectives	Beneficiary	Additional information
FONARSEC-ANPCyT GTec **Training Programme for Technology Transfer Managers and Specialists** (introduced in 2009)	Promote the training of technology-transfer managers and specialists Foster the training of professionals to facilitate and create linkages between academia and the production sector, identifying demands, facilitating technological opportunities, promoting business-innovation processes and translating solutions for the socio-productive sector	Public and private university institutions and institutions included in the Public Registry of Research Centres and Higher Vocational Training Centres	Grant of up to ARS 750 000 (USD 160 000) a year for each eligible proposal Maximum contribution per proposal: ARS 3 million (USD 637 000) over four years Grant for up to 50% of the project's total cost **To finance:** • Hiring teachers • Scholarships • Developing exchange-programme networks with other universities • Non-repayable financial support for student grants and minor equipment • Internships **Results to date:** Members 17 chambers of commerce 3 professional boards 21 companies 2 co-operatives 19 government bodies 4 foundations 6 associations Total students registered: 414

Table 4.A1.1. **Argentina: Targeted policy tools to promote start-ups, 2012** *(continued)*

Instrument/ Programme	Objectives	Beneficiary	Additional information
FONCyT-ANPCyT **PICT Start Up** (introduced in 2005)	Promote the commercial exploitation of public research centres' and universities' R&D results by founding technology-based start-ups	Research projects developed by the research teams of public and private non-profit institutions that aim to create the conditions for technology-based start-ups	Up to ARS 400 000 (USD 85 000) (First year: up to ARS 150 000; second year: up to ARS 125 000; third year: up to ARS 125 000) **To finance:** • Supplies • Books, journals, etc. • Publication of project results • Specialist technical services • Travel and other expenses • Equipment
FONCyT-ANPCyT **Technology Platform Projects (PPLs)**	Encourage the forming of units with cutting-edge technology and highly specialised staff devoted to providing the advanced science and technology products and services needed by leading research groups and technology-based start-ups	These highly competitive centres providing leading technology services are formed through vertical integration among R&D groups, at least one of which has positioned itself at the forefront of knowledge in the platform's specific domain	31 projects approved in 2011, receiving a total of ARS 31.7 million

Table 4.A1.1. **Argentina: Targeted policy tools to promote start-ups, 2012** *(continued)*

Instrument/ Programme	Objectives	Beneficiary	Additional information
FONARSEC-ANPCyT **Empretecno-FFP** (project flow facilitators) (introduced in 2011)	Promote a new landscape that creates better conditions for developing technology-based start-ups Foster technology-based start-ups by setting up a registry of project flow facilitators This instrument is part of the ANPCyT's IMPULSAR EBT programme, which aims to generate technology-based start-ups Project flow facilitators offer financing and assistance to technology-based start-ups included in the Empretecno-EBT programme	Registration as project flow facilitators is open to public, private and mixed legal entities devoted to developing, managing, promoting and transferring science and technology research under a public-private consortium formed through a public instrument	**Benefits for project flow facilitators** a) Basic compensation for services provided by project flow facilitators: the ANPCyT will refund, against invoice, 5% of executed costs for the support plan approved for each technology-based start-up b) Success Fee: paid to the facilitator by each technology-based start-up that successfully raises private equity (investment from venture capital, an angel investor or a commercial bank), with the project flow facilitator receiving up to 15% of the investment obtained by the start-up
FONTAR-ANPCyT **ANR I+D (CP)**	Create or strengthen a company R&D unit by incorporating researchers or research equipment	Firms with annual revenue no greater than the equivalent in Argentine pesos of USD 30 million, and technology-based start-ups	A grant to cover 50% of salaries of additional staff hired for R&D and to cover the cost of equipment not exceeding 30% of the project's total cost, for up to the equivalent in Argentine pesos of USD 200 000 **Results of the 2012 programme:** Seven projects approved, receiving a total of ARS 5.3 million

Table 4.A1.1. **Argentina: Targeted policy tools to promote start-ups, 2012** *(continued)*

Instrument/ Programme	Objectives	Beneficiary	Additional information
FONTAR-ANPCyT **Highly Qualified Human Resources**	Integrate highly qualified human resources into companies to strengthen their scientific and technological capacities	Existing firms that produce goods and services, and start-ups based on competitive technology that have the necessary technical, administrative and financial capacity to incorporate highly qualified human resources and provide them with the potential to develop and grow in the company	**The funds cover:** • Part of the salaries of staff hired by companies to join or set up their research, development and innovation departments or to carry out other tasks needed by the firm that justify hiring highly qualified human resources • Nine projects in 2011, receiving a total of ARS 2.8 million

c. Regulatory framework

Instrument/ Programme	Objectives	Beneficiary	Additional information
Tax incentive for investment associated with the MCyT PROFIET programme	Tax benefits in recognition of investment in start-ups that are part of the MCyT **PROFIET** programme		

Source: Based on official data and interviews with experts.

Table 4.A1.2. **Private initiatives to promote start-ups in Argentina, 2012**

Initiative	Objectives	Beneficiary	Additional information
NXTP Labs	Support start-up acceleration through seed capital, training and access to infrastructure and other support services	Entrepreneurs in the Internet industry	Investment of up to USD 25 000 in seed capital (USD 10 000 per start-up and USD 5 000 per founding partner, for up to three partners) in exchange for a minority share (5-10%)
IG Business Angels Club	Independent group of 28 qualified investors aiming to provide its partners with opportunities to invest in start-ups with high growth potential and thus obtain excellent financial returns	Focus on companies in the early stages and the start-up and growth stages in various sectors: technology, telecommunications, services, Internet, media, entertainment, agribusiness, energy, consumer goods, manufacturing and logistics	Seed-capital investments from USD 50 000 to USD 300 000 Expected return rate of 35%; exit strategy: strategic sale Participation on the board; active participation if required by the management To date the club has invested in nine start-ups
Wayra Argentina (Telefónica)	ICT business acceleration Calls for applications are issued twice a year	The beneficiary must be part of an entrepreneurial team and must have an innovation, business idea, solution, design or project that fills a need in the area of technologies or any other digital field in a web or mobile environment	USD 30 000 to USD 70 000 during the first six months, depending on the project's evaluation in terms of level of maturity and need for investment Wayra then continues working with the most attractive proposals among those selected, helping them obtain private (financing rounds) or public (grants) financing through its network of angel investors, mentors and partners. It also provides support in obtaining new funds, both from private (financing rounds) and public (grants and subsidies) sources In the last session 1 123 projects were submitted, of which eight were chosen Successful applicants may apply for the MINCyT FONARSEC programme

Table 4.A1.2. **Private initiatives to promote start-ups in Argentina, 2012** *(continued)*

Initiative	Objectives	Beneficiary	Additional information
AX-Ventures PYMAR Fund (introduced in 2008)	Supply the need for financing among innovative, technology-intensive Argentine SMEs with growth potential that struggle to obtain long-term financing The fund receives contributions from FEC, the Multilateral Investment Fund of the Inter-American Development Bank (MIF-IDB), COFIDES (Spanish Development Financing Company), the Andean Development Corporation (CAF) and private Argentine investors	Between 5 and 12 small companies with up to 100 employees and annual sales of up to USD 5 million operating in sectors in which Argentina has relative advantages, such as IT services, tourism, biotechnology, medical equipment and services, outsourcing, multimedia content, opportunities in specific product lines in the food industry, and metal mechanics	Capital budget: USD 22 million Investment in each company of between USD 500 000 and USD 3 million
Innovation Capital Forum	Support businesses seeking investors, provide advice in the different stages of a production process and provide effective management tools	Small businesses and entrepreneurs of small firms carrying out proposals involving some form of innovation	• Advice on the business plan and guidance on presentations to investors • Participation in meetings that enable entrepreneurs to present their projects to investors • Support for public tenders for financing issued by various public and private entities, and training at the various stages of starting and growing a business

Source: Based on official data and interviews with experts.

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Chapter 5

Promoting start-ups in Brazil

This chapter presents a brief overview of public policies recently introduced in Brazil to support the creation and expansion of start-ups. The chapter highlights the growing role of innovation policies in the country and the increase in the innovation policy budget. Brazil has been fostering the creation of new firms since the 1980s. It has a well-rounded range of tools to support the creation of innovative firms, with mechanisms that provide support from the seed to the expansion phases. State and local governments are increasingly involved in supporting start-ups and have contributed to set up several successful technology parks that have acted as bridges between the scientific and business communities. Nonetheless, the regulatory framework and the limited availability of infrastructures still represent important challenges for start-ups to become a relevant source of growth in Brazil.

Growing support for innovation

Brazil's innovation policy is formulated by the Ministry of Science, Technology and Innovation (MCTI).[1] In recent years, the country has increased its investment in science and technology and improved its legal framework for innovation. Brazil is the Latin American country that invests most in research and development (R&D), though the intensity of its investment is far from the standards seen OECD countries (1.2% of GDP in Brazil, versus 2.4% in the OECD countries in 2009). The adoption of the Innovation Act (law 10973/2004) and the *Lei do Bem* (law 11,196/2005) expressed a political will to position science, technology and innovation as central elements in Brazil's economic development and social transformation. The Innovation Act aims to increase innovative activities and facilitate investment in research and development by Brazilian firms. It introduces specific measures to foster innovation in small and medium-sized enterprises (SMEs) and facilitates co-operation between universities and businesses. The law establishes a legal framework to support business incubation activities at universities, as well as new forms of licensing technologies to businesses. At the same time, the law provides mechanisms for lecturers at federal universities to take temporary leave of absence to found a start-up. The *Lei do Bem* facilitates investment in R&D by offering tax incentives for private-sector investment in innovation. The General Law on Micro and Small Enterprises, passed in 2007, and the Individual Microentrepreneurs Act, passed in 2008, are also recent legal reforms that foster the creation of start-ups.

Brazil has a long tradition of government support to scientific and technological development, dating back to the 1950s and 1960s, when most of the country's science and technology institutions were founded. However, interest in fostering the creation of start-ups is a recent priority of the country's innovation and industrial policies. The issue began gaining attention in the 1990s, when the National Council for Scientific and Technological Development (CNPq) launched the Softex Programme to promote technological capabilities and start-ups, and the Génesis project to foster the creation of start-ups by recent graduate university students. Nowadays, a wide array of support programmes and institutions are actively seeking to promote start-ups. However, the long time lag for creating new firms remains an important barrier to start-up development in Brazil.

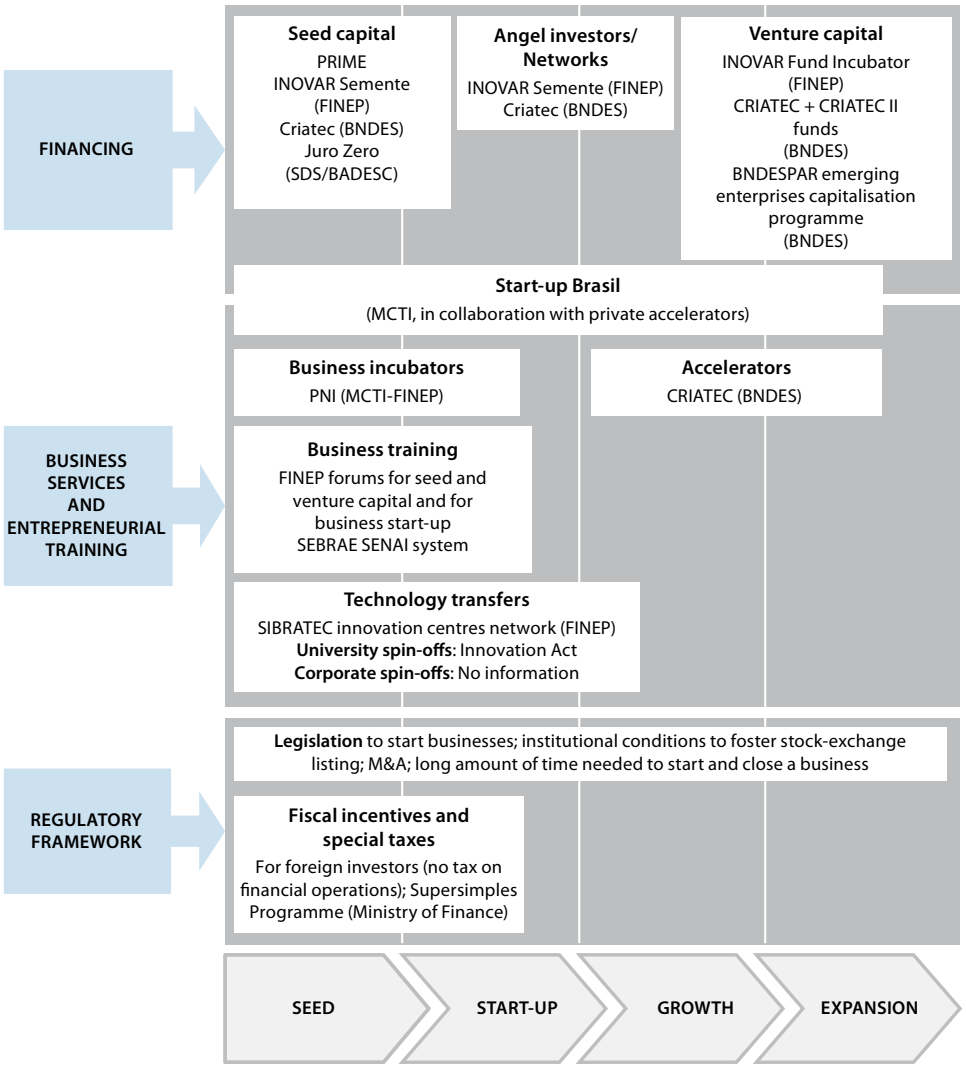
Brazil is expanding the support to start-ups

Compared to other Latin American countries, Brazil has a fairly comprehensive range of instruments to promote the creation of start-ups. Start-ups are emerging as a priority in the national innovation strategy. Several instruments cover the different phases of the entrepreneurial cycle, offering targeted support in: financing, business services and entrepreneurial training (see Figure 5.1 and Table 5.A1.1). Several federal and state-level programmes are now in place, addressing issues related to seed capital, angel and venture-capital networks. There are also initiatives to support entrepreneurs in formulating their business plans. In general, these instruments are horizontal, despite the introduction of sectoral priorities such as information and communication technologies (ICTs), biotechnology, nanotechnology and agribusiness. In recent years networks of private stakeholders have been launched as well, to foster the exchange of experiences among start-uppers and make it easier to found or expand businesses. In April 2013, the Ministry of Science, Technology and Innovation also announced the implementation of a new support programme for start-ups, called Start-up Brazil, that channels new resources to promote these businesses.

The main institutions promoting the creation and expansion of start-ups are the Brazilian Development Bank (BNDES), the Brazilian Innovation Agency (FINEP) and the Ministry of Science, Technology and Innovation (MCTI). The BNDES has a venture-capital division that implements initiatives to promote the development of venture capital through the company BNDESPAR. In 2012 the portfolio of BNDES's venture-capital division had 38 funds with an estimated total value of BRL 1.3 billion (Brazilian *reais*). BNDES's CRIATEC programme, launched in 2007, focuses on capitalisation of innovative businesses through an investment fund with a budget of USD 53.5 million (80% contributed by BNDES). Its goal is to reach 60 000 innovative micro and small enterprises by investing USD 300 000 to 600 000 per business. A second phase of the programme, CRIATEC II, is investing in 36 businesses and has a budget of some BRL 170 million (ANPEI, 2012). The new CRIATEC III programme was recently approved, also with a budget of BRL 170 million.

FINEP is a public corporation, affiliated to the Ministry of Science, Technology and Innovation, that promotes innovation and technological development and operates as a national innovation agency. In 2009 FINEP established the PRIME programme (which in Portuguese stands for First Innovative Business). This programme gives grants to start-ups through anchor incubators; the co-financing is about USD 70 000 per business and the grants are supplemented with (interest-free)

Figure 5.1. **Brazil: Targeted policy tools to promote start-ups, 2012**



Source: Prepared by the authors, based on: OECD (2011), *Financing High-Growth Firms: The Role of Angel Investors*, OECD, Paris; INNO-Grips (2011), "Policies in support of high-growth innovative SMEs", *INNO-Grips Policy Brief* No. 2, June; LAVCA (2012), *2012 Scorecard: The Private Equity and Venture Capital Environment in Latin America*, among others.

soft loans from the *Juro Zero* programme to innovative micro and small enterprises. The INOVAR *Semente* programme contributes seed-capital funds to innovative businesses in the start-up stage, while the INOVAR programme fosters venture capital. According to Kantis and Federico (2012), since its creation, INOVAR has held more than 30 forums with over 280 participating technology firms, 70 of which have received funding. More than 100 funds have responded to INOVAR's call and its funds comprise a total of nearly USD 3 billion.

The Ministry of Science, Technology and Innovation, in turn, has just launched a new programme (in April 2013) – Start-up Brazil – as part of the National Innovation Strategy and the Software Industry and ICT Sector Strategic Programme (*TI Maior* plan). The programme's budget is about BRL 40 million and is meant to support some 150 start-ups. The programme offers a range of services to new entrepreneurs, including consulting services on markets, sales and innovation, in addition to financial support. Start-up Brazil will not only offer integrated support to start-ups but will also focus on three different phases, selecting the new businesses by stages, from seed to acceleration. The programme will operate through accredited business accelerators and up to 25% of the beneficiaries can be foreign. The selected start-up will receive support for acceleration for a period of 6 to 12 months.

States in Brazil are taking on an increasingly active role in supporting start-ups. For example, the state of Santa Catarina's Secretariat for Economic and Sustainable Development, with a budget of USD 750 million, focuses on supporting the creation of start-ups. By 2012, through the *Juro Zero* programme, the secretariat aims to have 10 000 businesses generating ten new jobs per year in their early stages. *Juro Zero* provides flexible financing, with no requirement for collateral, reducing bureaucratic barriers for innovative production activities and commercial exploitation. The state of São Paulo's Research and Development Support Foundation (FAPESP) has in its portfolio of instruments specific support mechanisms for R&D projects in new and small businesses. The PIPE programme was implemented in 1997 and so far has given support in the form of subsidies or funding for educational programmes for nearly 3 000 entrepreneurs. Eligibility is open to small businesses (fewer than 250 employees) with R&D laboratories located in the state of São Paulo. Companies can apply for the programme in any of the four annual application periods. A recent evaluation of the programme has shown its positive impact on creating qualified jobs in Brazil. The number of employees hired rose 29% among businesses receiving PIPE support. In particular, businesses benefiting from the programme have played a disproportionately large role in increasing the demand for qualified workers (Salles-Filho et al., 2011).

Several institutions support the development of entrepreneurial skills. The National Association of Organisations to Promote Innovative Enterprises (ANPROTEC), founded in 1987, plays an important role in promoting entrepreneurial training and the dissemination and exchange of knowledge. It brings together 20 technology parks and about 6 500 innovative businesses. Since 2011, FINEP has increased the resources for the National Support Programme for Business Incubators and Science Parks. Nearly 80% of Brazilian universities have at least one business incubator, which may or may not be affiliated with technology parks (WAINOVA, 2012). This is helping to bridge the gap between academia and industry (see Box 5.1).

In parallel with the government's growing interest in supporting the creation of start-ups, there has also been an increased involvement of foreign and domestic private-sector stakeholders. São Paulo and Rio de Janeiro are becoming dynamic hubs for entrepreneurship; for instance, the 21212 accelerator in Rio de Janeiro comprises digital-sector entrepreneurs and

Box 5.1. **Technology parks and the growing role of the states in Brazil in promoting start-ups**

1. Porto Alegre Tecnopuc

The Pontifical Catholic University of Rio Grande do Sul in Brazil, in co-operation with the government of the state, established the Tecnopuc technology park in 2002. The purpose of Tecnopuc is to create an environment favourable to the creation of innovative start-ups (Spolidoro and Audy, 2008). A number of international companies are located in the park, which benefits from being close to the university. More than 80 businesses of various sizes have operations in the park, and some 5 500 employees are devoted to carrying out innovative projects. The park also offers legal advice and strategic-planning services, as well as infrastructure access and staff-recruitment assistance (see table below).

Businesses incubated in Tecnopuc, Brazil, 2012

Businesses incubated (RAIAR incubator)	11 in Porto Alegre and 12 in Viamão
Businesses graduated (RAIAR incubator)	More than 50 since 2002
Operations with foreign businesses with facilities in the park	77 (HP, Dell, Tlantic, Microsoft, etc.)
People affiliated with the park	5 000 (employees, researchers, etc.)
Research centres affiliated with the university	Six research centres (Nanotechnology; Molecular and Functional Biology; Solar Energy; Radiation and Energy; Petroleum, Gas and Carbon Storage; National Tuberculosis R&D Institute)

Source: ANPROTEC (2012*), Tecnopuc: Apoio ao Acrescimento de Empresas Baseadas em Inovação.*

Box 5.1. **Technology parks and the growing role of the states in Brazil in promoting start-ups** *(continued)*

2. The Institute for Technological Research (IPT) of São Paulo

The Institute for Technological Research (IPT) *is an institution attached to the São Paulo State Secretariat for Economic Development, Science and Technology that has been involved in the country's development for over 100 years (IPT, 2011a). It is one of Brazil's leading research centres and has laboratories staffed by highly qualified technical researchers. It focuses on four broad areas: innovation, R&D, technology services, and information and technology education. The IPT acts as a bridge between academia, research centres and the business sector, supplying solutions and technology services designed to increase the businesses' competitiveness.*

Technology centres and laboratories of the São Paulo Institute for Technological Research, 2011

Technology centres	13
Laboratories	40
Total area of laboratories	92 030 m²
Total area of the IPT	240 000 m²
IPT Units	São Paulo, Franca, São José dos Campos,* Piracicaba*

Note: * in development.

Source: IPT (2011a), *Relatório Anual*, São Paulo: IPT; IPT (2011b), *Institute for Technological Research: Technological Solutions*.

3. The São Paulo Centre for Innovation, Entrepreneurship and Technology (CIETEC)

The Centre for Innovation, Entrepreneurship and Technology (*Centro de Inovação, Empreendedorismo e Tecnologia*, CIETEC) came about through an agreement in 1998 between the Secretariat of Development of the State of São Paulo, the São Paulo Micro and Small Enterprise Support Service and the IPT (CIETEC, 2012). For more than ten years, CIETEC has been devoted to promoting innovative start-ups through support mechanisms for early-stage technology-based firms. Its services include, among others, pre-incubation, incubation and post-incubation processes for technology-based firms. CIETEC is located on the campus of the University of São Paulo, the country's largest centre for scientific and technological education and production. The centre has two business units providing incubation services: the Technology Business Incubator and the Technology Business and Start-Ups Group. CIETEC currently has the capacity to host up to 120 technology-based firms.

Box 5.1. **Technology parks and the growing role of the states in Brazil in promoting start-ups** *(continued)*

4. Porto Digital in Recife

The Porto Digital technology park in Recife was the result of a co-ordinated effort between the federal and state governments, the private sector and academia (EcoFinanças, 2012). Since its founding in 2000, it has become one of the economic keystones of the state of Pernambuco and has been recognised by ANPROTEC as the country's best technology park. Porto Digital averages BRL 900 million in sales per year and hosts nearly 500 entrepreneurs on site. The park harbours 200 institutions, which include ICT and creative-economy businesses and specialised services and development agencies (PortoDigital, 2012), generating some 6 500 new jobs in the 12 years it has been operating. Any project carried out in the park qualifies for assistance with logistics, resource distribution and financial assistance. A Human Capital Training Programme, for instance, aims to expand the qualified workforce in order to grow the local ICT sector, while an incubator project houses the CESAR incubators (Recife Centre for Advanced Studies and Systems) and CAIS do Porto. There is also the new, recently announced plan for an accelerator for innovative start-ups at Porto Digital, the first one in the North, North-West or Central-West regions (MundoBit, 2012).

Source: Based on: Spolidoro and Audy (2008); IPT (2011a); IPT (2011b); CIETEC (2012); EcoFinanças (2012); MundoBit (2012); OlharDigital (2012); PortoDigital (2012).

investors and offers support for expanding businesses with an eye towards strengthening co-operation with the United States through four- to six-month acceleration programmes. The phenomenon of start-ups in Brazil goes beyond the services and ICT sector. For example, in São Paulo a group of founders of biotech start-ups have also formed a private organisation for exchanging best practices in management and funding that are unique in Brazil (see Box 5.2).

Brazil has also invested in improving its legal framework and encouraging long-term foreign-capital investors to enter the market. The "*Supersimples*" system streamlines bureaucratic procedures and facilitates the start-up of SMEs, for example. However, the costs of creating and managing start-ups remain high. Among other reforms, Brazil has eliminated the tax on financial transactions for foreign investment in shares and on the flow of foreign venture capital into the country. These reforms have made it easier for foreign private capital to invest in Brazil. For instance, Redpoint Ventures and e.Ventures, two large private-equity

firms, recently announced plans to use a fund of BRL 130 million to invest in Brazilian early-stage businesses (Bloomberg, 2012).

Box 5.2. **The Campinas Startup Association: Business co-operation for knowledge sharing**

The Campinas Startup Association is a non-profit organisation founded in 2010 by ten entrepreneurs who owned technology start-ups in Brazil. The association's goal is to share knowledge to create an environment more open to the founding of knowledge-based companies and business models. The organisation functions under an innovative framework that distinguishes it from business incubators and accelerators.

The members meet periodically to discuss ways to improve their business models, access funding and develop business strategies, as well as analyse and discuss the impact of changes to regulations and public policy. It operates under a co-operative model where members share knowledge and ideas with one another to support the growth and expansion of their businesses.

The association is expanding and had 30 members as of 2012. The participating businesses operate in different sectors, including artificial intelligence and biotechnology, and have average net earnings of USD 500 000. Since 2010, all the founding start-ups have continued operating and the organisation has held four major support events for innovative start-ups, promoting dialogue among entrepreneurs, the public sector and financial markets.

Note

1. The current policies are part of the National Strategy on Science, Technology and Innovation (ENCTI 2011-14) which follows on from the previous Science, Technology and Innovation Plan (PACTI 2007-10).

Annex 5.A1. Policy tools to promote start-ups in Brazil

Table 5.A1.1. **Brazil: Targeted policy tools to promote start-ups, 2012**

a. Federal government financing

Instrument/ Programme	Type	Purpose	Beneficiary	Characteristics
FINEP PRIME (2008)	Grant	Create financial conditions favourable to the initial development phase of innovative businesses (seed money)	Innovative start-ups that have been in operation a maximum of 24 months	USD 70 000 per firm (stage 1) through an open application process; in 2009 approximately USD 7 million were allocated to each of the 18 anchor incubators or heads of PNI incubator networks, to serve approximately 1 900 incubated businesses. Additionally, USD 70 000 in soft-loan funding (at no interest and in 100 instalments) (*Juro Zero* programme) for stage 2
FINEP INOVAR Semente (2006)	Direct contribution to investment funds	Establish seed-capital investment funds	Private investors who invest seed money in technology-based start-ups originating in R&D centres and universities, in fields related to ICTs, biotechnology and other technologies; the private (angel) investor is guaranteed to recover the face value of the investment in case of a loss	USD 300 000 to USD 600 000 per firm; 40% contribution from FINEP; 20% must be raised from a private (angel) investor; sums committed in four operational funds and in three funding stages: USD 116 million; assets per fund: USD 6-7 million

Table 5.A1.1. **Brazil: Targeted policy tools to promote start-ups, 2012** *(continued)*

Instrument/ Programme	Type	Purpose	Beneficiary	Characteristics
Multilateral Investment Fund of the Inter-American Development Bank (MIF-IDB)	Contribution to seed-capital funds	Support seed-money investment in specific sectors in southern Brazilian states	2C-Ventures Primus fund	MIF-IDB investment of USD 4 million of seed money; the fund plans to raise USD 46 million to invest in at least 16 firms
BNDES CRIATEC (2007)	Contribution to investment fund (divestment stage)	Foster innovative micro and small enterprises through seed money and management support	Firms with net sales of up to USD 3.5 million in specific sectors (IT, biotechnology, new materials, nanotechnology, agribusiness); at least 36 firms were supported	The fund's capital was USD 53.5 million with 80% contributed by BNDES' BNDESPAR; at least 25% invested in firms with revenue of up to USD 800 000; up to 25% invested in companies with revenue of USD 2.4 to 3.2 million; a second capitalisation is allowed; investment per enterprise ranged from USD 300 000 to 600 000; acceleration phase: additional contribution of USD 1.9 million
FINEP INOVAR fund incubator – 2000	Minority contribution to investment funds	Establish seed-capital, venture-capital and private-equity funds	Firms administering/managing funds authorised by the CVM (securities and exchange commission); current portfolio of businesses: 80	To date: 19 funds in operation, four in the funding phase and one in the divestment phase (including *Inovar Semente*). Sums committed: seed-capital funds, USD 116 million; venture-capital funds, USD 455.2 million; private-equity funds, USD 1.26 billion
BNDES Participações BNDESPAR emerging enterprises capitalisation programme	Contribution to investment funds in collaboration with private investors, banks, pension funds, the IDB and the Brazilian Support Service for Micro and Small Enterprises (SEBRAE)	Support the establishment of venture-capital and private-equity funds. The calls for applications are by sector/priority areas	Contributes up to 25% in venture-capital funds; contributes up to 20% in private-equity funds	

Table 5.A1.1. **Brazil: Targeted policy tools to promote start-ups, 2012** *(continued)*

b. State-level funding

Instrument/Programme	Type	Purpose	Beneficiary	Characteristics
FUNDOTEC II (2007)	Fund for co-investments by FINEP with private investors	Venture-capital fund for innovative start-ups, with preference given to firms in the states of Minas Gerais and Pernambuco; FUNDOTEC I (2001) completed its investment period in 2005, investing in 12 start-ups	Technology-based start-ups, preferably within the state	The fund's committed assets total USD 60 million
Minas Biotechnology Fund (2008)	Fund for co-investments by FINEP with private investors (FIR Capital, FAPEMIG and Biominas Foundation)	Venture-capital fund for innovative start-ups, with preference given to biotechnology firms in the state of Minas Gerais	Biotechnology start-ups	The fund's committed assets total USD 6 million
ROTATEC fund (2008)	Fund for co-investments by FINEP with private investors (FIR Capital, FAPEMIG)	Venture-capital fund for innovative start-ups in the Santa Rita de Sapucaí and Itajubá regions of the state of Minas Gerais that are affiliated with the local centre for electronics, IT, industrial/ commercial automation, and telecommunications firms	Technology start-ups in the electronics and IT sectors	The fund's committed assets total USD 6 million
SPTEC, the São Paulo technology parks system (2008)	Tax incentives for technology firms that move into SPTec technology parks	Technology start-ups		

Table 5.A1.1. **Brazil: Targeted policy tools to promote start-ups, 2012** *(continued)*

Instrument/Programme	Type	Purpose	Beneficiary	Characteristics
SPTec fund (2002)	Venture-capital investment fund in which BNDES and SEBRAE hold a minority stake	Venture capital	Technology start-ups in the state of São Paulo with annual sales of up to USD 12 million in the fields of IT, biotechnology, agribusiness, the environment and health, among others	Assets of USD 14 million
Brasil São Paulo I fund (2008)	Venture-capital/private-equity investment fund	Venture-capital fund for technology-based start-ups. Investors: FIR Capital and Valetec Capital, located in the UNIVAP technology park (University of Vale do Paraíba)	New technology-based firms in the start-up or expansion phase, located in the state of São Paulo (São José dos Campos, Jundiaí, Campinas and São Carlos) in the fields of aerospace, electronics and microelectronics, IT and new materials	The fund's committed assets total USD 70 million

c. Business services and entrepreneurial training

Instrument/Programme	Type	Purpose	Beneficiary	Characteristics
FINEP INOVAR Brazilian innovation forum		Help transform technology from R&D centres and universities into businesses. Support for preincubation, incubation and technology transfer	Entrepreneurs and researchers	Use resources from sectoral funds to promote R&D
3FINEP INOVAR Seed Forum	Training and networking	Training for project design. Culminating in an event where entrepreneurs present their projects to potential seed-money investors	Firms/entrepreneurs. The programme chooses up to 40 firms, checking that they fit the profile (innovation-driven businesses)	

Table 5.A1.1. **Brazil: Targeted policy tools to promote start-ups, 2012** *(continued)*

Instrument/Programme	Type	Purpose	Beneficiary	Characteristics
FINEP INOVAR Venture Forum	Training and networking	Periodic meetings between entrepreneurs seeking funding, investors, and venture-capital funds. Same as above but focused on venture capital.	Incubators registered with the MCTI.	
National Support Programme for Business Incubators and Technology Parks (MCT-FINEP PNI)	Grants	Support technology business incubators. Support for planning, founding and strengthening business incubators and technology parks	Registered business incubators (currently 55 in operation)	USD 300 000 to USD 600 000 per project
FINEP SIBRATEC innovation centres network – 2007	Consulting and technology-transfer services	Help turn technological knowledge into commercially viable products, processes and prototypes	Entrepreneurs and technology start-ups	

d. Regulatory framework

Instrument/Programme	Type	Purpose	Beneficiary
Tax incentives	Elimination of the tax on financial transactions for foreign investment in shares and on the flow of foreign venture capital into the country.	Promote the venture-capital industry	Foreign investors
Ministry of Finance Supersimples Programme	Tax incentive	Reduce the tax burden on founding and incorporating firms	

Source: Based on official data and interviews with experts.

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Chapter 6

Promoting start-ups in Chile

This chapter presents an overview of public policies recently introduced in Chile to promote start-ups. The chapter highlights the growing role of innovation policies in the country and the increase in the innovation budget. Like Brazil, Chile began to promote start-ups before other countries in the region. Chile has accumulated institutional knowledge in developing programmes to support start-ups. Its experience shows how important it is to have a chain of instruments targeted to the different stages of business development, from seed to expansion. Lately Chile has placed a growing emphasis on start-ups, reforming its existing support systems to match the country's new vision focused on expanding the country's role in the global economy.

Increasing importance of innovation policy

Since the mid-2000s, innovation has been a priority on Chile's development agenda. The country increased its innovation budget and diversified its range of innovation policy instruments (IDB, 2010; OECD, 2012). The innovation budget has increased from about USD 300 million (CLP 140.57 billion [Chilean peso]) in 2005 to about USD 1 billion (CLP 504.83 billion) in 2013. Support for innovation in Chile includes grants for training human resources and direct and indirect support for firms, such as non-repayable grants and tax incentives for research and development (R&D). The institutions in charge of innovation policy are the Ministry of Economy, which sets strategic lines; the Chilean Production Development Corporation (CORFO), which is responsible for designing and implementing programmes to promote production development and innovation; and the National Research, Science and Technology Commission (CONICYT), which manages grants to boost human resources for innovation and scientific and technology research programmes.

During the last decade, Chile has strengthened its institutional framework for innovation. In 2006, Chile created the National Innovation Council for Competitiveness (CNIC). The CNIC is responsible for formulating the country's long-term innovation strategy. In parallel, Chile also created the Committee of Ministers for Innovation, chaired by the Minister of Economy. The committee is responsible for formulating innovation policy, co-ordinating its implementation among government ministries and monitoring its progress. At the same time, the government introduced a mining tax to fund innovation activities. For 2012, the Innovation Fund for Competitiveness (FIC) had a budget of USD 264 million (about 0.1% of gross domestic product [GDP]).

Support for start-ups is an integral part of Chile's innovation and productive development strategy. Since the 2000s, the country has created various new instruments and has accumulated learning in designing and implementing innovation policies. Venture capital was developed in Chile mainly as a result of a strategic decision by CORFO, which has helped create private venture-capital funds since 1998, matching private funds up to three times. Since 2004, CORFO has also provided seed capital and support to start-ups through business incubators.

In 2010, based on its previous experience Chile reviewed the orientation of its support to start-ups. It has: *i)* broadened the programme's scope, raising the budget and the number of beneficiaries; *ii)* simplified the definition of "start-ups" so that innovative elements can be more easily identified and assessed in proposals; *iii)* simplified procedures and the bureaucratic requirements

to improve the public sector's capacity to respond to the demands of new entrepreneurs; *iv)* invested in a culture of entrepreneurship within the country; and *v)* placed emphasis on creating a critical mass of new entrepreneurs in Chile also by attracting foreigners wishing to set up new businesses in Chile. To increase the co-ordination between the different programmes, in early 2012 CORFO set up a new department responsible for programme co-ordination.

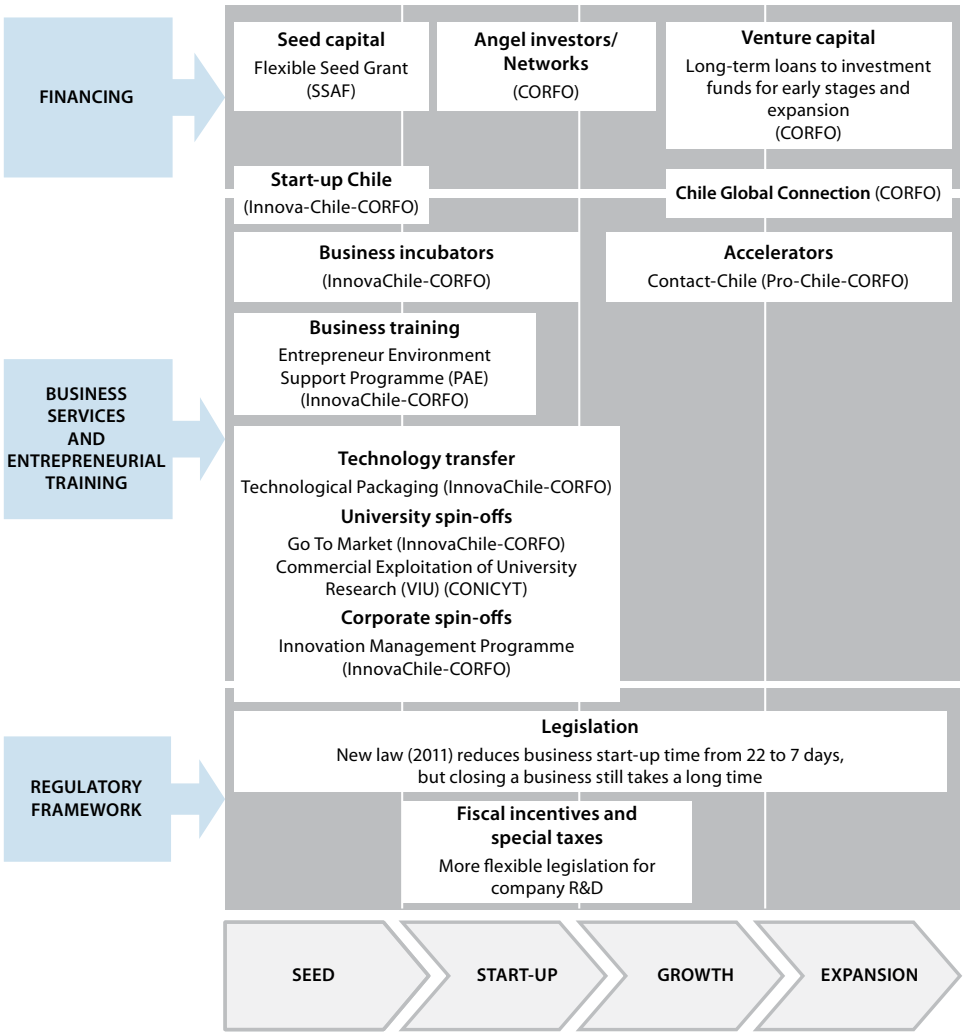
Growing support to start-ups

The institutional structure to support innovative start-ups has evolved since the 2000s. Previously, the most active institution in supporting start-ups was the *Fundación Chile*; now, the foundation is part of a more complex institutional ecosystem that also includes CORFO, which provides seed capital and support to angel-investor and venture-capital networks, and support initiatives for entrepreneurial training. At the same time, the regulatory framework has been improved by reducing the number of days needed to start a business (see Figure 6.1).

Chile has a fairly wide range of financial instruments to support start-ups. CORFO provides seed money for the creation of new firms, and its budget in this area has risen steadily in recent years (see Figure 6.2). One instrument recently introduced was the *Subsidio Semilla de Asignación Flexible* (SAAF). In this flexible seed-grant scheme, CORFO (through its InnovaChile programme) allocates resources to new entrepreneurs through certified intermediary incubators. These support the entrepreneur, providing advisory services and offering additional financing directly or by channelling resources from angel investors. The second-tier operation seeks to make the process smoother, increase the ability to select potentially successful projects and provide incentives to make incubators more effective.

In 2010 Chile introduced the Start-Up Chile programme to provide seed capital of USD 40 000 for new entrepreneurs and access to basic infrastructure for initial operations. Foreign entrepreneurs can also obtain a work visa more quickly. The programme aims to increase the critical mass of new entrepreneurs in Chile and attract talent from abroad. Since its launch, Start-Up Chile has received more than 5 600 applications and helped the creation of around 500 start-ups. The programme also provides training activities and networking with investors and local entrepreneurs. Entrepreneurs supported by Start-Up Chile have raised additional capital of around USD 13.4 million. The programme hopes to attract 1 000 start-ups to Chile by 2014.

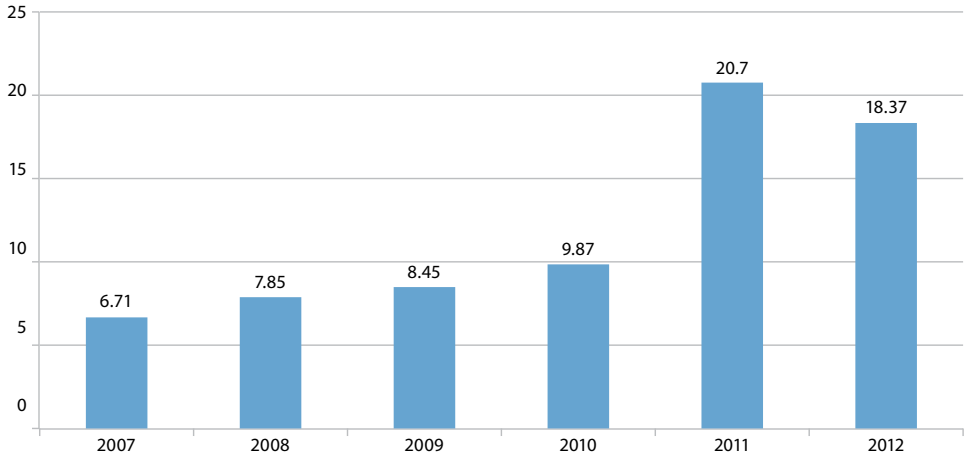
Figure 6.1. **Chile: Targeted policy tools to promote start-ups, 2012**



Note: The diagram is based on the available information about programmes in place in November 2012.

Source: Based on official information from Chile and interviews conducted in Chile with experts and policy makers.

Figure 6.2. **Resources allocated to seed capital in Chile, CORFO, 2007-12**
(Millions of USD)



Note: Total seed capital comprises all programmes active each year, as well as Start Up Chile since 2010.

Source: Based on CORFO data, updated in October 2012.

CORFO has played a key role in supporting start-ups' growth and expansion, financing venture capital and the development of angel-investor networks. Since 1998, CORFO has financed venture-capital funds, providing as much as three times the private sector's investment. In 2012, CORFO changed its lines of support for venture capital, differentiating between the quasi-equity it provides for investment funds operating in early stages and that which it provides for those in the expansion stage. Chile's venture-capital industry mobilises less money than that of more advanced countries, but establishing venture-capital funds has enabled stakeholders in Chile's national productive system to discover this industry, its fund managers and its business sector (see Box 6.1). Chile's venture-capital industry is worth around USD 850 million, just under half of which is venture capital and just over half of which is private equity. The industry has 37 investment funds and 24 fund managers (ACAFI, 2011), with 29 of the funds having received public finance through CORFO's venture-capital programmes. The leverage ratio of these long-term loans can be up to 2:1 during the early stages of development, and may increase to up to 3:1. CORFO has injected USD 295 million into private-investment funds, which have invested about USD 390 million in 135 companies. Micro and small firms have received 58% of that investment, with medium-sized firms and large firms receiving the rest (CORFO, 2012).[1]

Box 6.1. **Support for the venture-capital industry in Chile: CORFO and Austral Capital**

Since the early 2000s CORFO has contributed to the creation of Chile's venture-capital industry as part of its industrial and innovation policy. In 2007, CORFO provided a loan with a leverage ratio of 3:1 to create Austral Capital Partners. Austral Capital invests in export-oriented entrepreneurs with high growth potential. Although the fund does not focus on a specific sector, it tends to privilege innovative projects in knowledge-intensive areas. It also manages other specialist funds, such as the renewable-energies fund. Austral Capital Partners has five employees, two of whom are devoted to identifying investment opportunities. In addition to financial resources it also provides contact networks and experience in project management. Unlike other venture-capital funds, Austral Capital does not wait for entrepreneurs to apply for financing, but actively seeks out entrepreneurs for investment opportunities.

In 2008, Austral Capital Partners opened a small office in California with the support of CORFO to help attract co-investment and help the firms that it finances penetrate foreign markets. This has helped attract major venture-capital investors like Sequoia, Madrona, Motorola Ventures and Xseed. So far Austral Capital has invested in 12 companies: 9 in ICTs and services and 3 in biotechnology. Investments range from USD 400 000 to USD 5 million per project, averaging USD 3.2 million. Austral Capital is also working to develop an entrepreneurial culture in Chile, supporting initiatives such as Geek Fantasy Camp. Austral Capital organises this annual event in conjunction with the Pontifical Catholic University of Chile, bringing together students and people from business to encourage innovative entrepreneurship by sharing experiences and fine-tuning projects.

Austral's experience confirms the importance of having qualified investment managers and the need to interact intensively with companies. It also shows how vital it is to identify when projects need greater investment and when investment is not viable and should be stopped.

Source: Based on interviews conducted in Chile with experts and policy makers and on Miranda (2012).

Since 2006 CORFO has supported the establishment of angel-investor networks, co-financing up to 70% of the setting up and operation of these networks through non-repayable grants. CORFO's support for angel investors is for a maximum of USD 160 000 for the first year and USD 200 000 per year for the next six years. As of 2012, five angel-investor networks have been created and have invested around USD 15 million in 40 firms (see Box 6.2).

Box 6.2. **Angel investors in Chile**

Southern Angels has operated in Chile since 2006, making it the oldest angel-investor network in the country. Its 30 investors invested USD 6.5 million in 20 firms as of 2012.

Chile Global Angels is part of the *Fundación Chile* platform to support start-ups. It has 27 investors who since 2009 have invested between USD 100 000 and USD 800 000 in 12 firms, mainly in the areas of information and communications technologies (ICTs), biotechnology, computer games, energy and medical services. Chile Global Angels recently partnered with regional actors, such as Peru Capital Network (PCN), to arrange its first co-investment in a new innovative company.

The ProyectaChile network was launched in 2011 and consists of ten investors; as of November 2012 its total investment was USD 0.5 million.

In Chili, there are also university angel-investor networks. *Ángeles de Chile*, for instance, is linked to the Entrepreneurship Centre of the University of Chile's Faculty of Economics and Business. The network has around 30 investors, who have invested around USD 0.9 million in five firms. The Catholic University also has an angel network investing in two firms. Despite these first steps, Chile's angel-investor industry is still in the early stages of development. The country's current networks are well behind more advanced countries in terms of volume of operations and resources.

Source: Based on interviews conducted in Chile with experts and policy makers.

Chile also offers support to entrepreneurial skills development. CORFO's Entrepreneur Environment Support Programme (*Programa de Apoyo al Entorno Emprendedor,* PAE) co-finances training (up to 70% of the total budget for a maximum of USD 140 000). These programmes have received growing support in recent years, receiving more than USD 8 million in 2012. CORFO also supports technology transfer by financing technological packaging through the Innovation Management Programme (*Programa Gestión de la Innovación*), which supports innovative domestic companies and entrepreneurs. This programme aims to promote innovation-management and offers capacity-building and business consultancy services. CONICYT's VIU programme (*Valorización de la Investigación en la Universidad*) to promote the commercial exploitation of university research focuses on pre-doctoral and post-doctoral students preparing their thesis who wish to turn their ideas into a private or social enterprise, under the supervision of the lecturers and/or with the support of their university. The programme offers grants of up to CLP 2 million (around USD 5 000) during the initial phase so that the chosen researchers and their academic supervisors can develop their business plan. In the next phase, the

projects whose business plans have the greatest development potential, receive an additional grant of up to CLP 24 million (around USD 50 000) to create and start up their business.

Chile is showing a growing interest in helping its start-ups expand internationally. It has thus recently focused more on fostering business accelerators than on business incubators. ContactChile, for instance, operates as an accelerator aimed at helping start-ups expand internationally by providing them with finance, access to networks and technical support. The Global Connection programme introduced in 2012 supports Chilean entrepreneurs in their international expansions, helping them take part in the very best foreign business accelerators. The programme covers up to 90% of the total project cost up to a maximum of USD 40 000 and is aimed at Chilean companies that are less than four years old. Similarly, CORFO's Go To Market programme supports entrepreneurs and researchers who work in technology-intensive sectors or who conduct R&D that has the potential to be commercially exploited in Chile and abroad. The programme enables beneficiaries to hire a foreign training provider while conducting their projects to enhance opportunities for technology transfer and the commercial exploitation of research.

Notwithstanding the progress, there are still many regulatory barriers to starting up and re-starting a new business, although the situation has improved since the late 2000s. The Law 20 494 of 2011 simplifies the procedures needed to open a business and reduces the number of days from 22 to 7. However, many of the representatives of the private sector still complain of overlapping regulations and of the excessive amount of complex bureaucracy to set up and run a company. The government is currently running a pilot project co-ordinated by the Ministry of Economy to simplify procedures and set up a one-stop shop for information dissemination to potential entrepreneurs.

Evaluations have contributed to improve policy design and impact

Since 2007, Chile has carried out different evaluations of the initiatives to support start-ups. The recommendations made following the evaluations of first- and second-tier CORFO seed capital lines have helped streamline and simplify this financing system. As per the recommendations, the two lines of seed capital were replaced by the single, flexible, two-stage Flexible Seed Grant (SSAF) system. As a result, an initial investment is made when the project is

approved, then a second investment is made once the project has been shown to be feasible. Stage-one investments are lower, so that resources are prioritised towards projects with the greatest potential impact. Also, operating costs not previously considered can be covered, such as proofs of concept, market validation and intellectual property managment.

The system of incubators has also been modified based on the results of an evaluation carried out in 2006, six years after the system was introduced. A major weakness of the incubators was that there were no performance-based criteria for the allocation of resources. As in other countries, the incentives encouraged incubators to increase the number of projects they took care of, rather than to prioritising the selection of projects with high potential impact. Between 2009 and 2010 changes were made to redirect incentives by introducing performance-based evaluations. To make the incubators more effective, the SSAF was introduced and a shift was made towards a second-tier system in which CORFO (with its InnovaChile programme) allocates resources to potential entrepreneurs through registered incubators that are graded based on their performance. The incubators thus play a greater role, managing InnovaChile's resources, but at the same time they are expected to achieve results in terms of quality and performance. In addition to allocating InnovaChile's resources, incubators must also provide support and advisory services and allocate additional resources to start-ups or facilitate third-party investment, including angel investors.

CORFO's programmes for the venture-capital industry were evaluated in 2011. These assessments led to the creation of the Early Stages Fund and the Development and Growth Fund, thus distinguishing between operating mechanisms according to the phase of development. Measures are also being taken to simplify the methods for evaluating the proposals, with greater priority being given to projects with a global outreach. CORFO aims to expand its evaluation system so that it will systematically cover all programmes by 2013. To facilitate evaluation, recently beneficiaries of public incentives were required to provide information for up to three years after receipt of the last public investment.

Main challenges ahead

Chile has accumulated experience in innovation policies and in supporting start-ups since the mid-2000s. There is a general consensus among Chilean specialists and entrepreneurs that one of the main challenges for the country is to increase the quality and the quantity of proposals for start-ups. There remains a strong aversion to risk and a low propensity for entrepreneurship in Chile. Investing in promoting and spreading a culture of entrepreneurship and co-ordinating government efforts abroad to open up markets are essential to increase the number of entrepreneurs in Chile. Also, increasing the supply of skilled human resources, especially in technical, scientific and engineering fields, is vital to spawn dynamic enterprise in innovative sectors with a high potential. Consolidating R&D programmes in national priority sectors and creating professional and intra-regional innovation networks also seem essential to produce an ecosystem in which starting and developing new businesses is possible and profitable. As in other countries in the region, venture capital needs to broaden its scope and value to fund larger projects. Other essential tasks to make entrepreneurship a viable, attractive option in Chile include strengthening the industry of angel investors and venture capital.

Note

1. Small firms are defined as those with annual sales of less than CLF 25 000 (Unidad de Fomento) (around USD 1.1 million), and medium-sized and large firms as those with annual sales of between CLF 25 000 (USD 1.1 million) and CLF 150 000 (USD 6.8 million).

Annex 6.A1. Policy tools to promote start-ups in Chile

Table 6.A1.1. **Chile: Targeted policy tools to promote start-ups, 2012**

a. Financing

Instrument/ Programme	Type	Objectives	Beneficiary	Additional information	Maximum period
Seed capital (InnovaChile-CORFO)	Grant	Entrepreneurs wishing to create and implement a business idea	Operates through sponsors, which submit a joint application with the company	• Grant of up to 75% • 25% in monetary support • Up to USD 77 000	24 months
Flexible Allocation Seed Capital (InnovaChile-CORFO)	Grant	Innovative entrepreneurs with high-risk projects	Operates through business incubators (second-tier scheme) that receive funds to invest in high-risk innovative start-ups	• Grant of up to 75% • 25% in monetary support • Up to USD 1.3 million per incubator	9 years
Startup Chile Global Entrepreneurs Competition (InnovaChile-CORFO)	Grant	Attract investors from around the world to conduct business in Chile and thus generate externalities	Entrepreneurs from around the world who want to start a business in Chile	• Up to USD 40 000	1 year

Table 6.A1.1. **Chile: Targeted policy tools to promote start-ups, 2012** *(continued)*

Instrument/ Programme	Type	Objectives	Beneficiary	Additional information	Maximum period
Venture Capital for Innovative Firms (CORFO)	Long-term loans to investment funds	Support start-up or expansion of businesses that have innovative projects with high growth potential	Operates through investment funds that invest in firms with assets not exceeding USD 4.3 million	• The amount the fund invests in the firm depends on the project • Capital investment to acquire shares	
Direct Investment in Investment Funds (CORFO)	Direct contribution to investment funds	Develop the venture-capital industry Foster private investment in investment funds geared at firms with high growth potential in their expansion stage	Firms less than seven years old with annual sales of less than USD 17.1 million	• The amount the fund invests in the firm depends on the project • The fund acquires shares through capital investment	10 years
Fénix Mining Exploration Fund (CORFO)	Long-term loans to investment funds	Develop the venture-capital industry in the mining sector to promote exploration and mining in Chile	"Junior" exploration and mining firms with annual sales of less than USD 8.6 million	• Fénix fund: CORFO investment of USD 60 million and private investment of USD 30 million • Each management organisation can receive USD 6.4 to 17.1 million for investment	10 years
Angel Capitalist Networks (RCA) (InnovaChile-CORFO)	Grant	Organise, formalise and operate business angel networks to invest in emerging technology-based firms (R&D)	Individuals, businesses, foundations and corporations, or current beneficiaries of the network	• Grant of up to 70% • 25% in monetary support • Up to USD 154 000 in the first year and USD 192 000 in subsequent years	72 months

Table 6.A1.1. **Chile: Targeted policy tools to promote start-ups, 2012** *(continued)*

b. Development of business skills

Instrument/ Programme	Type	Objectives	Beneficiary	Additional information	Maximum period
Business incubator (InnovaChile-CORFO)	Grant	Support business-incubator operations	New incubators or those previously funded by InnovaChile. Currently, the investment depends on the performance evaluation of each incubator	• Grant of up to 65% • 25% in monetary support • Up to USD 422 000 a year	6 years
Technological Packaging for New Businesses (InnovaChile-CORFO)	Grant	Packaging of high-tech firms with high growth potential	Operates through intermediaries (advisory body). Beneficiary firms must be no older than three years old	• Grant of up to 80% • 20% in monetary support • Up to USD 38 000 in stage 1 and up to a total of USD 345 000 for two stages	36 months, or 48 months in exceptional cases
Global Connection – International Acceleration of Technology Firms (InnovaChile-CORFO)	Grant	Support for international expansion	Firms that are less than four years old	• Grant of up to 90% • 10% in non-monetary support • Up to USD 38 000	9 months

Source: Based on official data and interviews with experts.

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Chapter 7

Promoting start-ups in Colombia

This chapter presents an overview of public policies recently introduced in Colombia to promote the creation and expansion of start-ups. It highlights the growing importance of innovation in the national development strategy. Promoting start-ups is an emerging priority in Colombia. In 2012 the country designed a new instrument, iNNpulsa Colombia, to provide seed capital and training to new entrepreneurs. Colombia's regional governments are becoming increasingly involved in supporting start-ups to promote growth and employment in their territories. The national development bank (Bancóldex) is also taking a growing interest in supporting the venture-capital industry to facilitate these companies' expansion.

Innovation is becoming an important component of the national development strategy

The innovation agenda has received growing attention in Colombia. Since 2009 there have been institutional improvements, better governance and greater financial resource mobilisation for innovation. The law 1286 on Science, Technology and Innovation, passed in 2009, introduced a major institutional change, promoting COLCIENCIAS (the government body responsible for science and technology) to the rank of administrative department. This measure means that the director of COLCIENCIAS has now a ministerial level. COLCIENCIAS is responsible for formulating and implementing national innovation policy. The law also introduced the Advisory Council for Science, Technology and Innovation, which replaced the National Science and Technology Council. This council meets four times a year and it is composed by representatives of the public and private sectors, as well as prominent members of the scientific community. The legislation, with its 2011 amendments, defines the new modes of operation of the National Council for Tax Benefits for Science, Technology and Innovation.

The institutional changes also included new mechanisms to increase the budget for innovation. The 2009 law created the Francisco José de Caldas National Science, Technology and Innovation Fund, which channels various public and private resources, including international co-operation on innovation. In 2012, the Science, Technology and Innovation Fund began operating as part of the General Royalties Scheme (*Sistema General de Regalías*), which, in accordance with the constitution, receives 10% of the resources that the government receives for exploiting non-renewable natural resources, which finances regional innovation projects (OECD, 2013).

Alongside COLCIENCIAS the main actors in Colombia's innovation-support system are the Ministry of Trade, Industry and Tourism, which manages the Modernisation and Technology Development Fund for Micro, Small and Medium-Sized Enterprises (FOMIPYME), the National Learning Service (SENA) and the national development bank (Bancóldex), which operates as a second-tier investor. Bancóldex is gaining importance as one of the institutions fostering start-ups in Colombia.

In 2012 new mechanisms were introduced to support start-ups

Supporting start-ups has recently become a priority in Colombia as highlighted by the 2010-14 "Prosperity for All" National Development Plan. The 2011-14 Strategic Plan for Science, Technology and Innovation includes strategic lines targeted to promoting start-ups. For example, the Ministry of Trade, Industry and Tourism, together with the Colombian Conference of Chambers of Commerce (CONFECÁMARAS), will conduct activities including five studies to identify business ideas in market niches with high growth potential and that it will strengthen regional business networks. The government, meanwhile, decided to broaden the range of instruments to support start-ups, creating a new Innovation and Business Development Unit within Bancóldex. This unit, which also manages iNNpulsa Colombia, serves to increase the bank's capacity to support innovation and move towards a more integrated business-development support system which provides not only financing, but also business services and training (see Figure 7.1).

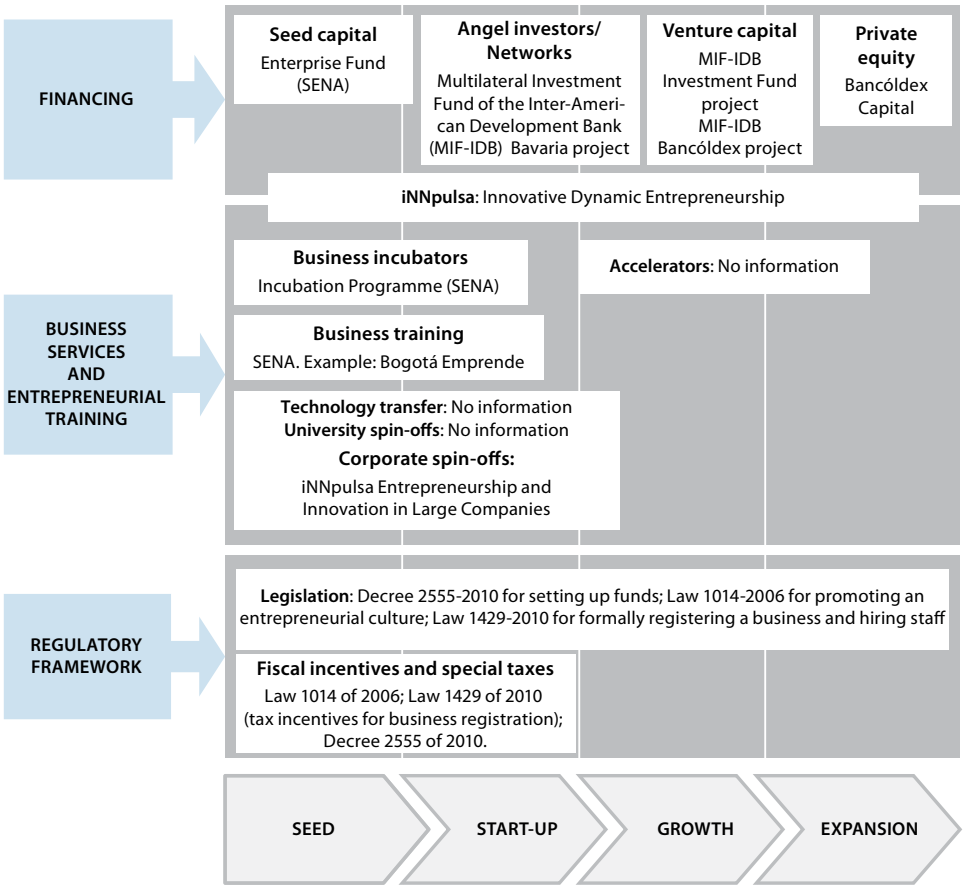
iNNpulsa Colombia aims to improve access to finance for innovative entrepreneurs from start-up through to expansion. The programme also promotes the development of an entrepreneurial culture and mindset in Colombia. Two of its support lines are specifically related to start-ups:

- *iNNpulsa Emprendimiento Dinámico Innovador* (Innovative Dynamic Entrepreneurship) provides financial and non-financial support to create and test a business plan and access venture capital. The programme operates through certified institutions, such as chambers of commerce. Support is offered to export-oriented projects with high sales potential.
- *Emprendimiento e Innovación en las Grandes Empresas* (Entrepreneurship and Innovation in Large Corporations) is designed to support business development and innovation through spin-offs and re-entrepreneurship. The programme provides financial and non-financial support to large corporations conducting innovative activities or promoting entrepreneurship. It offers a rediscount facility with a reduced rate and grace periods for this type of firm.

iNNpulsa strengthens the policy mix for start-ups. Before iNNpulsa was introduced, the only seed-capital tool was the SENA (National Service of Learning) Enterprise Fund (*Fondo Emprender*). Since it began operating in 2005, the Enterprise Fund has supported the founding of companies by university students (undergraduate, master and doctoral) and recent graduates (during

the last five years) who submit a viable business plan with growth potential. Through 102 calls for applications (21 national and 81 regional), the fund has provided direct investment to 2 811 new firms for a total of COP 170 billion (Colombian pesos) (Gobierno de Colombia (2011). The fund also financed 419 enterprise units throughout the country.

Figure 7.1. **Colombia: Targeted policy tools to promote start-ups, 2012**



Source: Based on: OECD (2011), *Financing High-Growth Firms: The Role of Angel Investors*, OECD, Paris; INNO-Grips (2011), "Policies in Support of High-Growth Innovative SMEs", *INNO-Grips Policy Brief*, No. 2, June 2011; LAVCA (Latin American Private Equity & Venture Capital Association) (2012), *2012 Scorecard: The Private Equity and Venture Capital Environment in Latin America*, LAVCA, New York, among other documents.

The venture-capital and angel-investor industries are not in line with the size of Colombia's economy, but they are currently expanding. In the second half of 2012 there were seven angel-investor networks and five seed-capital funds in operation. The Bavaria Angel-Investor Network, financed by the Inter-American Development Bank (IDB) and the Multilateral Investment Fund (FOMIN), aims to develop a culture of investing in innovation and facilitate meetings among Colombian investors so that they will invest capital and share their experiences in developing innovative companies.

The measures to support the development of business skills focus on the seed and start-up stages (see Table 7.A1.1.). Through iNNpulsa, the Ministry of Trade, Industry and Tourism aims to strengthen its business capabilities to support high-impact entrepreneurs, and the SENA offers support to business incubators and technology parks. Currently there is a discussion regarding the need to introduce mechanisms to evaluate their impact. At the same time, the Ministry of Commerce, Industry and Tourism is supporting the spread of an entrepreneurial culture by holding discussion forums for the training of young entrepreneurs. The SENA offers access to physical and technological infrastructure and expert consultants, and offers business advisory services to entrepreneurs to assist them in developing their projects.

In Colombia, there are also sub-national initiatives to support start-ups, carried out by regions and cities (see Table 7.A1.1). Each of the country's 32 departments has its own strategic entrepreneurship plan (*Plan Estratégico de Emprendimiento Regional*, PEER) that sets goals and supports co-ordination among actors and institutions in each region. The Ministry of Trade, Industry and Tourism supports regional entrepreneurship networks in setting up the programmes. Moreover, the new SNR royalties system (*Sistema Nacional de Regalías*) plans to create a fund of more than COP 790 billion for science, technology and innovation projects (Colciencias, 2012). The system will support at least 12 regional entrepreneurship networks.

The Bogotá Secretary for Economic Development and the local Chamber of Commerce manage the "Bogotá Emprende" programme; it provides information and services for start-ups, offering assistance in identifying business ideas and developing business plans, setting marketing strategies and obtaining financing. Information is provided through a one-stop shop. Other initiatives include RutaN in Antioquia, Manizales+ in Caldas and Empresas Innovadoras (Innovative Enterprises) in Bucaramanga.

Colombia is also improving the regulatory framework to facilitate the creation of start-ups. The law 1014 of 2006 defines and promotes the

development of an entrepreneurial culture. Also of note are Law 1429 of 2010, which provides tax incentives for formally registering a business and hiring staff, and Decree 2555 of 2010, which regulates how investment funds are set up and managed.

Annex 7.A.1. Policy tools to promote start-ups in Colombia

Table 7.A1.1. **Colombia: Targeted policy tools to promote start-ups, 2012**

a. Financing

Instrument/ Programme	Status	Type	Objectives	Beneficiary	Additional information
Enterprise Fund – SENA	Operational	Grant (repayment subject to successful business plan) for seed capital	Support productive projects that integrate the knowledge acquired by entrepreneurs in training with the development of new businesses	SENA students Students in the final two semesters of a state-sanctioned higher-education programme Professionals who earned a university degree in no more than 60 months Graduates of specialist courses, masters and PhDs (graduated during the past 60 months)	100% of the cost of the business plan: Up to USD 24 000 if three jobs are created Up to USD 45 000 if five jobs are created Up to USD 54 000 if six or more jobs are created
Multilateral Investment Fund of the Inter-American Development Bank (MIF-IDB) project through Bancóldex	Implementation	Investment to fund activities	Strengthen the venture-capital industry and improve small and medium enterprise (SME) access to funding	Training for local fund managers and institutional investors	Approximate budget of USD 1.5 million

Table 7.A1.1. **Colombia: Targeted policy tools to promote start-ups, 2012** *(continued)*

Instrument/ Programme	Status	Type	Objectives	Beneficiary	Additional information
Bancóldex Capital (2009)	Operational	Investment in private-equity funds	Private investment funds		Amount committed as of October 2011: USD 35 million In four investment funds The funds have capital of USD 412.2 million to invest in companies USD 131.6 million have already been invested in companies
MIF-IDB Investment Fund project	Implementation	Investment in an investment fund	Investment in companies with innovative, replicable, scalable business models, with a social and environmental focus	Established SMEs in specific sectors with proven business models, a clear market demand and growth potential	The budget envisages investment of up to USD 3 million The investment fund expects to raise about USD 20 million Investment in 15 SMEs
MIF-IDB Angel-Investor Network Project	Implementation	Investment to fund activities	Create a sustainable model of angel-investor capital geared at firms in the start-up stage Implemented through the Bavaria Foundation		IDB investment: USD 555 000 Local counterpart investment: USD 220 700
Innovative Dynamic Entrepreneurship (EDI) Seed Capital	Implementation	Grant for seed capital	Profitable companies growing quickly and sustainably that are able to re-invest and achieve a fairly considerable level of sales within a decade	New and existing firms	Up to COP 350 million per company

Table 7.A1.1. **Colombia: Targeted policy tools to promote start-ups, 2012** *(continued)*

Instrument/ Programme	Status	Type	Objectives	Beneficiary	Additional information
Special line of credit for business innovation	Implementation	Loan	Colombian firms of any size or production sector that involve innovation in their production processes and services	Innovative firms	Up to COP 3 billion for up to five years with a grace period of up to 12 months

b. Business services and entrepreneurial training

Instrument/ Programme	Status	Type	Objectives	Beneficiary
Bogotá Emprende	Operational	Service (project formulation)	Skilled services and effective solutions for entrepreneurs to start, grow and establish businesses in the city	Entrepreneurs and business people
Support Programme for SENA Platforms and Technology Park Network	Operational	Service and training	Promoting human capital, expert advice, physical and technological infrastructure, learning activities and support for the development of projects	Technology parks, business people
SENA Incubation Programme	Finished	Investment to fund activities	Incubation of technology-based firms	
SENA Business Mindset Chair (Cátedra de Pensamiento Empresarial)	Operational	Training	Entrepreneurs and business people	Entrepreneurs (about 20 000 have participated to date since 2004)
Programme for institutional strengthening	Implementation	Investment to fund activities	Co-finance projects by institutions that strengthen their capacity to identify, accelerate and support innovative dynamic enterprises in the different regions of Colombia	Organisations to support entrepreneurs

Table 7.A1.1. **Colombia: Targeted policy tools to promote start-ups, 2012** *(continued)*

c. Regulatory framework

Instrument/ Programme	Status	Type	Objectives	Beneficiary
Tax incentive	Operational	Law 1429 (2010)	Bring companies into the formal economy (progressive payment of corporate tax and other taxes) Provide incentives for hiring new staff below age 28 and amend Article 1 116 of the Bankruptcy Act	New and existing firms
Regulatory	Operational	Decree 2555-10	Regulation on creating and operating funds Foreign investment funds	Capital funds

Source: Based on official data and interviews with experts.

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Chapter 8

Promoting start-ups in Mexico[1]

This chapter presents a brief overview of public policies to support start-ups in Mexico. It outlines the progress made in innovation policy, especially the improvements in the regulatory framework, the introduction of new sectoral funds and the measures taken to facilitate public-private co-operation in innovation. It shows that access to credit, especially in the seed and start-up stages, is still a considerable barrier to fostering start-ups in Mexico.

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

Advances in innovation policy and in support of start-ups

Innovation policies in Mexico have increased in importance in the last decade. Since the second half of the 2000s Mexico has introduced changes to its innovation policy, improving the legal framework, the policy mix (for example by introducing the sectoral technology funds in 1999) and the institutional governance (OECD, 2012 and OECD/Economic Commission for Latin America and the Caribbean, 2012). There has also been growing support for public-private partnerships and for collaboration between universities and public research centres in innovative projects. Mexico's public research centres have a good scientific capacity, but the country performs poorly in generating international patents and technology transfer and is ranked behind Brazil, Chile and Colombia (OECD, 2012). The government is increasing its support for small and medium enterprises (SMEs) and technology transfer, but these efforts will only be fruitful if it strengthens its policy framework and increases policy co-ordination and budget allocation for innovation.

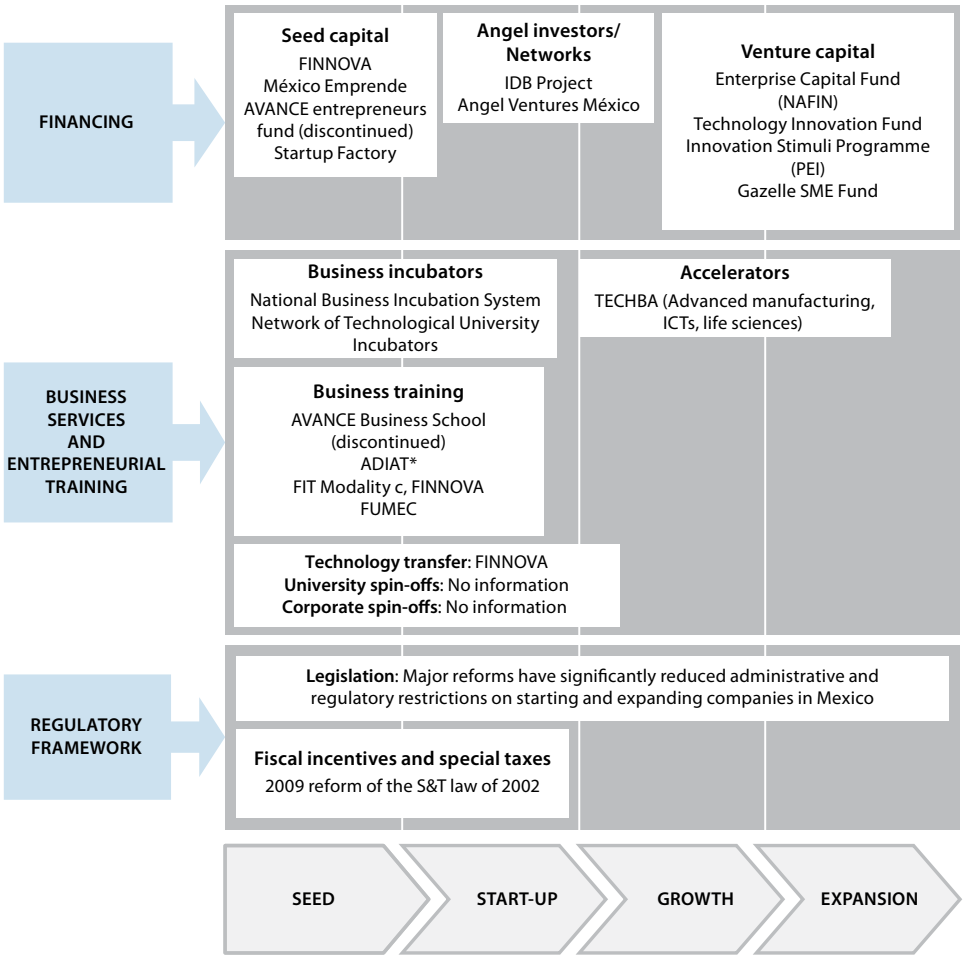
According to the OECD review, the most positive aspects of the Mexican agenda on measures to support start-ups include plans to develop venture capital and a more flexible legal and regulatory framework (OECD, 2012). However, the country needs to channel more resources into innovation, reduce the duplication in innovation programmes and strengthen the angel-investor market.

The National Science and Technology Council (CONACYT) and the Ministry of Economy have helped move innovation topics up the country's growth agenda. Other institutions supporting the creation of start-ups are the Ministry of Public Education, which supports training of human resources, and Nacional Financiera (NAFIN), which operates as a development bank and provides SMEs with access to financing and training. In Mexico states are also key players in supporting start-ups. They are responsible for managing and funding innovation policy, even though Mexico is less decentralised than Brazil in what regards innovation (OECD, 2011 and 2009).

In 2000 Mexico began introducing measures to support start-ups (see Table 8.A1.1). In 2000 CONACYT launched the Special Science and Technology Programme (PECYT), which included direct and indirect incentives for start-ups, such as the Technology Innovation Fund (FIT). However, the direct support was not enough to mobilise the business dynamic to the desired level. This would require greater co-ordination between programmes and institutions. The AVANCE programme, launched in 2003, aimed at improving the knowledge and

technology transfer and favouring the creation of new firms, providing seed and venture capital. When the AVANCE programme closed in 2009, these lines of support were discontinued, thus reducing the availability of seed capital in the country (see Figure 8.1).

Figure 8.1. **Mexico: Targeted policy tools to promote start-ups, 2012**



Note: * Association of Directors of Applied Research and Technological Development.

Source: Based on LAVCA (2012), *2012 Scorecard: The Private Equity and Venture Capital Environment in Latin America*, LAVCA, New York; OECD (2012), *Evaluation of the Mexican Knowledge-based Start-up Sector Diagnosis and Policy Recommendations*, OECD, Paris.

Access to finance is still an obstacle, especially in the seed and start-up stages

According to a recent OECD evaluation, the lack of access to financing is one of the main barriers to the development of technology-based firms in Mexico (OECD, 2012). This feature is particularly marked in the early stages of business development. The venture capital industry is not well developed in Mexico in relation to the size of the economy. Private equity and venture capital represent little more than 0.02% of gross domestic product (GDP) in Mexico, one of the lowest figures in the region (see Table 8.1).

Table 8.1. **Private equity and venture capital as a percentage of GDP, selected countries, 2008-11**

Country	2008	2011
Israel	0.94	0.73
Spain	0.32	0.18
Brazil	0.14	0.27
Chile	0.13	0.18
Colombia	0.04	0.16
Mexico	0.04	0.02

Source: LAVCA (2012), *2012 Scorecard: The Private Equity and Venture Capital Environment in Latin America*, LAVCA, New York.

NAFIN (the national development bank specialised in providing credit to SMEs) plays a pivotal role in developing venture capital in Mexico. The only mechanism that currently exists to support the venture-capital industry is NAFIN's Enterprise Capital Fund, which operates as a fund of funds. The Venture Capital Fund is targeted at private-equity funds that invest in domestic SMEs with high growth potential. The fund takes a minority stake in the company, injecting up to MXN 30 million (Mexican pesos) (USD 2.4 million) for a period of maximum 10-12 years. The private-equity fund must be at least USD 50 million. It is aimed at firms with annual sales of USD 20 million to USD 150 million needing investment of USD 10 million to USD 30 million (as a minority stake).

The FIT, financed by the Ministry of Economy and CONACYT, aims to provide support to SMEs. The capital can be paid out over several years and

there is no minimum amount for project financing. The fund usually covers 50-70% of the project's total cost. The FIT supports three kinds of proposals:

- The development of technological innovations, including the improvement of products, processes and services. This includes consultancy services and the development of pilot projects, as well as the production of prototypes needed to validate the financing and commercial strategy associated with the launch of an innovative project.
- The creation and strengthening of research groups involving specialists and professionals associated with industry and the acquisition of laboratory equipment.
- Market validation of the science and technology components of innovative projects.

INNOVAPYME of the Innovation Stimuli Programme can be considered a support instrument for the creation and expansion of technology start-ups. Between 2009 and 2012, the scheme benefited no fewer than 872 SMEs, whether in their launch or in a more advanced stage of their development. Companies supported by INNOVAPYME receive an additional grant for the total cost of each project up to a maximum of MXN 21 million. In 2012 a new type of company was introduced – the *sociedad anónima promotora de inversión*, or SAPI. This new form of company supports the founding of start-ups by guaranteeing investor rights and obligations, and by allowing greater control and transparency in the investment process. SAPIs also create incentives for seed and venture capital. The SME Fund, administered by the Ministry of Economy, offers a range of incentives, including those designed for gazelle firms. *México Emprende* supports companies that have been through an incubation phase; it also offers seed capital and loans for market research, commercial prototypes and business plans.

FINNOVA is a fund that was set up in 2010. Its main objectives are to make companies (including start-ups) more innovative, develop intermediation mechanisms (knowledge transfer offices) and support the generation of public assets related to science and technology. This sectorial innovation fund is funded by the Ministry of Economy and CONACYT. Since 2011, FINNOVA has also provided financial support for setting up and managing knowledge transfer offices.

Some initiatives to promote start-ups are managed directly by the states. The most active ones are the Federal District, Nuevo León, the State of Mexico, Jalisco and Guanajuato. They operate programmes that often have a small

budget, depend on additional federal resources and, though their stated aim is to focus on local needs, they do not always have the scope they desire. The State of Mexico Institute of Science and Technology offers a support package for innovative entrepreneurs. The Nuevo León Innovation System is a state public-private programme involving the private Monterrey Institute of Technology and Higher Education (ITESM) and the public Autonomous University of Nuevo León; it focuses on promoting innovative activities and start-ups.

Mexico's angel-investor market is in the early stage of development. Angel Ventures Mexico is one of the country's largest angel-investor "clubs". Its mission is to identify start-ups with growth potential and provide them with capital in the early stages of their development. Also noteworthy is the Mexico City-based Startup Factory, which provides finance to start-ups (OECD, 2012).

Mexico implements several programmes for entrepreneurial capacity building

According to the recent OECD review, Mexico has two incubator programmes to support start-ups: the National Business Incubation System (SNIE) run by the Ministry of Economy and the Network of Technological University Incubators run by the Ministry of Education, but with funding from the Ministry of Economy through the SME Fund. Mexico has around 500 business incubators operating in various cities, of which 217 are traditional, 262 are medium-tech and 21 are high-tech (OECD, 2012).

The Network of Technological University Incubators promotes the transfer of best practices and incubation models among incubators. At the end of 2011, the network had around 200 incubators and 2 500 projects in incubation. These projects led to more than 900 enterprises, around 5% of which were technology-based start-ups, providing 7 000 jobs. Some states play an important role in encouraging the founding of technology spin-offs (see Box 8.1).

Access to incubation services in Mexico is still limited. Incubation is only available from institutions certified by the Ministry of Economy. Incubation services could be extended to include more institutions if the certification process were streamlined, thus increasing the availability of incubation services

Box 8.1. **The government of Nuevo León in Mexico and the ITESM**

The Monterrey Institute of Technology and Higher Education (ITESM) is one of Mexico's leading private universities in terms of linkages between science, technology and the production sector. It has a portfolio of 200 patents, more than any other higher-education institution in Mexico. The ITESM is known for facilitating the movement of academic and research staff between the university and industry. The government of Nuevo Leon's Innovation and Technology Transfer Institute (I2T2) supports the founding of technology-based start-ups by providing incubation and intermediation services, thus helping companies find the right partners to develop their business in the early stages. The Technology Transfer Office supports patent licensing, and in 2009 the ITESM generated income of USD 130 000 from its patents portfolio.

Source: OECD (2012).

across the country. Many owners of Mexican start-ups when interviewed said they believed greater efforts were needed to facilitate and support access to seed capital and to help with creating international patents (OECD, 2012).

In the mid-2000s, Mexico introduced the TechBA business-acceleration programme for firms with a high growth and innovation potential. Funded by the Ministry of Economy and the United States-Mexico Foundation for Science (FUMEC), this programme supports the internationalisation of start-ups, especially those working in information and communications technology (ICT), advanced manufacturing (automotive, microsystems and aerospace) and life sciences. TechBA supports and advises companies in various stages: pre-acceleration (2-4 months), acceleration (8-10 months) and consolidation (12 months). In the acceleration stage the structure is modified to match the new international strategy and support is provided for commercialising the innovative products and services.

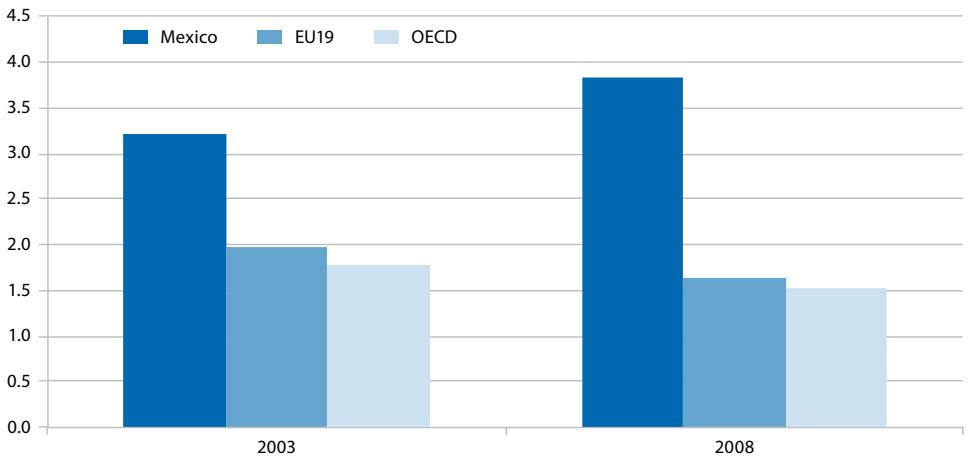
Mexico has invested in improving its regulatory framework for creating new firms

In the 2000s, business start-up costs in Mexico were above those in other OECD and Latin American countries (see Figure 8.2).

In recent years, however, Mexico has brought in major reforms that have significantly improved this area. As a result, Mexico is now among the leading countries in Latin America and is ahead of several other OECD countries (World Bank, 2013). The following 2009 reforms to the Science and Technology Act (2002) are of particular note:

- The new Article 25 *bis* extends the typology of sectoral funds initially envisaged by the act (trusts established jointly by federal government ministries or agencies and CONACYT, as per Article 25) to include the "sectoral innovation funds", the purpose of which ranges from forming networks and other associations and financing projects to creating seed-capital and venture-capital funds, among other activities not previously envisaged by federal legislation.
- The amendment to Article 40 and the inclusion of Article 40 *bis*, granting priority to projects that promote the modernisation and development of businesses and the creation of linkage and knowledge-transfer offices.
- Articles 51 and 56, which give public research centres greater autonomy in managing their intellectual property.

Figure 8.2. **Administrative and regulatory constraints for starting a business in Mexico, 2003 and 2008**



Note: Scale from 0 to 6 from least to most restrictive.

Source: OECD (2010), *SMEs, Entrepreneurship and Innovation*, OECD, Paris.

Note

1. This country note draws on and updates OECD (2012), *Evaluation of the Mexican Knowledge-based Start-ups in Mexico*, OECD, Paris.

Annex 8.A1. Policy tools to promote start-ups in Mexico

Table 8.A1.1. **Mexico: Targeted policy tools to promote start-ups, 2012**

a. Financing

Programme	Objectives	Beneficiary	Additional information
Technology Innovation Fund (FIT)	Support the development of science and technology for SMEs Mode (a): Developing technological innovation Mode (b): Integrating technological perspectives into projects	SMEs interested in innovation in specific sectors (agriculture, biotech, ICTs, health)	Depends on the project (50-70% of total cost)
Innovation Stimuli Programme (PEI)	Complement innovative projects in Mexico for a year Modalities: innovative processes, new products, prototypes, etc.	Companies registered in the National Registry of Science and Technology Institutions and Companies (RENIECYT) with a one-year innovation project	INNOVAPYME: MXN 21 million per company per fiscal year
Enterprise Capital Fund (NAFIN) (introduced in 2010)	Private venture-capital funds that invest in domestic SMEs with high growth potential	Companies with reported annual sales of USD 20 million to USD 150 million that require temporary capital investment of USD 10 million to USD 30 million	Minority share in companies Maximum investment of USD 2.3 million

Table 8.A1.1. **Mexico: Targeted policy tools to promote start-ups, 2012** *(continued)*

Programme	Objectives	Beneficiary	Additional information
México Emprende	Support the start-up of companies that have been through a period of incubation Provide seed capital for market research, commercial prototypes, business plans and protection of intellectual property rights	SMEs and entrepreneurs	Depends on the project (loans)
Fund of funds (Venture Capital Programme)	Provide financing to companies seeking additional capital, complementing other types of private equity	Companies that need additional capital and have revenues of USD 20 million to USD 150 million	Up to MXN 30 million over 10-12 years as a minority shareholder
Gazelle SME Fund (Ministry of Economy)	Promote innovation and technological development, growth and business acceleration Grant	Gazelle enterprises	Innovation and technological development: up to USD 13 000 or 50% (single company) or USD 26 000 or 60% (groups of companies) Technology adoption: USD 5 000 (single company) or USD 150 000 (group of companies) Prototyping: up to USD 130 000 or 80% Takes into account how innovative or knowledge-intensive the project is
PROSOFT (Ministry of Economy)	Support projects that promote the start-up, development, consolidation, viability, productivity, competitiveness and sustainability of companies providing IT and similar services Grant	ICT firms	The amount of support varies between 25% and 50% of the total investment Does not take into account how innovative or knowledge-intensive the project is
NAFIN Guarantees Programme			USD 6 million from the Ministry of Economy as guarantees for commercial bank loans of up to USD 90.8 million

Table 8.A1.1. **Mexico: Targeted policy tools to promote start-ups, 2012** *(continued)*

b. Business services and entrepreneurial training

Programme	Objectives	Beneficiary	Additional information
Business Incubator (Ministry of Economy)	Support creating and strengthening traditional, medium-tech and high-tech business incubators Services	High-tech incubators focused on companies in advanced sectors (ICTs, microelectronics, biotech, food)	Maximum incubation period of two years Takes into account how innovative or knowledge-intensive the project is
Network of Technological University Incubators (Ministry of Public Education and Ministry of Economy via the SME Fund)	Consolidate the transfer of incubation models to technological universities Services	Technological institutes, technological universities and polytechnic universities	Does not take into account how innovative or knowledge-intensive the project is
Support for the FINNOVA Technology Transfer Office (CONACYT-Ministry of Economy)	Support technology transfer offices to foster linkages with the private sector Services	Technology transfer offices belonging to academic institutions or independent organisations	Takes into account how innovative or knowledge-intensive the project is
ADIAT (introduced in 1989)	Support R&D centres, promoting R&D and disseminating best practices in technology management and seeking to articulate technology transfers Services	Training for specialists in linkages and transfer	Financed by CONACYT, among others Takes into account how innovative or knowledge-intensive the project is

Table 8.A1.1. **Mexico: Targeted policy tools to promote start-ups, 2012** *(continued)*

Programme	Objectives	Beneficiary	Additional information
PRODIAT (Ministry of Economy)	Grant to boost the competitiveness of high-tech sectors (especially ICTs), through their transfer and adoption of cutting-edge technologies Grant	Companies, corporate entities, suppliers and academic and research institutions	2010 budget: USD 9.8 million Takes into account how innovative or knowledge-intensive the project is
TechBA (Ministry of Economy-FUMEC)	Support for SMEs to achieve rapid growth and open up to international markets Financing and acceleration services	SMEs with high innovation potential mainly in ICT sectors, advanced manufacturing and life sciences	Pre-acceleration: 2-4 months Acceleration: 8-10 months Consolidation: 12 months

Source: Based on official data and interviews with experts.

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Chapter 9

Promoting start-ups in Peru

This chapter presents a brief overview of public policies recently introduced in Peru to support start-ups. The country is benefiting from high economic growth and is looking into how to channel part of its resources from the extraction of natural resources towards innovation and productive development in its regions. Start-ups are an emerging topic on the national development agenda. The country is working to create a new start-up programme, intended to offer seed capital and advice to new businesses. It is also adding new seed-capital budget lines to the national fund for innovation. Strengthening these initiatives, co-ordinating them better with other existing public and private initiatives, and supporting the regions as they develop their own programmes for innovative entrepreneurship are some of the future challenges for the country.

Recent trends in innovation policy in Peru

During the last decade, Peru has achieved remarkable economic growth and recovered rapidly from the financial and economic crisis of 2008. The main economic indicators – including exports, growth, inflation, public and private investment and foreign investment – show good results. However, Peru's performance in science, technology and innovation shows that the country is well below the Latin American average in this area (Sagasti, 2011). Although public resources allocated to science, technology and innovation are rising (they rose from USD 84 million in 2008 to USD 132 million in 2009), they remain fairly modest. However, Peru recently decided to improve its performance in innovation to raise productivity and help diversify exports, which are currently concentrated on natural resources (ECLAC and UNCTAD, 2011; OECD, 2011). As part of this renewed interest in innovation, the government has announced it will make support for start-ups a priority among its policies to make the economy more competitive and that some new programmes will be initiated in 2013 to achieve this.

Peru's main science, technology and innovation policy institutions are:

1. The Ministry of Production (PRODUCE), which promotes industrial development and business innovation. The ministry is responsible for two policy instruments: the Research and Development Fund for Competitiveness (Innóvate Perú – FIDECOM), a USD 71 million competitive fund to co-finance projects aimed at promoting research and development (R&D) for innovation, and Technological Innovation Centres (CITEs), which are regionally operated technology-transfer support instruments that connect businesses with the actors in the national innovation system.
2. The Ministry of Education is responsible for fostering the training of the advanced human capital needed for R&D and innovation activities. The ministry's National Science and Technology Council (CONCYTEC) is the main agency for promoting scientific development and preparing the researchers overseen by the National Fund for Scientific and Technological Development (FONDECYT). FONDECYT's role is to obtain and manage resources from domestic and foreign sources for science, technology and innovation activities (ECLAC and UNCTAD, 2011). It had a budget of USD 2.2 million in 2010.

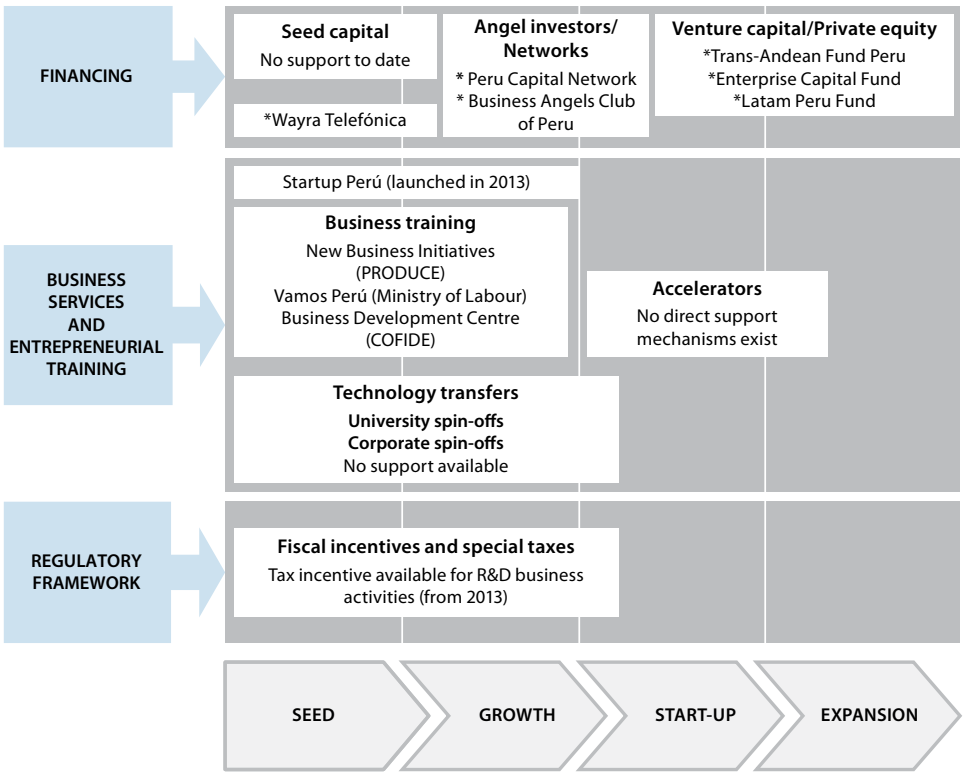
3. The Presidency of the Council of Ministers is in charge of various programmes, projects and instruments, including the National Institute for the Defence of Competition and Protection of Intellectual Property (INDECOPI), and Funding for Innovation, Science and Technology (FINCyT). The latter receives USD 25 million from the Inter-American Development Bank (IDB) and USD 11 million from the treasury to fund projects that raise competitiveness in science, technology and innovation (STI).

In 2004 Peru amended its legislation on mining licences (*Ley del Canon*), increasing the financial resources allocated to supporting innovation. This reform allows 20% of mining-tax revenue to be spent on developing regional universities' capacities in science and technology. As a result, the regions' financial resources for innovation have been increasing, totalling around USD 170 million for the period 2004-08. However, many regions do not have planning and implementation capacities. Although the Organic Law on Regional Governments states that the regions are responsible for science, technology and innovation policy, and although CONCYTEC has supported the creation of regional science, technology and innovation councils in each of the 25 administrative regions since 2008, most of Peru's regional governments lack the capacity to develop and implement innovation projects.

Support for start-ups in Peru: An emerging priority

As in the other countries in the region, start-ups are gaining momentum in Peru. Both PRODUCE and the Ministry of Labour and Employment Promotion (PETM) are revising their policy mix to promote start-ups (see Figure 9.1). The government is launching new initiatives. Startup Perú, a new initiative by PRODUCE, is an example of the government's commitment to innovation and private-sector development. The programme seeks to offer integral support to new entrepreneurs, issuing calls for technology start-ups to apply for seed capital and business training. The initiative will be implemented from 2013, with a budget of USD 50 million. The programme will co-finance up to 80% of the cost and support new firms in their international expansion.

Figure 9.1. **Peru: Targeted policy tools to promote start-ups, 2012**



Note: Instruments marked with an asterisk (*) are private initiatives

Source: Based on official data from Peru.

The New Business Initiatives Programme, run by PRODUCE through its Dirección Mi Empresa programme in partnership with the Ministry of Labour and Employment Promotion, develops business skills by providing training and consultancy services to young people aged 24-35 wishing to become entrepreneurs to develop business plans through partner universities. The Ministry of Labour and Employment Promotion also manages the programme Vamos Perú, which covers the training costs of people who graduated from high school and are in temporary employment or at risk of unemployment. These programmes are accompanied by private initiatives such as the capacity-building programmes of some universities and training institutes (see Box 9.1). Similarly, the Kauffman Foundation-sponsored Startup Weekend Lima event

regularly gives groups of entrepreneurs the opportunity to put forward their business ideas to mentors and investors and share their business experiences.

Box 9.1. **The EmprendeAhora programme in Peru**

The *EmprendeAhora* programme, organised by the *Instituto Invertir* in conjunction with the Center for International Private Enterprise (CIPE) and the University of Lima, aims to promote entrepreneurship among young people in all regions of the country, awarding 120 scholarships to the most outstanding students at the regional universities. Each year the programme offers scholarships for a four-month training programme in strategic planning, market analysis, creativity, leadership and team management. Additionally, students have mentors who support them in developing their business plan. As part of the programme, students must share what they have learned in a college or university in the region.

Source: Based on interviews with members of Instituto Invertir.

Start-ups face high barriers in accessing financing in Peru. Until now there have been no direct instruments to support seed capital. Firms that have already been in business for at least a year can obtain support from two programmes. The first is FINCyT's Innovative Projects in Individual Enterprises (*Proyectos de Innovación en Empresas Individuales*), which subsidises up to 50% of the cost of R&D and innovation projects (or up to 70% for projects in collaboration with a university or research institute), up to a maximum of USD 100 000. The second is Small Productive Innovation Projects (*Proyectos Menores de Innovación Productiva*), run by FIDECOM/Innóvate Perú (PRODUCE), which subsidises up to 75% of the cost of generating, transferring and adapting technology in micro-enterprises, up to a maximum of USD 30 000. However, these programmes exclude early-stage start-ups.

FINCyT is expected to be reformed in 2013 to include a new component to support businesses in the seed stage. Meanwhile, an Entrepreneurs Guarantee Programme has been set up to provide early-stage start-ups with access to financing. The programme is managed by the Development Finance Corporation (COFIDE), which operates as a second-tier development bank, with the support of the Ministry of Production and the Ministry of Labour and Employment Promotion. The programme envisages guarantees on loans issued by financial institutions to entrepreneurs wanting to create a firm or improve their current business. However, it is geared more towards supporting micro-enterprises than start-ups. The programme's budget is

around USD 2.3 million, and in late 2011 the first guarantee contract was signed with the *Caja Nuestra Gente* savings bank. Entrepreneurs must first complete a *Nuevas Iniciativas Empresariales* (New Business Initiatives) or *Vamos Perú* training programme to be eligible for COFIDE's programme. As of November 2012 the programme was still not operational, but it is expected to be up and running by early 2013. Since 2011, a private initiative by Wayra (Telefónica) is helping to raise interest in start-ups and provide seed capital for starting new businesses (see Box 9.2).

Box 9.2. **The role of large firms in supporting start-ups: The case of Wayra Peru**

Wayra is the Telefónica Group's business accelerator. Its mission is to select innovative early-stage projects in the field of new information and communication technologies and provide them with integral support through technology resources, management tools, platforms and knowledge. Wayra thus aims to accelerate the development, operations and commercialisation of the business initiatives with higher economic potential. Wayra is currently present in 11 countries (Argentina, Brazil, Chile, Colombia, Venezuela, Mexico, Peru, Spain, the United Kingdom, Ireland and Germany) and to date it has received more than 14 000 proposals from digital businesses, 180 of which are being accelerated by Wayra academies around the world.

Wayra set up in Peru in 2011 and has made two calls for proposals, receiving more than 2 500 applications (one in six proposals worldwide were from Peru), 19 of which were selected to undergo acceleration in the Lima academy. Of the first generation of nine projects, four have received Wayra funding for further development, with the total amount of funding having reached more than USD 5 million.

Source: Based on official data and interviews with Wayra Peru representatives.

In Peru there are two formal angel-investor networks that have been operating for several years. One is *Instituto Invertir*'s Peru Capital Network (PCN), which was set up in 2010 with 59% funding from the Multilateral Investment Fund of the Inter-American Development Bank (FOMIN-IDB). The network brings together 15 angel investors and has a three-year budget of USD 950 000. The other network is the Business Angels Club of Peru. Specialising in early-stage investment (between USD 20 000 and USD 2 million), it is the first formal angel-investor network in Peru. So far it has made two investments (for USD 150 000 and USD 75 000), and recently it teamed up with

the Chile Foundation's Chile Global network to work together on identifying projects and make joint investments. The venture-capital industry is not well developed compared to the region as a whole (LAVCA, 2012). Existing private-equity funds in Peru include the Trans-Andean Fund Peru, which supports high-growth SMEs with revenue of USD 1-15 million, investing between USD 500 000 and USD 2.25 million, the Venture Capital Fund (*Fondo Capital Emprendedor*) and the Latam Peru Fund. COFIDE is one of the investors in the latter.

In recent years Peru has improved the legal framework for the creation and expansion of new firms. The government has set up online services for starting a business and created one-stop shops to simplify administrative procedures. These measures have reduced the costs and time involved in starting a business, thus improving Peru's ranking among countries in the region (World Bank, 2013). Recently legal changes have been made to strengthen the capital markets by bolstering minority shareholders' rights, thus encouraging investment in high-growth companies.

Main challenges ahead

Although instruments to support start-ups in Peru are still limited, there is a growing interest in the topic. The new Startup Perú initiative can provide the opportunity to consolidate existing programmes and provide integrated support for start-ups. In Peru it is particularly important to strengthen innovation policies and ensure there is good articulation between promoting start-ups and strengthening the national and local innovation system. Public policies could benefit from generating synergies with existing private initiatives, such as Wayra. These private initiatives are not only important sources of finance for start-ups; they can also bring management experience and support to the start-up and provide contact networks and a good reputation in business circles. These attributes are crucial in developing economies, where the markets are not yet seen as potential generators of innovation. At the same time, co-ordination with regional governments and mobilisation of the regions in supporting start-ups are crucial, given the growing role of the regions in the country's innovation and competitiveness agenda.

Annex 9.A1. Policy tools to promote start-ups in Peru

Table 9.A1.1. **Peru: Targeted policy tools to promote start-ups, 2012**

a. Financing

Instrument/Programme	Objectives	Beneficiary	Additional information
Entrepreneurs Guarantee Programme (PGE), run by the Development Finance Corporation (COFIDE), the Ministry of Production, and the Ministry of Labour and Employment Promotion (introduced in 2011) As of the end of November 2012 this programme was no longer operating (it was frozen)	Act as credit guarantee on loans issued to eligible entrepreneurs by intermediary financial institutions (IFIs). Guarantee the credit risk to the IFIs for the loans they issue to eligible entrepreneurs (up to 77% of the outstanding balance).	Entrepreneurs with plans to start or improve a business linked to a production, commercialisation or service activity Businesses that are less than 12 months old Businesses can also participate through the NIE, REVALORA and PROJOVEN programmes promoted by PRODUCE and the MTPE, which act as an initial filter in selecting the best business plans, submit them to the PGE and provide ongoing support to the entrepreneur in setting up the business	Loan of up to 90%, with at least 10% provided by the entrepreneur Loans of up to USD 11 600 per beneficiary (with a single IFI) **To finance:** Current working capital Investment: Acquisition of fixed assets and structural working capital The **total amount** allocated to the programme is USD 2.3 million (PEN 6 million [Peruvian nuevos soles]), which is provided by COFIDE (50%) and FONDEMI (50%). The first guarantee contract was signed in November 2011 with the IFI Caja Nuestra Gente, which will channel the resources

Table 9.A1.1. **Peru: Targeted policy tools to promote start-ups, 2012** *(continued)*

Instrument/Programme	Objectives	Beneficiary	Additional information
Innovation Projects in Individual Enterprises (PITEI), run by FINCyT and the Presidency of the Council of Ministers	Finance projects at the R&D stage and innovation efforts for products and processes Projects should provide competitive advantages to boost companies The scaling-up stage (large-scale production and commercialisation) is not eligible for financing	Only expanding businesses (at least one year in operation) One firm or two firms associated with each other or with non-profit organisations of producers, which may or may not be affiliated with one or more universities or R&D institutes	Up to 70% of the total project cost if in partnership with a university or research institute, or 50% otherwise, up to a maximum of USD 100 000 **To finance:** Costs directly associated with implementing the project (fees, equipment, material, supplies, consultancy, services and other eligible expenses)
Small Productive Innovation Projects (PIMEM), run by FIDECOM and the Ministry of Production	Contribute to strengthening capacities to generate, transfer and adapt technology to innovate products, processes and services, providing them with features to ensure their successful market entry and raise the performance of the companies	Only expanding micro-enterprises (at least one year in operation)	Maximum co-investment of USD 30 000, equivalent to 75% of the total project cost **To finance:** Costs directly associated with implementing the project (equipment, supplies, fees, consultancy, technology services and other expenses) Does *not* cover the scaling-up stage; only R&D and/or pilot-scale technology transfer, adaptation and validation

Table 9.A1.1. **Peru: Targeted policy tools to promote start-ups, 2012** *(continued)*

b. Business services and entrepreneurial training

Instrument/Programme	Objectives	Beneficiary	Additional information
New Business Initiatives programme (NIE), run by the Ministry of Production's Dirección Mi Empresa programme	Support entrepreneurs in starting their own business Act as an initial filter in selecting the best business plans and submit them to the PGE	24- to 35-year-old entrepreneurs with high-school, vocational and/or university qualifications and a business initiative	The programme offers: a. Training and advice on writing a business plan b. Technical support on starting and growing a business
Vamos Perú Entrepreneurship Training Programme, run by the Ministry of Labour and Employment Promotion	Provide training to aspiring entrepreneurs The Entrepreneurship Training Programme is run by the Vamos Perú programme as part of an agreement with the Faculty of Industrial Engineering at Universidad Nacional Mayor de San Marcos through the Postgraduate Unit.	People over the age of 18 who have completed high school and are in temporary employment or at risk of unemployment	The Ministry of Labour and Employment Promotion's Vamos Perú programme covers the beneficiary's costs in their entirety. Training for entrepreneurs includes support in writing a business plan, specialist technical support and advice on seeking sources of finance
COFIDE's **Business Development Centre (CDE)**	COFIDE's CDE regularly holds free talks, training events and workshops geared at the business community	Entrepreneurs in general	The second version of the CDE business services website was launched in 2011, and by December of the same year it had 3 989 people registered, 82.2% of whom were business users and 45.7% of whom were from outside the Lima region.

Table 9.A1.1. **Peru: Targeted policy tools to promote start-ups, 2012** *(continued)*

c. Regulatory framework

Instrument/Programme	Objectives	Beneficiary	Additional information
Legislative Decree 1124 (2012)	Allocate resources to companies' science, technology and innovation projects	Enables employers to deduct up to UIT 300 (*unidad impositiva tributaria*) – around USD 42 000 – as expenses from their taxable income	
Measures to simplify business start-up procedures	Enable business start-up procedures to be done on line Provide a one-stop shop for business start-up	Potential entrepreneurs	• Online business start-up service: available in Puno, Arequipa, Cusco, Madre de Dios, Piura and Tumbes • Reduced registration rates for the Land Registry and Registry of Companies • 43% reduction in the cost of obtaining an operating licence • Incorporation of the procedure to validate accounting and corporate books into the online business start-up service.
Enactment of Law 29720	Improve investor protection (2012)	This law "promotes securities issues and strengthens the capital market" and strengthens minority shareholders' rights.	

Source: Based on official data and interviews with experts.

Table 9.A1.2. **Private initiatives to support start-ups in Peru, 2012**

a. Financing

Programme	Objectives	Beneficiary	Additional information
Peru Capital Network (PCN) (introduced in 2010)	Help entrepreneurs and young companies in various sectors with innovative proposals to find the necessary (angel) capital to take the next step in their growth The first formal angel-investor network in Peru that specialises in early-stage investment	Businesses and young enterprises with investment opportunities and the following: A product or service that has been shown to be unique and innovative through a competitive advantage that has been identified and tested A solid entrepreneur and management team High growth potential and the capacity to reach it • Potential to generate a high return on investment • Realistic and achievable financial projections • Capital requirement of USD 20 000 to USD 2 million	Investment size: USD 20 000 – USD 2 million Currently has 15 network partner investors Also offers additional services during the period of investment, such as due diligence and negotiation advice Receives no public-sector support, but does receive MIF-IDB support: 59% MIF-IDB 21% Instituto Invertir and University of the Pacific 20% investors

Table 9.A1.2. **Private initiatives to support start-ups in Peru, 2012** *(continued)*

Programme	Objectives	Beneficiary	Additional information
Wayra Peru (Telefónica)	Accelerate information and communications technology (ICT) businesses Calls are made twice a year with the aim of financing 20 firms a year	The beneficiary must be part of an entrepreneurship team and must have an innovation, business idea, solution, design or project that fills a need in the area of technologies or any other digital field in a web or mobile environment	Financing of USD 30 000 to USD 70 000 during the first six months Wayra then continues working with the most attractive proposals among those selected, helping them obtain private (financing rounds) or public (grants) financing through its network of angel investors, mentors and partners. In the future, when Wayra has finished working with projects, it is envisaged that they will be analysed by Amérigo, a network of innovation investment funds that Telefónica will launch shortly in conjunction with other co-investors. Wayra selected its first ten start-ups in July 2012 and the winners will receive an average of USD 50 000 each.
Popular SAFI Venture Capital Fund	Public investment fund managed by Popular SAFI to finance proposed or existing businesses, as well as financial restructuring in micro and small enterprises (MSEs)	Entrepreneurs and MSEs	Operates by acquiring marketable mortgage-backed securities and other securities The maximum amount of financing is 40% of the value of the property that is securing the mortgage

Table 9.A1.2. **Private initiatives to support start-ups in Peru, 2012** *(continued)*

Programme	Objectives	Beneficiary	Additional information
Trans-Andean Fund Peru (SEAF PERU SAFI- SEAF SAFI)* (began operations in 2004 and should be completed soon)	Private-capital investment fund managed by SEAF PERU SAF (a SAFI SEAF subsidiary based in Washington), which focuses on companies with high growth potential in developing countries	Small to medium-sized firms across many sectors with sales revenue of between USD 1 million and USD 15 million, with an emphasis on high-growth companies	Makes investments of USD 500 000 to USD 2.25 million in small and medium-sized enterprises Committed capital of USD 15 million over eight years.
SEAF SAFI **Latam Peru Fund** (began operations in 2008)	Finance growth and expansion capital (COFIDE) Three international organisations to promote development by financing small and medium-sized enterprises in developing countries also contribute: the Belgian Investment Company for Developing Countries (BIO), the Finnish Fund For Industrial Cooperation Ltd. (Finnfund) and the Swiss Investment Fund for Emerging Markets (SIFEM)	SMEs with high growth potential	The main investors are two Peruvian pension companies and the Development Finance Corporation

* It also manages the Latam Peru Fund, with a focus on growth capital.

b. Business services and entrepreneurial training

Programme	Objectives	Beneficiary	Additional information
Telefónica's Wayra Academy (began operating in February 2012)	Telefónica opened Wayra Peru on 16 February 2012. The academy is the first organisation specifically to promote the creation of ICT-related companies in Peru. On the second floor of its main premises in the Lima District, the academy has created a 630 m² space to provide digital entrepreneurs with the latest technology, expert advice and an extensive network of experienced mentors, as well as comprehensive support for developing innovative ideas.		

Table 9.A1.2. **Private initiatives to support start-ups in Peru, 2012** *(continued)*

Programme	Objectives	Beneficiary	Additional information
Entrepreneurial Innovation and Development Centre (CIDE-PCUP)	Support the launch of new companies with innovative characteristics using various mechanisms, including advising entrepreneurs in designing their business model, creating an applicable business plan and managing the execution of that plan	Teams of two to five people aged 20 to 40	
CIDE-PUCP **Training Programmes**	Offers entrepreneurial training through programmes for entrepreneurs tailored to their business's situation and stage in the life cycle.	Entrepreneurs	**Lima Norte courses** For entrepreneurs and business people who want to succeed in their business **Diplomas** Academic training and top-level official accreditation geared at transforming entrepreneurs into business people **CREA Programme** For people who want to start a business and want to better manage the risk in the early stages **CRECE Programme** Aimed at people running a micro, small or medium-sized enterprise, their staff, and professionals wishing to optimise their business skills to grow successfully in the market **GERENCIA Programme** Aimed at business people and executives who need to expand their managerial skills to successfully contribute to consolidating and positioning their company

Table 9.A1.2. **Private initiatives to support start-ups in Peru, 2012** *(continued)*

Programme	Objectives	Beneficiary	Additional information
CIDE-PUCP Diploma in Technological Innovation Management	Provides technical knowledge related to managing technological innovation, with emphasis on generating, executing and evaluating technologically innovative projects.	For executive staff and directors at production and service companies, government bodies and academic institutions	
Instituto Invertir's EmprendeAhora	Promote entrepreneurship skills and leadership skills among young people in all regions of the country	Young people up to age 25 from all regions of Peru (except Lima/Callao) wishing to start a business	Currently in its fifth edition (since 2008), it is run by Instituto Invertir with the support of the Center for International Private Enterprise (CIPE), in conjunction with the University of Lima Each edition selects 150 young people from different regions of Peru, who receive a scholarship and guidance in developing their business plan Around 40 companies already formed
Startup Weekend Lima (Kauffman Foundation)	Help entrepreneurs develop their business ideas in 54 hours	Anyone with a start-up idea wishing to receive comments from their peers	Brings together entrepreneurs to express their business ideas and discuss the most attractive proposals

Source: Based on official data and interviews with experts.

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