Chile

A Strategy to Promote Innovative Small and Medium Enterprises

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MAIN ABBREVIATIONS AND ACRONYMS

ASEXMA Association of Exporters of Manufactured Products (Asociación de Exportadores de Manufacturas)
BAF Financial Transaction Subsidy (Bono de Articulación Financiera)
CAR Regional Resource Allocation Committee (Comité de Asignación de Recursos en el Nivel Regional)
CEGES Business Management Centers (Centros de Gestión Empresarial)
CIMO Integral Quality and Modernization (Calidad Integral y Modernización)
CNR National Irrigation Commission (Comisión Nacional de Riego)
CONAF National Forestry Corporation (Corporación Nacional Forestal)
CONICYT National Commission of Scientific Investigation And Technology (Comisión Nacional de Investigación Científica y Tecnológica)
CONUPIA National Federation of Micro, Small and Medium Enterprises (Confederación Gremial Nacional Unida de la Mediana, Pequeña, Microempresa y Artesanos)
COOPEUCH Chilean Savings and Loan Cooperative (Cooperativa de Ahorro y Crédito de Chile)
CORFO Production Development Corporation (Corporación de Fomento de la Producción)
FAT Technical Assistance Fund (Fondo de Asistencia Técnica)
FDI Foreign Direct Investment
FIDES Enterprise Development Investment Funds (Fondos de Inversión en Desarrollo de Empresas)
FOGAPE Guarantee Fund for Small Entrepreneurs (Fondo de Garantía para Pequeños Empresarios)
FONDEP National Education Development Fund (Fondo Nacional de Desarrollo Educativo)
FONTEC Fund for Technology Development and Productivity (Fondo de Desarrollo Tecnológico y Productivo)
FOSIS Social Investment and Solidarity Fund (Fondo de Solidaridad e Inversión Social)
GDP Gross Domestic Product
INDAP Agricultural Development Institute (Instituto de Desarrollo Agropecuario)
MGA Mutual Guarantee Associations
NIS National Innovation System (Sistema Nacional de Innovación)
OECD Organization for Economic Cooperation and Development
PAG Management Assistance Program (Programa de Asistencia a la Gestión)
PDP Supplier Development Program (Programa de Desarrollo de Proveedores)
ProChile Export Promotion Office (Dirección de Promoción de Exportaciones)
PROFO Network Development Projects (Proyectos Asociativos de Fomento)
PSD Private Sector Development
PTI Integrated Territorial Programs (Programas Territoriales Integrados)
R&D Research and Development
SAG Soil Conservation Recovery Incentives System (Sistema de Incentivos para la Recuperación de Suelos Degradados)
SBA Small Business Administration of the United States
SENCE National Training and Employment Service (Servicio Nacional de Capacitación y Empleo)
SEP Public Enterprise System (Sistema de Empresas Públicas)
SERCOTEC Technical Cooperation Service of Chile (Servicio de Cooperación Técnica de Chile)
SERLAC Regional Planning and Coordination Secretariat (Secretaría Regional de Planificación y Coordinación)
SERNAPESCA National Fisheries Service (Servicio Nacional de Pesca)
SME Small and Medium Enterprise
TFP Total Factor Productivity
UNCTAD United Nations Conference on Trade and Development
UF Currency Adjustment Unit (Unidad de Fomento)

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EXECUTIVE SUMMARY

I. INTRODUCTION

The purpose of this study is to review the portfolio of development programs run by the Chilean Government supporting small- and medium-size enterprises (SMEs). At the closing of 2001, the Government spent US$400-600 million annually of public resources on private sector support programs, mainly directed toward SMEs. While some programs have been successful, as a whole they have not provided the necessary incentives to convert the SME sector into a dynamic, innovative part of the Chilean economy capable of competing on world markets and generating significant employment opportunities. The study provides policy recommendations to reorient the strategy of Government support to SMEs more along the lines of successful programs in OECD countries, which encourage companies to transform themselves through improved networking among companies, technology adoption, and in-firm training.1

Chile has been one of the most successful developing economies in the world during the past 15 years, with an average annual GDP growth of 5.9 percent between 1990 and 2002. These impressive results are based on key reforms in export facilitation, competition policy, privatization of pension, health care, education services, the financial sector and capital markets, and are anchored by prudent, disciplined fiscal and monetary policy. However, Chile’s economy is vulnerable to external shocks, as seen during the downturn after 1998 due to the crises in Russia, Brazil, Turkey and Argentina, when GDP growth declined and the unemployment rate doubled from just over 5 percent to nearly 10 percent. A vibrant, competitive SME sector can become an important pillar of Chile’s economy, helping the country regain high levels of growth and acting as a source of more and increasingly better-paid jobs.

To make a major step forward will take more than refinements on the margins. International benchmarking shows that Chile needs to redefine its approach in four ways:

a. Reorient the Government’s SME support to emphasize improved productivity and greater integration into national and world markets.

b. Streamline the Government’s portfolio of SME support programs with better coordination and strong leadership by the Ministry of Economy.

c. Implement a comprehensive results-based tracking system of all SME programs, to provide information (currently lacking) on the successes and drawbacks of different programs, to allow the reallocation of resources based on the effectiveness of the programs.

d. Promote a more coherent national innovation system that more closely links research, the education system and the private sector to foster technological innovation and better-trained workers and managers.

Chile has made great strides in supporting SMEs, and the high level of support for the sector exemplifies the Government’s commendable long-term approach to economic development. However, while elements of SME support are efficient and effective, the system as a whole is insufficiently coordinated, with duplication of services, and lacks key incentives to promote change in the ways companies operate. Reforming the SME support framework offers the opportunity to save

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1 In this study, the term “OECD” refers to the more developed members (including most European members, Canada, the United States, Australia, New Zealand and Korea). In general, the term is not used to refer to other OECD countries, such as Poland, Mexico, Greece and Turkey.
significant budgetary resources and to dramatically increase the impact of the resources that are dedicated to this sector.

This introductory section describes the principal constraints to improved SME efficiency, followed by a brief discussion of the rationale for government intervention in the sector. The second section reviews the strengths and weaknesses of Chile’s main SME support programs and offer specific suggestions to increase their impact, while the third section will lay out a new over-arching strategy for SME programs to stimulate growth and innovation in the sector.

A. Constraints to SME Efficiency

SMEs frequently find themselves in a low-level equilibrium trap, unable to raise productivity and efficiency due to a lack of basic understanding of key problems, erroneous actions following the wrong diagnosis, poor performance, and an inability to invest in productivity and knowledge-enhancing tools. Poorly designed SME programs can easily reinforce this vicious circle and be strongly counter-productive if they merely provide financing to allow uncompetitive companies to stay afloat, rather than providing incentives to changes and improve.

This report identifies three principal constraints to improved SME productivity:

- inadequate networking among companies to increase business opportunities and achieve economies of scale;
- insufficient in-firm training programs; and
- low levels of investment in technology.

International experience indicates that business linkages among SMEs and large companies in marketing, management, development, technology adoption, finances and design are key determinants of learning, innovation and productivity improvements. However, most Chilean firms in general, and SMEs in particular, work in isolation and lack solid business networks. The solid and dynamic national and international value chains, such as suppliers of exporters and large firms, are very important for SME development. In Chile, significant vertical integration is only found in wine production and fruit production sectors and certain segments of wood processing. Compared with other countries, Chilean SMEs have a limited level of integration through the supply and export chains, even among the more successful exporting SMEs. Indeed, only around 30 percent of firms have formal cooperation agreements with other firms.

SMEs could benefit from improvements in in-firm worker training. Chile’s culture of in-firm training is strong, reinforced by the relatively high level of education, but the outreach of available programs is weak. A study by Fundes Chile found that only about 20 percent of firms could identify at least one training support program. Analytical studies using cross-country comparisons and firm level time series data in specific countries have consistently concluded that firms that invest in human capital have higher levels of total factor productivity (TFP). In Mexico, for example, from 1993 to 1999, there was an increased investment in human skills development. At the same time, TFP increased from under 0.09 to 0.17 (Tan 2002). The gains from investments in worker training are amplified when changes in technology are involved, especially under open economy conditions. Foreign-owned firms are more likely to introduce new technologies, and to train workers. Exporting enterprises are more likely to invest in worker skills training and technology, given the pressures they face to remain competitive. Firms need to invest and innovate to remain competitive—and improving worker skills converts innovation into increased productivity.

As for technology investments, Chile lags behind more developed countries. According to official figures of Chile’s National Council on Science and Technology (CONYCIT), Chile dedicates 0.7 percent of GDP to research and development, compared to over 2 percent in OECD countries. And of this amount, the private sector contributes only about 25 percent of the total, compared to between 40

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2 See World Business Environment Surveys.
and 70 percent in OECD countries. Chilean firms typically cite factors such as time, cost, absorptive capacity, and technical expertise as the constraints they confront. Other factors appear to be the level of competition in a sector, the effectiveness of innovation-related institutions, relationships among producers, subcontractors and clients, and the overall level of education of the population. Technology adoption has a particularly dramatic impact when linked to worker training and education: a 1 percent increase in education in the region is associated with a 5.8 percent increase in TFP in low research and development (R&D) sectors, and a 10.9 percent increase in high R&D sectors (Schiff and Wang 2002).

While access to credit is a problem for some SMEs, financing is not a binding constraint on the development of the sector as a whole. Compared to SMEs in other countries, Chilean SMEs have a high rate of access to credit from financial institutions. A high percentage of small and medium businesses hold at least one kind of indebtedness with the financial system, a fact that places Chilean SMEs in a situation comparable to that of SMEs in the most developed countries of the world. In 2000, 62 percent of small firms and 72 percent of medium firms had access to formal sector credit. Informed observers agree that there are adequate resources for innovative business—what is lacking is a critical mass of attractive projects and well-trained managers to bring them to market.

B. Constraints Result in Low Productivity and Lack of Dynamism

As a result of the constraints noted above, labor productivity of small companies is two to four times lower than that of large companies. This is true whether productivity is measured in terms of number of employees or gross value of production. Similar differences have been observed for capital efficiency. SMEs require more working capital as a percentage of total sales than the large companies. This affects their unit costs and level of productivity.

SMEs are, on average, less efficient than larger firms, due to increasing returns to scale in most sectors and the lack of business networking among SMEs to achieve adequate scale. The average efficiency of smaller firms is below the production possibility frontier, controlling for scale effects. Because of their average low levels of efficiency, SMEs do not adjust well to changing economic conditions, compared to other firms. SMEs are less vibrant during economic growth spurts and appear more vulnerable to shocks. In 1996, the SME growth rate lagged micros and large firms during a period of economic growth. Yet in 1999, when a recession occurred, SMEs sales dropped 5.7 percent, a larger decline than that suffered by micros (2.1 percent) and large firms (3.8 percent).

Addressing these problems is critical—SME efficiency is a key factor in growth and jobs creation. The SME and formally registered micro business sectors (not including self-employment or subsistence level firms) account for 77 percent of employment by the private sector and 99 percent of total number of firms. However, SMEs and formal micro businesses only generate 23 percent of sales and have an extremely limited direct participation in the dynamic export sector. Further, although SMEs are growing in number, the last seven years have seen a drop in the share of the number of firms, employment, sales and exports.

The technical efficiency of SMEs is central to the debate about the role of small-scale industries in economic development. SMEs are unlikely to be important sources of growth and employment generation if they are relatively inefficient, with limited ability to compete, survive and grow into larger firms.

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3 Berger, A. Et al. (1998) report that based on 1993 data – in the USA only 54.2% of small businesses have any type of credit with a financial institution.

4 This subject was stressed in interviews with angel investors, who cannot participate in more projects due to time, cost and staffing constraints, particularly at the investment management stage.

II. CHILE’S SME PROGRAMS: NOT GETTING THE DESIRED RESULTS

Despite very significant Government interventions to make financial, marketing, management, and technology services available to SMEs in Chile, the importance of SMEs in the national economy is relatively small and decreasing, which suggests that existing SME support framework is not successfully promoting change and growth in the sector.

The principal drawback to Chile’s SME strategy is that, unlike similar programs in OECD countries, it focuses on socially-oriented and operational instruments—basically, supplying resources to keep companies running that might otherwise fail—instead of offering incentives and technical support to transform themselves. Chilean programs are less oriented toward structural changes, which promote SME productivity improvements. The Chilean portfolio of programs also lacks the coordination, common goal and internal consistency, compared to approaches in Australia, Ireland, and Scotland.

Another area where OECD countries have been effective in supporting SMEs is in cluster and network development. The focus of OECD networking efforts has been for the government to serve as a catalyst, with a limited resource contribution and a timeframe of three to four years. Private sector leadership is essential, and a low-risk early return approach helps to build the firms’ commitment to the network. It is important to create a mechanism to terminate an initiative, if early results are poor or the private sector’s interest drops off. Finally, these networking initiatives should not be used to “introduce distortionary industrial policy intended to target ‘national champions’ [or] ‘sunrise sectors’.”

The Chilean Government’s investment in one networking instrument—Proyectos Asociativos de Fomento (PROFOs)—has paid off handsomely, but the effects of other networking efforts are less convincing. The PROFO model has produced significant results in productivity and profitability. A recent evaluation by the University of Chile identifies the positive impact that these instruments have had on the member companies, in the short and long term. Companies that participated in PROFOs increased their annual sales by 12.9 percent between 1996 and 1999, while similar companies in a control group registered a reduction of 2.1 percent in sales during the same period. The PROFO system is also noteworthy because it offers one of the few independent evaluations with panels and control groups in the government’s portfolio of private sector support programs.

Three institutions provide most government services to SMEs and their performance has varied significantly. The three institutions are: Corporación de Fomento de la Producción (CORFO), Instituto de Desarrollo Agropecuario (INDAP) and the Servicio de Cooperación Técnica de Chile (SERCOTEC).

- CORFO, created in 1939, is a leader in Latin America in credit and guarantee schemes for the private sector, targeting SMEs through alliances with commercial banks and private technical assistance agents. CORFO activities are shaped by market demand and by the principle that it should only intervene when a clear market failure exists. CORFO covers a wide range of sectors and is not targeted to any specific geographic area.

- INDAP is intended to contribute to the development of small agricultural producers and families and rural producer organizations, and integrate them into the national economy. INDAP offers training, provides credits, supports environmental conservation, and encourages business networking among agricultural producers.

- SERCOTEC, a public agency set up to run like a private corporation, has the objective of providing services to increase micro and small firms’ sales, their competitiveness, and managerial capacities. SERCOTEC has developed innovative services for non-

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agricultural micro-businesses. SERCOTEC designs and executes its own programs, and also acts as an agent for some CORFO programs.

A. CORFO IS A REGIONAL LEADER, BUT COSTS AND BENEFITS ARE NOT SYSTEMATICALLY MONITORED

CORFO’s financial base – the income of the state enterprises it controls – raises issues about how to streamline management for a more accurate picture of the costs and benefits of CORFO’s private sector programs. CORFO’s Council manages Sistema de Empresas Públicas (SEP), which includes mining, coal, mail, wheat marketing, railroads, and oil companies. A separation of the administration of the SEP might yield better results in both state enterprise performance and private sector programming. However, any discussion of the separation of these functions should take into consideration the need to ensure sufficient resources for CORFO’s valuable technical assistance and financial services operations.

Decentralization of certain functions would help CORFO standardize its activities and lower administrative expenses. The main obstacle to this is the set of restrictions imposed by the Controlaría General concerning the delegation of administrative tasks. Any move to decentralize such functions would have to be negotiated in light of the existing requirements. Strategic functions that do not lend themselves to standardization include region-specific strategies, impact evaluations, good practice development and dissemination. The links between the ProChile program and regional development illustrates how such integration can benefit programs in terms of outreach and financing (half of ProChile’s budget comes from the National Fund for Regional Development).

CORFO’s intermediation model, using agents to implement its programs, has generated savings and led to innovative approaches, but also has important limitations. Most of the experts and government officials interviewed agreed that the system has increased CORFO’s outreach substantially without increasing administrative costs. However, agents tend to limit their work to more standardized functions, and do not contribute to the strategic side of CORFO operations. There have also been complaints that agents offer what they know, but this may not always be what the business needs to become more efficient or profitable.

B. INDAP: CHANGING THE VISION FROM RETAIL TO WHOLESALE, WITH EXCEPTIONS IN MARGINAL REGIONS

INDAP’s performance as a first tier (that is, retail-level) financial institution has historically been poor. Key problems include a low quality loan portfolio, difficulties in developing credible contracts, a lack of competition, subsidized interest rates, heavy targeting of credit, and high administrative costs. Senior management is aware of these problems, and has begun to take actions to address them.

To better serve the estimated market of 279,000 agricultural producers, INDAP could take on a second tier role, in which it strengthens existing financial intermediaries and cooperatives with operations in agricultural areas. Financing for agricultural micro firms and SMEs possesses particular characteristics that must be taken into consideration both from the perspective of a cooperative or other financial intermediaries, such as banks. Intimate knowledge of the rural clients, their ability to generate profits in the face of cyclical commodity prices, their level of risk in normal times and under unusual circumstances are all required to be a successful lender to such clients. Cooperatives are membership-based local institutions, which under most circumstances already possess such knowledge of the crops, markets, and producers, meaning they are better positioned to act as the first tier financiers.

A precondition for reorienting INDAP to a second tier financial institution is that an adequate number of potential financial intermediaries with broad geographical distribution, and appropriate qualifications are present in the region. However, some regions do not have well-developed cooperatives or other financial intermediaries. Under such settings, there is no alternative
but to maintain a retail INDAP operation. Nevertheless, INDAP’s operations should be re-engineered to take advantage of knowledge generated by the increasing number of rural finance institutions in the world. At the same time, a medium term plan should be developed to foster first tier private financial institutions, through partnerships, management contracts or other mechanisms. INDAP should not be engaged in both first tier and second tier operations in the same region, since this opens the door to unfair competition and could undermine commercially oriented retail financial institutions.

C. SERCOTEC: ADDING BUSINESS ENVIRONMENT ADVOCACY TO PROGRAM DELIVERY FOR MICROS

This study found that some of SERCOTEC’s own initiatives overlapped with those CORFO programs already operated by SERCOTEC itself. SERCOTEC operates both as a public agency, designing and executing a number of its own programs, and as an intermediary for some of CORFO’s PSD programs. This signaled the need for SERCOTEC to revise the portfolio of programs it offers to its beneficiaries. It also stressed the need for a clear definition of SERCOTEC’s role among other institutions regarding the strategies for private sector development in the micro and small business sector. In response to this confused identity, SERCOTEC has recently undergone a process of strategic redefinition, which has enhanced the definition and attention of its target market.

SERCOTEC receives a relatively small budget for its micro and small business support operations. The government should reconsider its commitment to SERCOTEC in light of the vital employment role played by micro and small businesses (see Chapter 2). At the same time, SERCOTEC would benefit from greater independence, allowing it to move beyond its role as an agent for CORFO programs. SERCOTEC could also take on a greater role in defining policies for the sector.

III. REORIENTING THE PARTNERSHIP TO BUILD SME PRODUCTIVITY

The overall conclusion of this report is that the government is providing a great deal of assistance based on traditional approaches and in an uncoordinated way. To achieve better results, the Government should develop a new approach to SME support based on redrawing relationships and incentives, and streamlining the support program options. The role of the Chilean Government should be to promote linkages among SMEs themselves and between SMEs and large firms and the adoption by SMEs of technologies and innovative processes that can raise their productivity and competitiveness. Incentives should be reserved for those sectors that offer a long-term prospect for competitive production, but, due to industry-specific requirements would not naturally attract sufficient FDI. There should be clear limitations to the Government’s role, with greater “buy-in” from private sector firms and business associations.

This new approach would require strong coordination and decision making from the Ministry of Economy. The existing working group on SMEs could act as the forum to hold discussions and reach and enforce decisions. This report proposes specific policy recommendations in five general areas:

a. Streamline the portfolio of SME support programs
b. Redirect incentives to promote SME transformation
c. Implement a results-based tracking system for all SME programs
d. Improve public financing assistance to SMEs
e. Strengthen links between Chile’s national innovation system and the private sector
A. STREAMLINE THE PORTFOLIO OF SME SUPPORT PROGRAMS

In line with the Ministry of the Economy’s mandate to rationalize existing programs, this study proposes reducing the nearly 100 different interventions that exist currently to a portfolio of 30 grant and 13 credit programs. This meets requirements for legally mandated programs, and potentially represents an enormous reduction in overall administrative expenses. This portfolio was developed through the analysis described in detail in Chapter 4. The first analytical step was to identify duplications and eliminate the smaller programs. Those programs with very limited outreach, and those that did not target SMEs or formally registered micros, were also removed from the new program portfolio. Programs with high non-performing loan portfolios, large administrative expenses, and low budget use were also removed from the list. When possible, very similar programs were marked for merger.

There is a tension in the proposed portfolio between general support products with special lines for specific sectors, and a more sector-driven approach. While the general approach would be easier to promote and deliver in some ways, there are important advantages to be gained from focusing some programs on specific sectors (including fishing, mining, and agriculture, which are strategic industries for Chile).

B. REDIRECT INCENTIVES TO PROMOTE SME TRANSFORMATION

The project portfolio should be reoriented to invest more in transformational support to SMEs. While the portfolio should continue to include a select number of well-targeted socially oriented programs (to help marginal businesses survive and slowly build asset stocks) and operational support to SMEs (with a firm “graduation” criteria), “transformational” programs should represent the bulk of the portfolio and the investment in SMEs. These would support a qualitative as well as quantitative change in SMEs, in terms of the adoption of innovations, improved productivity measured by TFP and other quantifiable measures. The institutions managing the SME support programs should be able to differentiate between those sectors that need help to resolve networking or other problems, and those that can resolve them with no external input (such as wine and pharmaceuticals in the case of PROFOs).

To improve their potential, SMEs should be encouraged to adopt measures to reduce their unit costs and increase their productivity, innovation and quality. This should include investments to adopt new technologies, in-firm training, quality, packaging and labeling changes, and other adjustments. SMEs should be encouraged to “graduate” from most types of government-supported interventions within a reasonable period of time (three to four years). The Ministry of Economy should develop the capacity for ongoing international benchmarking with OECD countries in transformational types of SME support activities (networking, innovation and technology adoption, venture capital, angel capital).

To bring Chile up to the OECD standards for financial services facilities to SMEs, it would be useful to divide the credit program portfolio into three categories: socially oriented credit, operational credit, and transformational credit. A gradual shift from socially oriented to transformational credit programs, at least in the metropolitan region and more developed regions of the country is likely. In poorer regions of the country, credit should be mostly for operational purposes (expansion of existing product lines, for instance). Socially oriented credit should be replaced by asset building transfers targeted to people with potentially profitable projects and the necessary minimum level of productive skills. This two-pronged approach in poorer regions would not lead to unfair competition, subsidized credit, or other distortions in financial markets. Finally, innovations in leasing, factoring, guarantees and venture and angel capital should be pursued.

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7 For a detailed description of each PSD program, please refer to Almeyda and De la Barra (2002), in Annex B.
C. IMPLEMENT A RESULTS-BASED TRACKING SYSTEM FOR ALL SME PROGRAMS

An important limitation to any effort to reform the Government’s SME programs is the lack of an integrated information system with comparable indicators on program performance, whether in terms of cost-benefit analysis, impact evaluations or more clearly defined outreach and administrative expenses. Such a system would also enable firms to create a kind of credit and technical assistance history, enabling strong performers to attract the attention of financial institutions. The lack of such firm level tracking creates an incentive for dependence on government subsidies, rather than a “graduation” path as the firms overcome the constraints to higher productivity. The independent tracking system of PROFO, the only one of its kind in Chile, has been extremely useful in evaluating program results and could serve as a model to be expanded throughout the SME support programs.

An integrated information system would permit the Ministry of Economy to make performance-based comparisons and efficient allocation decisions. This would require standardized information collection at firm and institutional levels to compare the cost-benefit of each program. All institutions would have to move beyond anecdotal evidence to control groups, time series studies, and other statistically significant evaluation methods. Such a change would require a short-term increase in their budgets to develop the capacity to conduct the evaluations. This could also be achieved with independent evaluations (with evaluation capacity built within the Ministry of Economy or outsourced periodically with an experienced private firm).

The integrated information system could lead to a transparent method of rewards for efficient service delivery institutions (including both private agents and public sector agencies) that could demonstrate quantifiable firm-level results. For the public sector institutions (CORFO, INDAP and SERCOTEC), the annual programming and administrative budgets could be based largely on proven results and cost savings from streamlined systems—starting with real costs rather than budget allocations. Indicators could include (i) the actual number of clients served (rather than annual estimates); (ii) client satisfaction surveys; (iii) administrative efficiency; (iv) impact; and (v) overall fund coherence.

D. IMPROVE PUBLIC FINANCING ASSISTANCE TO SMES

Although lack of access to financing is not the most important constraint currently facing SMEs, the Government can make a number of improvements that will help increase the flow of resources to the sector.

Streamlining the Guarantee Fund for Small Businesses (FOGAPE)—which provides loan guarantees for micro and SMEs—would encourage more banks to participate. It would be important to quantify the value-added aspects of FOGAPE guarantees, to ensure that the government investment in FOGAPE becomes more than a convenient mechanism for banks to finance existing clients. Currently, many commercial banks appear to be using FOGAPE guarantees to hedge their SME risk at a relatively low cost. The ultimate measure of FOGAPE’s success would be an increased SME portfolio among commercial banks without the guarantee, after clearly defining the SME lending frontier with the guarantee.

Building on the example of BancoEstado, other commercial banks should be encouraged to develop specialized lending platforms. These platforms would have to include cost-sensitive client assessment and delivery mechanisms, but would be supported in the early stages by the FOGAPE guarantee. The development of this SME demand-driven product would require a significant amount of technical assistance in the market analysis and product development and testing stages.

The government could also support the lengthening of the maturity of commercial bank loans to SMEs by purchasing subordinated bonds with a quasi-equity character linked to SME lending. The quasi-equity feature would be attractive to commercial banks, allowing them to maximize the
leveraging aspects of this arrangement. These bonds could be issued by the participating banks at a premium linked to the channeling of funds to longer term projects presented by SMEs. In fact, CORFO carried out two of these operations in the past at a low cost and successful results in terms of the increase in operations with SMEs.\footnote{8}

E. STRENGTHEN LINKS BETWEEN CHILE’S NATIONAL INNOVATION SYSTEM AND THE PRIVATE SECTOR

It is important to move beyond the existing approach to a broader view of the role of the private sector in the national economy. An essential tool for this evolution is the national innovation system—the policies that support the academic and other institutions that generate much of a country’s research and technological innovation. Chile is a leader in scientific research, well respected internationally in a number of fields. However, the linkages between research and the private sector are lacking. And while innovation can be worthwhile for its own sake, business applications are much more important as a stimulus for economic growth. If firms do not integrate technological innovation into their business plans, the multiple activities of the public sector to create an intensive knowledge-based economy will be ineffective. Moreover, the resources assigned to science and technology may not produce the desired results, because of the lack of concrete applications or relevance. Innovative technologies with business applications promise much more, in terms of a modern economy, significant jobs creation and increased exports.

Three principal factors limit national innovation—low levels of education in reading and mathematics, a very small investment rate in applied technology, and an even lower commitment to technology investment by private firms. To overcome these limitations, Chile should consider establishing a five- or 10 year action plan to encourage technological development, as many of its competitors have. These exercises include broad consultations with national and international experts and with active private sector and university participation, with real strategic agreements that establish a diagnostic and propose a set of measures to be implemented over time. They have been driven by an integrated and macro level approach to innovation, limited resources and the need to generate a minimal critical mass to obtain relevant research and development results. Examples in Ireland, New Zealand and the United Kingdom offer models that Chile could learn from in this area.\footnote{9}

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\footnote{8}{See Foxley, J. (1998) and Held, G. (1999).}
\footnote{9}{This effort is coordinated by: FORFAS in Ireland; the Ministry of Science and Technology in New Zealand and the Department of Trade and Industry (DTI) in the United Kingdom.}
CHAPTER 1: JUSTIFYING INTERVENTION IN SME MARKETS

1.1 The purpose of this study is to provide the Government of Chile with a review of the portfolio of small and medium enterprise development programs and the institutions that provide them, leading to recommendations to improve the effectiveness of a streamlined portfolio. This emphasis is important for economic reasons, given the sector’s role in employment, and the possibility of improving its integration into the national economy and export-oriented production and marketing chains. However, this analysis also identifies areas where SMEs can more effectively leverage Government programs to become more productive, efficient, and innovative. The analysis is based on interviews with key policymakers, managers and other staff of the Government institutions responsible for most of the programs, secondary reports, discussions with small business managers, business association leaders, academicians and financial intermediaries.

1.2 The report is organized as follows: The present chapter reviews the evolution of the macroeconomic and business environment in Chile, and provides the theoretical arguments upon which the government’s intervention in favor of SMEs has been based. Chapter 2 examines the characteristics of the SME sector, as well as key determinants of SME productivity and growth. Chapter 3 describes the obstacles to SME development, such as constraints to financial resources. This chapter also compares Chilean venture capital markets with international experiences. Chapter 4 recommends a streamlined portfolio of private sector assistance projects and provides an institutional analysis of CORFO, INDAP and SERCOTEC. Chapter 5 focuses on programs that promote innovation, technology and networks. Finally, Chapter 6 offers strategic and operational recommendations to improve the effectiveness of the Government’s investment in SME programs.

1.3 Chile has developed an enviable macroeconomic situation, due to a pattern of fiscal reforms and monetary discipline. The country is one of the leaders in Latin America in economic growth, having implemented a series of structural reforms over the past 15 years. From 1984 to 1998, the annual Gross Domestic Product (GDP) growth rate ranged from 5 percent to 12 percent, with an average of 7.7 percent. Even in the face of external shocks in the region from 1999 to 2003, Chile maintained a positive growth rate, (except 1999). As Figure 1.1 shows, the rate of growth outpaced the OECD high-income countries. Such strong growth can be attributed to a strong fiscal and monetary discipline, a relatively developed financial system, modern institutions, and a supportive business environment. First and second generation reforms focused on export facilitation, competition policies and regulations, the privatization of the pension, health and education systems, using social policies to target extreme poverty and a reduction of the role of the State in the economy.10

1.4 These features have made Chile an attractive country for international financial markets, and a reference point for successful structural reform for the region.11 Chile has outpaced the Latin American and OECD countries in attracting foreign direct investment (FDI). The annual growth rate of FDI has remained above 4 percent since 1994, peaking at 12 percent in 1999 (see Figure 1.2).

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Figure 1.1 Chile’s Annual GDP Growth was impressive in the 1990s


1.5 Another characteristic of Chile’s economy is the success with which it has exported products such as wine and pharmaceuticals. The ratio of exports to GDP increased up to 30 percent per year, far superior to the levels of comparable countries. Figure 3 highlights the evolution of this export-oriented economy from the mid-1970s to 2000.

1.6 Chile’s export-based approach left it vulnerable to external shocks. Between 1998 and 2002, when a series of external shocks and a recession struck the region (including Brazil, Argentina and the United States), Chilean annual growth fell to an annual average of 2.6 percent. This was a dramatic decline from the 7.6 percent annual average growth achieved between 1993 and 1997. This situation reached a critical level in 1999, when the growth rate registered a negative level (-1.1 percent) for the first time since 1983. Likewise, the unemployment rate reached 9.9 percent, a sharp increase from the 5.3 percent annual average recorded between 1990 and 1998. While, economic recovery in 2002 has been relatively fast, and moderate growth (3.2 percent for the first ten months), it is worrisome that unemployment has held steady at historically high rates in 2003.

1.7 Despite the vulnerability, Chile’s remarkable economic growth has led to significant reductions in poverty and improvements in social indicators. Income poverty dropped by more than half, from about 40 percent of the population in 1987 to 17 percent in 1998. By the end of the 1990s, only 4 percent of the total population was indigent. Life expectancy and infant mortality rates had reached OECD levels, and participation in primary education was almost universal. A recent World Bank report on poverty in Chile confirmed that economic growth was the main determinant of poverty reduction, responsible for 73 percent of the observed decline in poverty in the country between 1987 and 1998.

12 A large share of Chilean exports are natural resource-based products, such as mining, foods and other agriculture and livestock products. These categories amount to 80 percent of total exports in 2000 (World Development Indicators, World Bank).


1.8 **The missing element to renewed strong growth in Chile is a new series of reforms.** Experts point out that Chile is losing its earlier advantage because other countries have implemented similar first and second-generation open economy reforms. As a result, they argue for the need for a third generation of reforms. This includes institutional reforms that would, among other things: (i) improve labor market flexibility; (ii) create a training certification system to stimulate private sector investment in worker training; (iii) result in increased accountability in education; (iv) clarify responsibility in government for the promotion of participation in the free trade agreements; (v) improved regulations for the food processing sector to meet import requirements established by the United States, Europe and Japan; and (vi) eliminate conflicts of interest and discretionary use of confidential information in the stock market.\(^{15}\)

**THE BUSINESS ENVIRONMENT**

1.9 **The Business Environment is not as supportive as those in OECD countries.** In spite of remarkable advances achieved by successive administrations, the Chilean business environment is characterized by relatively high administrative burdens, an extensive role for government ownership and investment, and significant tariff and trade restrictions. A key aspect of Chile’s public policy agenda is to improve the business environment through deregulation, regulatory framework improvements, enforcement mechanisms, and institutions that promote competition and enforce antitrust regulations. According to the OECD, Chile’s regulatory system and the level of administrative restrictions affecting production and markets are similar to other emerging economies (Czech Republic, Hungary, Mexico, Turkey, Poland, Korea, Mexico and Slovakia).\(^{16}\) The Chile Pro-Growth Agenda has tried to address the relatively high degree of regulatory and administrative inflexibility. Specifically, this has been done through the introduction of reforms such as one-stop business service centers and the enforcement of Law Nº 19,880 of May 2003 on Basic Administrative Procedures, which establishes terms for administrative procedures.

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\(^{15}\) Expert commentary provided by Eduardo Bitran, Executive Director, Fundación Chile, Feb. 2004.

\(^{16}\) OECD (2003)
1.10 Even though Chile fares remarkably well in most international comparisons on administrative burdens and barriers, the role of government remains large. Table 1.1 provides an international benchmarking along four axes: (i) government ownership and involvement in business; (ii) administrative burdens; (iii) tariff and trade restrictions; and (iv) the regulatory framework for competition. In general, the Chilean Government is more heavily involved in business operations and price controls than comparable OECD and emerging market countries. Administrative burdens are higher and there is a lack of regulatory and administrative flexibility. In terms of tariff and trade restrictions, Chile compares favorably for ownership barriers, but has very high regulatory barriers, a significant level of discriminatory procedures, and slightly higher barriers to trade and investment than OECD and emerging market countries.

1.11 Reforms have contributed to improved bankruptcy procedures, strong protection of creditor rights, and the openness of natural markets. An international study (de La Porta et. al., 1998) found that the Chilean legal framework provides strong protection for shareholders and creditors and clearly defines property rights and contract performance. However, according to the different indicators used by the Doing Business Report of the World Bank (2003), Chile occupies an intermediate position on contract performance compared to developed countries and relatively better than that of other Latin American countries, such as Mexico and Brazil.

1.12 Creditors are well protected, but contract enforcement costs are relatively high. Contract problem resolution in Chile takes about 200 days, which contrasts very positively with the more than 300 days required in Canada, Brazil, the United States, Mexico, and Australia. Similarly, the index of creditor rights in Chile is equivalent to Spain, and higher than levels in Mexico, Brazil, Canada, and France. However, creditor rights are better protected in Germany, Australia, New Zealand, and the United Kingdom. The cost of contract problem resolution through court proceedings is much higher in Chile, in terms of percent of GDP per capita, than in the rest of the countries in Table 1.2.

Figure 1.3 The Export Sector has Out-performed Upper Middle Income Countries (goods and services as % of GDP)

Table 1.1 Some Trade and Competition Regulations (comparison between Chile and OECD Countries)
(Scale: 0 represents a very low level, while 6 is a high incidence)

<table>
<thead>
<tr>
<th>GOV'T OWNERSHIP AND INVOLVEMENT</th>
<th>Chile</th>
<th>Emerging Markets (1)</th>
<th>Mexico</th>
<th>EU-15</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>State control</td>
<td>2.1</td>
<td>3.0</td>
<td>1.7</td>
<td>2.4</td>
<td>0.9</td>
</tr>
<tr>
<td>Public ownership</td>
<td>1.7</td>
<td>3.4</td>
<td>1.7</td>
<td>2.3</td>
<td>0.8</td>
</tr>
<tr>
<td>Size of public enterprise sector</td>
<td>1.5</td>
<td>2.5</td>
<td>1.4</td>
<td>1.9</td>
<td>0.0</td>
</tr>
<tr>
<td>Involvement in business operations</td>
<td>2.7</td>
<td>2.4</td>
<td>1.7</td>
<td>2.4</td>
<td>0.9</td>
</tr>
<tr>
<td>Price controls (2)</td>
<td>2.0</td>
<td>1.2</td>
<td>1.3</td>
<td>1.2</td>
<td>0.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADMINISTRATIVE BARRIERS</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Barriers to entrepreneurship</td>
<td>2.3</td>
<td>2.0</td>
<td>1.7</td>
<td>1.8</td>
<td>1.3</td>
</tr>
<tr>
<td>Regulatory and administrative opacity</td>
<td>3.5</td>
<td>2.2</td>
<td>2.3</td>
<td>1.9</td>
<td>2.1</td>
</tr>
<tr>
<td>License and permits system</td>
<td>4.0</td>
<td>3.0</td>
<td>4.0</td>
<td>2.9</td>
<td>4.0</td>
</tr>
<tr>
<td>Communication and simplification of rules and procedures</td>
<td>3.1</td>
<td>1.2</td>
<td>0.5</td>
<td>0.8</td>
<td>0.0</td>
</tr>
<tr>
<td>Administrative burdens on start-ups</td>
<td>2.2</td>
<td>2.2</td>
<td>1.8</td>
<td>2.1</td>
<td>0.8</td>
</tr>
<tr>
<td>Administrative burdens for corporation</td>
<td>2.3</td>
<td>2.7</td>
<td>2.1</td>
<td>2.3</td>
<td>0.5</td>
</tr>
<tr>
<td>Administrative burdens for sole proprietor firms</td>
<td>4.0</td>
<td>2.1</td>
<td>1.6</td>
<td>2.1</td>
<td>1.3</td>
</tr>
<tr>
<td>Sector specific administrative burdens (3)</td>
<td>0.6</td>
<td>2.1</td>
<td>1.6</td>
<td>1.9</td>
<td>0.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TARIFF AND TRADE RESTRICTIONS</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Barriers to trade and investment</td>
<td>2.7</td>
<td>2.5</td>
<td>2.2</td>
<td>0.7</td>
<td>0.9</td>
</tr>
<tr>
<td>Explicit barriers</td>
<td>1.5</td>
<td>2.8</td>
<td>3.1</td>
<td>0.9</td>
<td>1.3</td>
</tr>
<tr>
<td>Ownership barriers</td>
<td>0.0</td>
<td>2.6</td>
<td>2.7</td>
<td>0.3</td>
<td>2.2</td>
</tr>
<tr>
<td>Discriminatory procedures</td>
<td>2.3</td>
<td>2.0</td>
<td>1.4</td>
<td>0.6</td>
<td>0.3</td>
</tr>
<tr>
<td>Tariffs</td>
<td>3.0</td>
<td>3.7</td>
<td>5.0</td>
<td>2.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Other barriers</td>
<td>4.3</td>
<td>2.0</td>
<td>1.1</td>
<td>0.4</td>
<td>0.3</td>
</tr>
<tr>
<td>Regulatory barriers</td>
<td>5.3</td>
<td>1.7</td>
<td>0.3</td>
<td>0.2</td>
<td>0.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REGULATORY FRAMEWORK FOR COMPETITION</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic regulation</td>
<td>1.9</td>
<td>2.5</td>
<td>1.5</td>
<td>2.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Regulation of economic structure</td>
<td>2.0</td>
<td>2.7</td>
<td>1.7</td>
<td>2.1</td>
<td>1.0</td>
</tr>
<tr>
<td>Regulation of economic behavior</td>
<td>2.5</td>
<td>3.1</td>
<td>1.8</td>
<td>2.7</td>
<td>1.2</td>
</tr>
<tr>
<td>Regulation of competition</td>
<td>1.0</td>
<td>1.4</td>
<td>0.7</td>
<td>1.0</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Data for Chile take into account the state of the legal framework in May 2003 and for the other countries, 1998.
(1) Emerging markets: Czech Republic, Hungary, Korea, Mexico, Poland, Turkey; (2) Includes sector specific information on road freight, air transport, retail distribution and some telecom services; (3) Exemptions to public enterprises and state-mandated actions only. Source: OECD 2003
Table 1.2  In Chile, contract resolution is relatively expensive and complex

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of Procedures</th>
<th>Duration (days)</th>
<th>Cost (% GDP per capita)</th>
<th>Procedural Complexity Index</th>
<th>Creditor Rights Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chile</td>
<td>21</td>
<td>200</td>
<td>15.0</td>
<td>73.0</td>
<td>2</td>
</tr>
<tr>
<td>Brazil</td>
<td>16</td>
<td>380</td>
<td>2.0</td>
<td>48.0</td>
<td>1</td>
</tr>
<tr>
<td>Mexico</td>
<td>47</td>
<td>325</td>
<td>10.0</td>
<td>62.0</td>
<td>0</td>
</tr>
<tr>
<td>Australia</td>
<td>11</td>
<td>319</td>
<td>8.0</td>
<td>29.2</td>
<td>3</td>
</tr>
<tr>
<td>Canada</td>
<td>17</td>
<td>421</td>
<td>0.7</td>
<td>31.3</td>
<td>1</td>
</tr>
<tr>
<td>France</td>
<td>21</td>
<td>210</td>
<td>3.8</td>
<td>84.7</td>
<td>0</td>
</tr>
<tr>
<td>Germany</td>
<td>22</td>
<td>154</td>
<td>6.0</td>
<td>61.1</td>
<td>3</td>
</tr>
<tr>
<td>Ireland</td>
<td>16</td>
<td>183</td>
<td>7.2</td>
<td>42.4</td>
<td>1</td>
</tr>
<tr>
<td>New Zealand</td>
<td>19</td>
<td>50</td>
<td>11.6</td>
<td>36.8</td>
<td>4</td>
</tr>
<tr>
<td>Spain</td>
<td>20</td>
<td>147</td>
<td>10.7</td>
<td>82.6</td>
<td>2</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>12</td>
<td>101</td>
<td>0.5</td>
<td>41.8</td>
<td>4</td>
</tr>
<tr>
<td>United States</td>
<td>17</td>
<td>365</td>
<td>0.4</td>
<td>45.8</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Doing Business, World Bank

A PROFILE OF CHILE’S SMES

1.13  SMEs are different from larger firms in a variety of ways—such as the efficiency of their strategic planning, the depth of market contacts and the resource base they command. Another important difference is in the objectives of an SME operator, which can range from survival in the marketplace to maintenance of jobs, following the family business tradition, or maximizing profits. For larger firms, maximization of profits tends to be the only motivation. Of particular importance are those factors that affect to a greater extent SMEs’ unit costs and costs of transaction and logistics. These realities are the basis for the Chilean practice of providing explicit subsidies and special treatment to SMEs.

1.14  Productivity levels, the use of different factors of production, and the impact of regulations tend to vary substantially with the size of the firm. These differences can have an impact on the prospects for growth and development of SMEs. The majority of studies that evaluate the productivity of manufacturing firms consistently show that the labor productivity of the large companies is two and four times higher than that of small companies, as measured in terms of number of employees and gross value of production (Little, Mazumdar and Page 1987, FIEL 1996, Kosacoff 2000, Batra and Tan 2003). Similar differences have been observed for capital efficiency. SMEs require more working capital as a percentage of total sales than the large companies. This affects their unit costs and level of productivity. The case of Argentina, presented in the Table 1.3, illustrates the differential impact of the factors according to the size of the company.

1.15  As clearly indicated by recent evidence from a large number of countries, the solid and dynamic national and international chains of value, such as suppliers of exporters and large firms, are very important for SME development. Compared with other countries the Chilean SMEs have a limited level of integration through the chain of supply and export, even among the more successful exporting SMEs. Indeed, only around 30 percent of the firms have formal cooperation agreements with other firms.
Table 1.3 SMEs in Argentina are less integrated and face higher logistics costs

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organized as</td>
<td>Owner</td>
<td>Sociedad Anónima</td>
<td>Sociedad Anónima</td>
</tr>
<tr>
<td>Average age of manager</td>
<td>28 year</td>
<td>38 years</td>
<td>57 years</td>
</tr>
<tr>
<td>Subcontracted sales as % of total</td>
<td>4.5%</td>
<td>9.5%</td>
<td>52%</td>
</tr>
<tr>
<td>% firms operating with bank loans</td>
<td>76%</td>
<td>86%</td>
<td>98%--</td>
</tr>
<tr>
<td>Average annual rate on bank credit</td>
<td>&gt;25%</td>
<td>&gt;23%</td>
<td>12%</td>
</tr>
<tr>
<td>Informality (% unregistered employees)</td>
<td>70%</td>
<td>32%</td>
<td>10%</td>
</tr>
<tr>
<td>Costs of transaction (% of sales)</td>
<td>15%</td>
<td>7%</td>
<td>1%</td>
</tr>
<tr>
<td>Logistics Costs (% of sales)</td>
<td>35%</td>
<td>26%</td>
<td>15%</td>
</tr>
<tr>
<td>Investment in R&amp;D</td>
<td>0.3%</td>
<td>1.5%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Sources of Technical Support</td>
<td>Clients and suppliers</td>
<td>Clients and suppliers</td>
<td>Providers and other sources</td>
</tr>
<tr>
<td>Basis of Initial Development</td>
<td>Previous experience</td>
<td>Experience and access to new technology</td>
<td>Access to new technology</td>
</tr>
</tbody>
</table>

Source: FIEL (1996, 2001) and World Bank estimates

1.16 There is evidence that such factors as limited information, high labor rotation and imperfect capital markets represent important obstacles to the training provided by the employers, mainly of SMEs. Many of these same obstacles are related to other decisions regarding training, investments in new technology and use of quality control methods and adoption of performance-based labor practices. The resulting low efficiency limits the contribution that SMEs can make to economic growth and employment generation. This argument indicates the need to identify deficiencies in the market and coordination and would justify governmental action, through selective interventions destined to promote business ties, innovation, training and various aspects of businesses development (as in case of technology improvement and new forms of organization of work) and thereby improve the SMEs’ productivity.

WHY AND WHEN TO INTERVENE IN FAVOR OF SMES

1.17 The argument in favor of government intervention is based on the existence of market deficiencies or government obstacles that adversely affect the SMEs. Other arguments consider the impact of these firms on employment and poverty. Despite the validity of some of these arguments, many of these justifications for production promotion based on the size of the firms do not have sufficient theoretical backing.

1.18 Institutional issues and public policy influence some of the factors that explain the distribution of the size of the firms and the differences between SMEs and large companies. Accordingly, they support an economic rationale for intervention. In particular, these factors are related to costs of transaction, distortions, segmentation of labor markets (due to institutional rigidity), degrees of competition, and the businesses climate, among others.  

1.19 On the other hand, there are factors related to public goods and externalities, as is the case with information and business coordination, and the development of networks of companies, start-up of companies that merit intervention. It should be emphasized that factors related to economies of scale remain outside the public policy arena. As to equity arguments, they are based on the impact of SMEs on employment, poverty and equity. More concretely five areas can benefit from direct government intervention in the SME sector:

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17 The theory of industrial organization (Tirole 1986, y Guasch 1986, among others) set forth by Acs, Carlsson, y Karlsson (1999), emphasizes three principal groups of factors: (i) market power, segmentation and distortions in input and product markets; (ii) technical efficiency, that determines the minimal scale of efficient operations; and (iii) economies of scale that affect the capacity of a firm to respond to external and internal shocks.
(i) **Deregulation and improvement of the business environment** where the justification for interventions in support of SMEs are based on market and institutional deficiencies that skew the distribution of firm size, and not in the inherent economic benefits provided by small firms. Several studies suggest that the business environment is the most important determinant of competitiveness and growth of the SMEs. Consequently, the principal role of the State is to provide a businesses environment that opens access to markets and reduces the institutional biases that affect the SMEs. The reforms necessary for improving the business environment are not limited to macroeconomic and structural adjustments, but they imply the minimization of macroeconomic and institutional obstacles that affect small businesses and reduce their competitive strength.\(^{18}\)

(ii) **Access to innovation and technology**. Although this argument applies to all firms, its impact is particularly significant for SMEs given their inability to face risks and the uncertainty of the investments. A variety of market deficiencies affect the generation and assimilation of innovation and inhibit the optimal level of participation and private investment, strengthening arguments in favor of government intervention to resolve these market failures. According to this point of view, the market by itself cannot induce adequate levels of investment for innovation or the optimal development of technological capabilities. Accordingly, the government should play a more active role in the correction of market deficiencies and in designing the necessary incentives so that the firms adopt efficient decisions.\(^{19}\)

1.20 The recognition that the process of procurement and dissemination of knowledge is plagued by market deficiencies and coordination points to the importance of public intervention to ensure the socially optimal level of innovation. Among others, the principal market deficiencies associated with innovation are:\(^{20}\)

(i) **Knowledge is a quasi-public good that cannot be completely controlled by the firms that create it.** The firms that make the investment cannot always keep to themselves the resulting benefits, since knowledge cannot be possessed exclusively. In many ways, their closest competitors are the ones who stand to benefit the most from such investments. In the end, the firms are not sufficiently compensated for their investment and opt not to invest further;

(ii) **Knowledge and innovation generate significant positive externalities:** where the social rate of return is frequently almost three times higher than the private rate of return;\(^ {21}\)

(iii) **Investments in research and development (R&D) are hazardous and long-term.** The open markets of Latin America do not usually provide the instruments nor the structure with adequate terms to finance R&D, particularly in the case of SMEs;

(iv) The process of innovation implies the coordination of various agents, which is expensive and subject to deficiencies of coordination and “free rider” behaviors. In view of the fact that the benefits of the coordination usually are not exclusive, the incentives to assume the task are very limited; this particular case happens in the linkage between different firms and the linkage between firms and universities;

(v) Dissemination is not an automatic result of innovation, since no individual agent has incentives to disseminate knowledge broadly and rapidly after which it can be used by anyone else, including direct competitors;

\(^{18}\) On the business environment, see Levy (1994); On Donor Committee Guidelines for SME policies, see Hallberg (2000)  
\(^{19}\) De Ferranti et. al. (2002)  
\(^{20}\) See Martin y Scott (2000)  
\(^{21}\) Griliches (1992)
The phenomenon of non-existent markets occurs as a result of transaction costs and deficiencies of coordination, where, for example, there are no markets for scientific applications given the lack of scientific knowledge in the private sector and the lack of productive knowledge on the part of the scientists.

Association and development of networks. Additional arguments in favor of assistance to SMEs are based on externalities, complemented by association and development of networks, innovation, the deficiencies of coordination and "free rider" behaviors present in the formation of consortia (among firms and between firms and universities), integration in production and in the development of clusters and business networks. Moreover, these arguments are based on the capture of economies of scale and spillover effects facilitated by these schemes.

Training. High staff turnover suggests that there exist externalities in the provision of training on the part of the companies. Firms cannot fully or exclusively take advantage of the benefits of the training in which they invest, since easy mobility of labor means that the trained workers can be easily hired by other firms. This causes under-investment in training. Many countries, both advanced and developing, have implemented different policies designed to promote in-house training, either through tax incentives or subsidies for specific training.

Access to credit. Government support to the SMEs in financing is a delicate subject. It is argued that the state should focus on eliminating the barriers that inappropriately hinder access to financing, strengthening the financial sector and ensuring that the cost of financing accurately reflects costs and risks. The role of the State in facilitating SME access to credit can be through the promoting and adoption of reliable financial statements and the preparation of clear businesses plans to facilitate the evaluation of the risk profile. Furthermore, the role of the State is very important in promoting financial sector efficiency and in facilitating the development of financial instruments to mitigate risks and permit adequate collateralization of assets. Under conditions of efficiency, the role of the State should be less active. As long as the interest rates reflect the commercial risk of the companies, there are few theoretical arguments to support subsidizing credit for SMEs.

There are justifications (market imperfections and the effects of regulations) for government intervention. However, each party has its role to play in addressing these financial, information, and other resource market issues. To improve their potential, SMEs should adopt measures to reduce their unit costs and increase their productivity, innovation and quality. The firms by themselves can and should take measures to improve their situation. The government should help to correct the inefficiencies and deficiencies of the market and of government regulations that accentuate the differences among companies of various sizes.

Public interventions should be proactive and coordinated in a package of integrated services, given the SMEs’ limited access to information. SMEs are usually not aware of the policies and programs designed to support them and have these translate into higher efficiency. To make this link clearer, an underlying philosophy that unifies government assistance should be developed. If assistance is provided for basic operational needs, it should be limited in scope and time, to encourage graduation of individual firms and allow access to others with similar needs. If assistance is intended to be transformational (helping firms to dramatically change productivity and promote their adoption of innovations), it should be more integrated and sustained. In either case, assistance should be tracked to measure concrete changes at the firm level, and service delivery efficiency at the institutional level.

Interventions to develop markets for financial and non-financial services will be successful only if the long-term effects of development surpass the distortional effects of the market. In turn, this depends on whether the intervention solves the underlying problems that constrain market development. This argument points to the need to understand in-depth the structure.
and performance of the existing markets and of taking advantage of pre-existing institutions and business networks. The argument also points to the importance of evaluating the impact of the interventions on institutional performance, the development of the market and, finally, the competitiveness of the SMEs.

1.24 Chile is not alone in intervening in markets to stimulate the productivity and growth of SMEs. Despite limited theoretical backing, the governments of advanced and developing countries indeed intervene in the promotion of their SMEs. Support strategies for SMES usually try to reach a combination of equity (relief of poverty and social inequities, ethnic and gender) and efficiency objectives (increase the productivity and profitability of the companies). Unfortunately, the confusion created by multiple objectives usually leads governments to over-subsidize services that could be provided by the market, as in case of direct provision of credit to SMEs, which tends to replace markets, instead of facing the underlying causes of the problem of access to credit.  

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22 See Chapter 3 for examples of the types of government intervention in OECD countries linked to social, operational and transformational objectives
2.1 This chapter describes the SME sector in Chile and provides the basis for analysis of the programs and incentives discussed in subsequent chapters. The first part of this chapter presents a profile of the SME sector based on survey statistics, census data and recent studies. The second part interprets the data in terms of efficiency and productivity, including the direct and indirect export implications for SMEs.

2.2 Recent studies and census data show that, although SMEs are growing in absolute terms, the last seven years have seen a drop in the share of the number of firms, employment, sales and exports. There are reasons to believe that these gradual drops are not the result of structural changes in the Chilean economy. The SME and formally registered micro business sectors (not including self-employment or subsistence level firms) in Chile account for 77 percent of employment by the private sector and 99 percent of total number of firms. However, SMEs and formal micro businesses only generate 23 percent of sales and have an extremely limited direct participation in the dynamic Chilean export sector.

2.3 Given the importance that the Chilean Government has placed on SMEs as engines of growth and employment, and its correspondingly high investment in support programs, this finding is somewhat surprising. Government programs that provide access to technology, innovative processes, and efficiency-enhancing techniques should make an important contribution, since they attack the issues central to improved SME productivity. However, the sizeable Government investments in SME support programs have not yet compensated for the various constraints faced by small and medium businesses. This disappointing outcome could be a result of the choices and designs of the market interventions.

2.4 SMEs should be treated as economic agents with unique characteristics, rather than merely “smaller-sized large firms.” Of particular relevance in the comparison between SME and large firms, are factors that significantly affect their unit costs, interest rates and transaction and logistics costs, all significantly higher for SMEs. This approach suggests that selective policy interventions could prove instrumental in improving SME productivity. To maximize their effects, these interventions should be aimed at fostering linkages, promoting innovation, advancing training, improving technology and developing new forms of work organization, among other aspects of business development.

2.5 In this discussion, various levels of analysis and terms are used to highlight SME and micro business trends. In this concept note, the terms “micro business,” “small enterprise” and “medium enterprise” reflect the national definitions explained in Table 2.1. The term “broadly based SMEs” includes micro, small and medium-size enterprises (but not self-employed or subsistence microbusinesses). This definitional convention has been taken to allow the document to emphasize certain trends detected in the analysis. For instance, it is difficult to speak about employment trends without acknowledging the dominant role, in lower skilled jobs, of the microbusiness sector. However, when discussing exports, the SME role is worth examining in and of itself. National surveys permit this kind of disaggregation, and allow more powerful conclusions through this segmentation of the private sector.

A STATISTICAL PROFILE OF SMES

2.6 The Chilean classification system for firms is unique, making international performance benchmarking more difficult. In contrast to many countries in Latin America, Chile uses a precise measure based on a floating value of sales (in unidades de fomento) to classify firms by size (see Table 2.1). This makes comparisons with other Latin American and OECD countries difficult, since they typically use the number of employees and assets as the main criteria. Based on the Chilean definitions, many firms labeled as “micro businesses” would be
considered small enterprises in other countries. This explains the apparently low number of SMEs, by regional standards, in the data presented in this chapter.

### Table 2.1 Chile has a unique classification of firm size.

<table>
<thead>
<tr>
<th>FIRM SIZE</th>
<th>Value of Annual Sales in Unidades de Fomento</th>
<th>Value of Annual Sales (US equivalent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>Less than 2,400</td>
<td>Less than $52,800</td>
</tr>
<tr>
<td>Small</td>
<td>2,401 thru 25,000</td>
<td>$52,800 to $550,000</td>
</tr>
<tr>
<td>Medium</td>
<td>25,001 thru 100,000</td>
<td>$550,001 to $2,200,000</td>
</tr>
<tr>
<td>Large</td>
<td>More than 100,001</td>
<td>More than $2,200,000</td>
</tr>
</tbody>
</table>

2.7 The crucial importance of broadly defined SMEs to the Chilean economy is illustrated by their share in the number of the country’s firms (99 percent) and of national employment (77 percent) in the private sector. SMEs are represented in a broad array of economic activities, although they clearly predominate in certain sectors. Around 58 percent of micro, small and medium enterprises concentrate in commerce and services, while 11 percent are in agriculture, 11.5 percent in transportation, and only 6.5 percent are in industrial activities.24 Tables 2.2, 2.3 and 2.4 show the distribution of firms by size and sector and the contribution of SMEs to employment. Figure 2.1 shows the decreasing trend of labor employed by SMEs in recent years.

2.8 The sectoral distribution of SMEs in Chile follows regional patterns, in which commerce and services are the largest sectors. SMEs have the greatest market share in services (38 percent), agriculture (35 percent), construction (31 percent) and trade (24 percent). SMEs concentrate sales in four sectors: trade (35 percent), finances, technical and professionals services (16 percent), industry (12 percent) and agriculture (9 percent).25 These sectors represent 76 percent of SME sales. SMEs are found in sectors with low barriers of entry, low capital requirements, a strong regional presence and less “sophisticated” markets (less stringent quality, packaging requirements). This explains the limited presence of SMEs in mining, electricity, gas, and water.

**Figure 2.1** SME Employment has declined to 1990 levels (in thousands).

![SME Employment Graph](image)

Source: Caracterización de las Micro y Pequeñas Empresas (2002); Comité de Comento MYPE, with data from CASEN (1990-2000)

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23 *Unidad de Fomento (UF), an indexed unit of account used to express prices and limit the effects of inflation in budget allocations and contracts; the unit’s purchasing power is defined daily by the previous month’s variation in Consumer Price Index. The approximate exchange rate on March 22, 2004 was US$27.86/UF (UF value of Peso 16,820.82, dollar set at Peso 607.64).*

24 Caracterización de las Micro y Pequeñas Empresas (2002)

25 This second indicator of SME sales to the interior refers to how sales are distributed in the various sectors of the economy.

26 Measured by: Sales by SME / Sales by all enterprises
Table 2.2 SMEs and Micros dominate in many sectors, and account for 99% of all firms

<table>
<thead>
<tr>
<th>Sector</th>
<th>Micro</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Total</th>
<th>Micro, Small and Medium as % of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining</td>
<td>1,219</td>
<td></td>
<td>85</td>
<td>87</td>
<td>1,842</td>
<td>95.3%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>60,635</td>
<td>9,303</td>
<td>806</td>
<td>243</td>
<td>70,987</td>
<td>99.7%</td>
</tr>
<tr>
<td>Industry</td>
<td>30,388</td>
<td>8,761</td>
<td>1,745</td>
<td>1,137</td>
<td>42,031</td>
<td>97.3%</td>
</tr>
<tr>
<td>E.G.W.</td>
<td>863</td>
<td>222</td>
<td>43</td>
<td>88</td>
<td>1,216</td>
<td>92.8%</td>
</tr>
<tr>
<td>Construction</td>
<td>23,113</td>
<td>6,386</td>
<td>1,047</td>
<td>484</td>
<td>3,103</td>
<td>84.4%</td>
</tr>
<tr>
<td>Commerce</td>
<td>216,014</td>
<td>31,016</td>
<td>4,607</td>
<td>204</td>
<td>253,677</td>
<td>99.9%</td>
</tr>
<tr>
<td>Restaurants</td>
<td>26,466</td>
<td>3,591</td>
<td>363</td>
<td>98</td>
<td>30,518</td>
<td>99.7%</td>
</tr>
<tr>
<td>Transport</td>
<td>63,251</td>
<td>9,763</td>
<td>975</td>
<td>416</td>
<td>74,405</td>
<td>99.4%</td>
</tr>
<tr>
<td>Services</td>
<td>92,139</td>
<td>23,601</td>
<td>3,428</td>
<td>1,443</td>
<td>120,611</td>
<td>98.8%</td>
</tr>
<tr>
<td>UC.</td>
<td>19,391</td>
<td>748</td>
<td>60</td>
<td>29</td>
<td>20,228</td>
<td>99.9%</td>
</tr>
<tr>
<td>Total</td>
<td>533,479</td>
<td>93,842</td>
<td>13,159</td>
<td>6,065</td>
<td>646,545</td>
<td>99.1%</td>
</tr>
</tbody>
</table>

Source: Caracterización de las Micro y Pequeñas Empresas (2002)
E.G.W.: Electricity, Gas and Water; UC: Unclassified

Table 2.3 The share of SMEs in employment is declining slowly over time (percent of all formal sector workers).

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>81.91</td>
<td>81.53</td>
<td>81.59</td>
<td>81.04</td>
<td>81.48</td>
<td>82.57</td>
<td>82.51</td>
</tr>
<tr>
<td>Small</td>
<td>15.05</td>
<td>15.33</td>
<td>15.26</td>
<td>15.62</td>
<td>15.36</td>
<td>14.48</td>
<td>14.51</td>
</tr>
<tr>
<td>Medium</td>
<td>2.11</td>
<td>2.17</td>
<td>2.17</td>
<td>2.28</td>
<td>2.17</td>
<td>2.03</td>
<td>2.04</td>
</tr>
<tr>
<td>SMEs</td>
<td>17.16</td>
<td>17.51</td>
<td>17.43</td>
<td>17.90</td>
<td>17.53</td>
<td>16.51</td>
<td>16.55</td>
</tr>
<tr>
<td>Large</td>
<td>0.93</td>
<td>0.97</td>
<td>0.98</td>
<td>1.06</td>
<td>1.00</td>
<td>0.93</td>
<td>0.94</td>
</tr>
</tbody>
</table>

Source: Caracterización de las Micro y Pequeñas Empresas

Table 2.4 SME firms account for nearly half of productive sector employment, but the share is declining (percent of productive sector employment).

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>33.97</td>
<td>33.6</td>
<td>30.26</td>
<td>38.95</td>
<td>30.85</td>
<td>33.18</td>
</tr>
<tr>
<td>Small</td>
<td>28.62</td>
<td>31.04</td>
<td>33.47</td>
<td>32.36</td>
<td>24.91</td>
<td>26.92</td>
</tr>
<tr>
<td>Medium</td>
<td>17.85</td>
<td>18.08</td>
<td>17.63</td>
<td>17.07</td>
<td>17.22</td>
<td>17.18</td>
</tr>
<tr>
<td>SMEs</td>
<td>46.47</td>
<td>49.12</td>
<td>51.10</td>
<td>49.43</td>
<td>42.13</td>
<td>44.1</td>
</tr>
<tr>
<td>Large</td>
<td>19.56</td>
<td>17.28</td>
<td>18.64</td>
<td>11.61</td>
<td>27.02</td>
<td>22.71</td>
</tr>
</tbody>
</table>

Source: Caracterización de las Micro y Pequeñas Empresas. Based on data from CASEN Survey, 1990-2000 Figures do not include the self-employed, military forces, public service, household service, and undefined categories, which account for more than 42% of total employment

2.9 SME sales are declining, as large firms increase their dominant position. The importance of SMEs in the national economy is small and decreasing. Micro and SME sales fell from 27 percent of total sales in 1994 to 23.3 percent in 2000 (Table 2.5 and Figure 2.2). In addition, the relative weight of large firms increased during the 1990’s in terms of absolute sales, sales per worker and sales per company.\(^\text{27}\)

\(^{27}\) Alarcon and Stumpo (2001).
Table 2.5 SMEs account for only 23 percent share of total sales

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>4.11</td>
<td>3.74</td>
<td>3.72</td>
<td>3.50</td>
<td>3.88</td>
<td>3.96</td>
<td>3.69</td>
</tr>
<tr>
<td>Small</td>
<td>11.85</td>
<td>10.93</td>
<td>10.66</td>
<td>10.56</td>
<td>11.11</td>
<td>10.93</td>
<td>10.17</td>
</tr>
<tr>
<td>Medium</td>
<td>10.95</td>
<td>10.18</td>
<td>9.97</td>
<td>10.17</td>
<td>10.36</td>
<td>10.19</td>
<td>9.46</td>
</tr>
<tr>
<td>Large</td>
<td>73.09</td>
<td>75.15</td>
<td>75.65</td>
<td>75.77</td>
<td>74.65</td>
<td>74.92</td>
<td>76.68</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Caracterización de las Micro y Pequeñas Empresas.

2.10 While some SMEs have trouble gaining access to credit, others are over-indebted. SMEs have more difficult access to bank financing, compared to large companies (as measured by the number of companies served by the financial system, and according to the bank access indexes). SMEs perceive access to financing as a critical constraint, since it limits sales, investment, expansion, the adoption of technology and in-firm and other kinds of worker training. SMEs’ indebtedness is greater than that of the large companies, relative to sales—and the conditions of their loans are more costly. The lack of guarantees is often cited as the principal problem to gaining access to financing. In addition, there is little access to other sources of financing, besides credit. That some SMEs have access to financing and others do not means that the conclusions and policy implications are complex.

Figure 2.2 Large firms increasingly dominate in terms of sales (UF millions)

Source: Caracterización de las Micro y Pequeñas Empresas (2002), Comité de Fomento PYME, with data from CASEN (1990-2000)

2.11 SMEs do not adjust well to economic downturns, compared to other firms. Table 2.6 shows that SMEs are less vibrant during economic growth spurts and appear more vulnerable to shocks. In 1996, the SME growth rate lagged micros and large firms during a period of economic growth. Yet in 1999, when a recession occurred, SMEs sales dropped 5.7 percent, a much decline than that suffered by micros (2.1 percent) and large firms (3.8 percent). In fact, the greater operational flexibility of micros and their reliance on commerce and trade seem to cushion these firms during economic downturns.

---

28 A key bank access index measures the number of firms that have had some relationship with the formal banking system at some time, whether this means through loans, deposits, or other transactions.
29 Bravo, D.; Crespi, G.; Gutiérrez, I. (2002); Fundes Chile (2001)
Table 2.6  SMEs have smaller Sales Growth Rates and are vulnerable to shocks

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>5.00%</td>
<td>6.67%</td>
<td>-1.79%</td>
<td>10.00%</td>
<td>-2.07%</td>
<td>2.95%</td>
<td>22.00%</td>
</tr>
<tr>
<td>Small</td>
<td>6.24%</td>
<td>4.73%</td>
<td>3.43%</td>
<td>4.52%</td>
<td>-5.76%</td>
<td>2.91%</td>
<td>16.63%</td>
</tr>
<tr>
<td>Medium</td>
<td>7.13%</td>
<td>5.08%</td>
<td>6.50%</td>
<td>1.25%</td>
<td>-5.72%</td>
<td>2.62%</td>
<td>17.45%</td>
</tr>
<tr>
<td>Large</td>
<td>18.49%</td>
<td>8.02%</td>
<td>4.59%</td>
<td>-2.14%</td>
<td>-3.82%</td>
<td>13.18%</td>
<td>42.61%</td>
</tr>
<tr>
<td>Total</td>
<td>15.20%</td>
<td>7.30%</td>
<td>4.40%</td>
<td>-0.70%</td>
<td>-4.20%</td>
<td>10.60%</td>
<td>35.90%</td>
</tr>
</tbody>
</table>

Source: Caracterización de las Micro y Pequeñas Empresas (2002)

2.12 Firm entry and exit rates and growth trends for SMEs are similar to large firms. The SME sector shows a fair amount of dynamism, according to Table 2.7 below. Figure 2.8 illustrates that all size categories of firms (except micros) follow a similar trend and levels. There appear to be no significant differences in growth trends and levels of growth with respect to size of the enterprise, since the difference between growth rates from 1994 to 2000 is about 5 percent.

Table 2.7  SMEs have grown more slowly than micros and large firms

<table>
<thead>
<tr>
<th>Años</th>
<th>Micro</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995-1994</td>
<td>3.63%</td>
<td>6.06%</td>
<td>7.03%</td>
<td>8.87%</td>
<td>4.11%</td>
</tr>
<tr>
<td>1996-1995</td>
<td>5.12%</td>
<td>4.50%</td>
<td>5.13%</td>
<td>6.25%</td>
<td>5.04%</td>
</tr>
<tr>
<td>1997-1996</td>
<td>-0.04%</td>
<td>3.01%</td>
<td>5.74%</td>
<td>8.71%</td>
<td>0.64%</td>
</tr>
<tr>
<td>1998-1997</td>
<td>7.68%</td>
<td>5.33%</td>
<td>1.84%</td>
<td>0.74%</td>
<td>7.10%</td>
</tr>
<tr>
<td>1999-1998</td>
<td>1.86%</td>
<td>-5.23%</td>
<td>-5.87%</td>
<td>-6.94%</td>
<td>0.51%</td>
</tr>
<tr>
<td>2000-1999</td>
<td>2.48%</td>
<td>2.80%</td>
<td>2.87%</td>
<td>3.92%</td>
<td>2.55%</td>
</tr>
<tr>
<td>2000-1994</td>
<td>22.40%</td>
<td>17.16%</td>
<td>17.31%</td>
<td>22.53%</td>
<td>21.50%</td>
</tr>
</tbody>
</table>

Source: Caracterización de las Micro y Pequeñas Empresas (2002)

2.13 However, a company’s risk of closing is reduced with its size, the concentration of the sector, and the availability of machinery suppliers. It increases with the firm’s debt, productivity, the availability of financial services, the growth of market, or the debt of the sector.30

Table 2.8 SMEs firms have a marginal and decreasing participation in exports value

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>0.2</td>
<td>0.19</td>
<td>0.17</td>
<td>0.1</td>
<td>0.23</td>
<td>0.12</td>
<td>0.07</td>
</tr>
<tr>
<td>Small</td>
<td>1.88</td>
<td>1.51</td>
<td>1.55</td>
<td>1.09</td>
<td>1.19</td>
<td>1.18</td>
<td>0.97</td>
</tr>
<tr>
<td>Medium</td>
<td>4.64</td>
<td>3.75</td>
<td>3.7</td>
<td>3.03</td>
<td>3.58</td>
<td>3.47</td>
<td>2.9</td>
</tr>
<tr>
<td>SMEs</td>
<td>6.52</td>
<td>5.26</td>
<td>5.25</td>
<td>4.12</td>
<td>4.77</td>
<td>4.65</td>
<td>3.87</td>
</tr>
<tr>
<td>Large</td>
<td>93.28</td>
<td>94.55</td>
<td>94.58</td>
<td>95.78</td>
<td>95.01</td>
<td>95.23</td>
<td>96.06</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Caracterización de las Micro y Pequeñas Empresas (2002), with information from Customs (Aduanas) and CORFO, based on ProChile and SII database.

2.14 SMEs are increasingly marginal direct exporters. It is somewhat surprising that SMEs export a very small and declining amount of products, at least directly. Table 2.8 reveals that SME participation in total export value declined from an already meager US$ 781 million in 1994, to US$ 716 million in 2000, representing just 3.94 percent of total export value. In addition, in 2000 only 0.53 percent of total SMEs and micros exported directly (3,423 firms out of a universe of 640,480 SMEs and micros).31

Table 2.8 SMEs firms have a marginal and decreasing participation in exports value

Source: Caracterización de las Micro y Pequeñas Empresas (2002), with information from Customs (Aduanas) and CORFO, based on ProChile and SII database.

30 Controlling for the sector activity, concentration has the effect of increasing the risk of closure for a firm, Crespi, G. (2003), Pp. 78-80
31 Caracterización de las Micro y Pequeñas Empresas, with information from Aduanas (Customs) and CORFO, based upon ProChile and SII database.
MAKING SENSE OF THE NUMBERS

2.15 Chilean SMEs, like those in other countries, have special features. They are affected quite differently than large firms by regulations and risk factors. Generally speaking, these firms are family businesses and their management falls directly on the owners (often untrained). Thus, the owner’s outlook (a generational and cultural factor) is especially important in deciding actions that determine a firm’s evolutionary process. In fact, SMEs not only differ in regard to how effective they are at strategic planning, but may also pursue goals that differ from profit maximization, such as market survival, maintaining their jobs and sources of income, or keeping up the family business tradition.

2.16 SMEs should be treated as economic agents with unique characteristics, their own productive possibilities and constraints to efficiency, not merely as “smaller-sized large firms.” Of particular relevance in the comparison between SMEs and large firms are factors that significantly affect their unit costs, interest rates and transaction and logistics costs, all significantly higher for SMEs.

2.17 Productivity and the use of inputs, and the level and impact of regulations differ significantly according to firm size. This is not surprising, given differences in modes of production, scale effects and the myriad costs (both productive and regulatory) have differential impacts. These differences tend to affect the prospects for growth and development of SMEs. Most studies evaluating productivity of manufacturing firms consistently find that labor productivity for larger firms was two to four times higher than that of smaller firms, when firm size was measured by either number of workers or gross production value. Similar results are shown for the productivity of capital. SMEs require a much higher proportion of working capital as a percentage of sales than larger firms, affecting unit costs and productivity. Table 2.9 shows the differences for the case in Argentina, illustrating the differential impact of factors according to size (common trends in Latin America). Figures 2.3 and 2.4 show some specific indicators for Chile. All point to the SMEs’ disadvantages relative to larger firms. That alone need not be a reason for intervention. A closer look at the business environment and the causes or drivers behind those differences is essential in evaluating the case for intervention, at least on efficiency grounds.

2.18 Chilean SMEs’ entry and exit trends appear to be similar to those in OECD countries. The sectors with the highest entry rates have the highest exit rates. They also have a large number of SMEs. The exception is agriculture, which has a low rate of entry and a low exit rate. SMEs in Japan and the United States have similar trends. Company survival rates are related positively with company size (see Table 2.10). A company’s risk of closing is reduced with its size, the concentration of the sector, and the availability of machinery suppliers. It increases with the firm’s debt, productivity, the availability of financial services, the growth of markets, and the debt of the sector.

2.19 The proportion of firms that grow, shrink or exit the market in a ten-year period shows a great deal of dynamism. Exit rates for medium and large firms appear high by OECD standards, and the likelihood of a small firm in Chile growing into a medium firm appears low. Not surprisingly, with low entrance barriers and little documentation required for bankruptcy, microfirms have a high exit rate. It seems that they also mature into small firms at a fairly high rate, but this could be based on the definitional distinctions between micro and small firms.

Figure 2.3 Productivity Differential is much higher for large firms.

![Figure 2.3 Productivity Differential is much higher for large firms.](image)

*Source: Álvarez, R., Crespi, G., Naschelski, D., y Sepúlveda, M. G. (1999)*

Figure 2.4 Large firms invest more capital per worker in Chile.

![Figure 2.4 Large firms invest more capital per worker in Chile.](image)

*Source: Álvarez, R., Crespi, G., Naschelski, D., y Sepúlveda, M. G. (1999)*

Table 2.9 Comparing Firms Characteristics by Size in Argentina

<table>
<thead>
<tr>
<th>Concept</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization</td>
<td>Individual Owner</td>
<td>S.A.</td>
<td>S.A.</td>
</tr>
<tr>
<td>Avg. age</td>
<td>28 years</td>
<td>38 years</td>
<td>57 years</td>
</tr>
<tr>
<td>% that sub-contract</td>
<td>4.5%</td>
<td>9.5%</td>
<td>52%</td>
</tr>
<tr>
<td>Operate with bank Loans</td>
<td>76%</td>
<td>86%</td>
<td>98% --</td>
</tr>
<tr>
<td>Avg. annual interest rates on bank loans</td>
<td>&gt;25%</td>
<td>&gt;23%</td>
<td>12%</td>
</tr>
<tr>
<td>Informality (% of workers)</td>
<td>70%</td>
<td>32%</td>
<td>10%</td>
</tr>
<tr>
<td>Transaction Costs (% of sales)</td>
<td>15%</td>
<td>7%</td>
<td>1%</td>
</tr>
<tr>
<td>Logistic Costs (% of sales)</td>
<td>35%</td>
<td>26%</td>
<td>15%</td>
</tr>
<tr>
<td>R&amp;D investment</td>
<td>0.3%</td>
<td>1.5%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Technological support</td>
<td>Customers &amp; Providers</td>
<td>Customers &amp; Providers</td>
<td>Providers &amp; other sources</td>
</tr>
<tr>
<td>Initial development based on:</td>
<td>Previous experience</td>
<td>Experience &amp; access to new technology</td>
<td>Access to new technology</td>
</tr>
</tbody>
</table>

*Source: FIEL (1996, 2001) and Bank Staff estimations.*
Table 2.10  Matrix Measuring Transition over ten-year period

<table>
<thead>
<tr>
<th>En't + 10 →</th>
<th>Microenterprise</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Exiting Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>En t</td>
<td>Microenterprise</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Microenterprise</td>
<td>0.16</td>
<td>0.11</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>Small</td>
<td>Microenterprise</td>
<td>0.01</td>
<td>0.37</td>
<td>0.10</td>
<td>0.01</td>
</tr>
<tr>
<td>Medium</td>
<td>Microenterprise</td>
<td>0.01</td>
<td>0.09</td>
<td>0.34</td>
<td>0.21</td>
</tr>
<tr>
<td>Large</td>
<td>Microenterprise</td>
<td>0.01</td>
<td>0.01</td>
<td>0.04</td>
<td>0.68</td>
</tr>
</tbody>
</table>


2.20 **SME efficiency is the key to growth and jobs creation.** The technical efficiency of SMEs is central to the debate about the role of small-scale industries in economic development. SMEs are unlikely to be important sources of growth and employment generation if they are relatively inefficient, with limited ability to compete, survive and grow into larger firms. The evidence is not conclusive, but there are broad tendencies. Many of the SME efficiency studies find that SMEs are, on average, less efficient than larger firms, due to increasing returns to scale. The average efficiency of smaller firms is below the production possibility frontier, controlling for scale effects. The variance is large, and indicates that there are some very efficient SMEs. There are notable sectoral differences. That variance and the objective of reducing it are often at the heart of policies for assisting and targeting SMEs.

2.21 **A recent study by Batra and Tan (2003) finds that SMEs are not inherently inefficient as compared to their larger counterparts.** Because SMEs are very heterogeneous, simple comparisons of the mean efficiencies of different sized firms can be very misleading. Batra and Tan, using large samples of firms from developing economies, suggest a possible explanation for those empirical findings. While SMEs are less efficient on average than their larger counterparts, there are significant numbers of highly efficient SMEs that are more productive than many large firms. For policy makers, the latter is the more important finding.

2.22 **SMEs find themselves in a low-level equilibrium trap, unable to raise productivity and efficiency.** Conspicuously low demand for knowledge sets the stage for a low-low level equilibrium trap—a vicious circle of mutually reinforcing lack of basic understanding of where the problems are and erroneous actions following the wrong diagnosis, resulting in poor performance. Poorly designed SME programs can easily reinforce this vicious circle and be strongly counter-productive if, for instance, they provide credit resources to firms whose main limitation is in managerial and marketing issues. Weak knowledge capabilities imply that credit would be poorly utilized, which would put both the SME and the bank in jeopardy. Latent, but often unarticulated demand for knowledge implies that the major function of SME support programs is to enhance and meet firm demand for knowledge.

2.23 **Highly efficient firms, both large and small, have several technological, work force, and organizational characteristics that can, in principle, be emulated by other less-efficient SMEs.** Efficient firms have better access to new technology through know-how licensing agreements, integration into the supply chain, joint ventures with foreign partners, and export contacts with foreign buyers and suppliers. They have a more educated work force, and are more likely to provide formal structured training to their workers. The work organization of more efficient firms is characterized by greater automation and quality control in production, and by human resource management and compensation practices that emphasize job stability.

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34 Based on a panel of businesses interviewed by INE between 1986 and 1997. Note: The transition matrix has been constructed in the following way. In year t, all existing plants were classified according to criteria provided in table 5 (of Cabrera, de la Cuadra, Galetovic, and Sanhueza, 2002). Ten years later, the size of the plant is measured again. For example, the matrix shows that, on average, 1% of the small businesses transformed into microbusinesses, 37% remained in the small category, 10% became medium sized firms, 1% became large firms, and 51% had ceased operations. The database starts with information from 1986 and 1987, to permit a ten-year analysis.
productivity and skill acquisition. The wide dissemination and adoption of these best practices can have productivity-enhancing benefits to less efficient firms, SMEs in particular.

SMES IN A LOW LEVEL EQUILIBRIUM TRAP

2.24 SMEs tend to be isolated in terms of linkages and knowledge, which are key factors of firm performance. Practically all studies on Chilean SMEs identify those factors, along with credit, as key determinants of performance. Isolation, rather than size, constitutes the major problem that affects SME growth and access to finance and business development services (BDS). Business linkages, such as marketing, managerial, technical, financial and design linkages are primary determinants of learning innovation and productivity, whether the linkages are to large firms or other SMEs.

2.25 By most accounts, Chilean firms in general, and SMEs in particular, work in isolation and lack well-developed networks. For instance, a study by FUNDES-UNGS (1999) found that only 5.1 percent of the firms surveyed consider that ties with other organizations (firms and institutions) are important, while 58.6 percent and 36.3 percent operate in, respectively, high and medium levels of isolation. Strong and vibrant domestic and international value chains, such as suppliers for exporters and large firms, as recent evidence from a large number of countries strongly indicates are important for SME development. Compared to other countries, Chilean SMEs show limited integration along the supply chain and even less success in exporting. Even among successful SME exporters, only about 30 percent of the firms have formal cooperation agreements with other firms.

2.26 Knowledge constraints differ greatly between successful SMEs (which grow and export consistently) and failing and barely surviving SMEs. For the successful SMEs, the constraint is high-quality high intensity marketing, managerial, and technical knowledge, which is often available through global export-oriented value chains. That might argue for a public policy role to facilitate connecting these firms into the global private networks of knowledge.

2.27 There are direct and indirect export implications—if SMEs can raise efficiency. To remain competitive, the private sector has been challenged to produce higher quality outputs while lowering production costs and improving business productivity. This increased orientation to quality and to international markets has led to greater differences between large firms and most SMEs, due to the lags in SME efficiency and productivity. Large firms and some medium firms demonstrate a high level of dynamism and technology adoption. They have diversified sources of funds, and obtain timely information on a range of investment and trade opportunities. However, the dynamism and innovation of some of the large Chilean firms, such as in the mining and agro and sectors have not generated significant spillovers to other firms. Most SMEs appear to be isolated from the supply chain, do not invest in innovation, face knowledge constraints and have had limited access to financial and technical resources and market information. Therefore, they have not been able to take advantage of market opportunities, including opening in international markets. These factors have limited their productivity, integration and growth.

2.28 Given the characteristics of SMEs and the constraints they face, the Government has an important role. This role should be to promote (i) linkages among SMEs and between SMEs and large firms, and (ii) the adoption by SMEs of technologies and innovative processes that can raise their productivity and competitiveness. In addition, the Government should, to the extent possible, support vulnerable, yet commercially viable SMEs during economic downturns. This approach will open the door to identifying market or coordination failures.

35 Cabrera, De la Cuadra, Galetovic and Sanhueza (2002); Consultoría Nomisma (2002); Bravo, Crespi, and Gutierrez (2002); Alarcon and Stumpo (2001).
37 Alarcon C and G. Stumpo (2001)
and, when they exist, justify government intervention to address them. Policy makers have a role to play in assisting SMEs on grounds of knowledge and coordination failures. While markets in developing economies are generally well functioning, there is evidence that factors such as poor information, high labor turnover, and imperfect capital markets pose important constraints on training for many employers, especially SMEs. Many of the same constraints are pertinent to other employer decisions tied intimately to training, such as investments in new technology, use of quality control methods, and adoption of high performance work practices. The resulting low levels of efficiency limit the contribution that SMEs can make to overall economic growth and to employment generation.
CHAPTER 3: RESPONDING TO BARRIERS TO SME GROWTH AND PRODUCTIVITY

3.1 This chapter addresses the vital question of the specific barriers to SME growth and productivity in Chile. If SMEs are expected to generate employment and become increasingly efficient and competitive, it is critical to identify the barriers they face. These obstacles are classified into three types (i) networking; (ii) entry and normative barriers; and (iii) market and information problems that affect SME access to resources (including credit, technology, innovation, quality information, and management skills). Every government intervention should be linked to one of these barriers with specific mechanisms to reduce their effects for individual firms and the sector as a whole. Before assessing the institutions and their programs for the private sector (especially SMEs), this chapter will address the nature of these barriers and provide examples of how OECD countries have addressed these issues.

SMEs need to deal with barriers related to the legal and regulatory framework, management skills, human resources, and technology and credit access. These market barriers may arise out of a lack of information on business registration and market opportunities, business organization and management, and a lack of access to financing for operating expenses and investments in well-established or new technologies.

Legal and Regulatory Barriers

Legal and regulatory barriers in Chile range from requirements to register and maintain a business to labor regulations, tax policies, inspection and environmental practices and government procurement procedures. These requirements are enforced at the municipal, regional and national levels. Obstacles include inadequate safeguards to promote competitive markets and practices and a low level of enforcement of existing laws in cases of non-compliance. Although government procurement has the potential of becoming an enormous market for SMEs (as has begun to occur in other countries), existing regulations covering procurement procedures make it difficult for small and medium businesses to participate. Two projects were designed to improve the regulatory context: (i) Simplification of Transactions and (ii) One-Stop Shops. Laws establishing limited liability individual companies and the standards to facilitate the creation of family microenterprises have also been approved.

NETWORKING

The promise of networks is clear—economies of scale and scope, and access to information on technology, markets and product information. Networking has been defined as the capacity of companies to generate collective action for mutual benefit (Nadvi and Schmitz 1999). Effective networks (also known as clusters, business associations and industry associations) help firms use new technologies efficiently, develop a greater capacity for negotiation with suppliers, diversify markets, and develop new systems to exchange information. The principal incentives for business associations are to increase sales, purchase inputs, learn more about market opportunities and acquire new technologies (Bravo et. al. 2002). Networking can also accelerate the dissemination of new knowledge and improve the entrepreneur’s ability to make decisions more effectively.

SMEs have demonstrated a limited ability to create networks on their own. This can be explained by the lack of time and resources for organizational work, the relatively high transaction costs involved, membership fees in many cases, and the risks perceived in sharing proprietary information and knowledge. Many SME managers have become entrepreneurs because they have strong values of individualism and the concept of sharing information with a direct competitor is not appealing. This value system creates a cultural bias against networking. Also, since SMEs tend to compete in very small, localized market niches, “inside information” on client preferences and product differentiation are the keys to client loyalty—and business survival.
The services provided by business associations tend to generate positive externalities that are not captured by the membership. With this in mind, associations may limit the types of services provided to only those that can exclusively benefit members. Another limitation is the organizational commitment required to maintain the relevance of associations. A recent study in Chile found that there were over 2,000 business associations listed in 2003. However, it appears that the majority are inactive, do not renew their leadership, or are not fully representative (Bravo, et al, 2002). The kind of long term commitment to joint action among SMEs and in general seems to be missing in many cases.

Chile has a number of ongoing initiatives to promote business networks. The most significant are those sponsored by CORFO, which has developed a solid experience in the design and implementation of horizontal networking (Networking Projects for Growth, PROFOs), vertical linkages (Supplier Development Programs, the PDP) and, more recently, regional networking (Integrated Territorial Programs, the PTIs). The methodologies, scale of operations, and effects of each of six of the leading Government network promotion programs are summarized below.

**Proyectos Asociativos de Fomento (Group Development Projects, PROFOs):**

A PROFO is a horizontal network intended to overcome scale-based barriers such as access to technology, markets and management skills. PROFO finances, at a decreasing rate over time, a percentage of expenses of a project proposed by a voluntarily formed group of businesses, that share a common management problem. The items considered for financing are coordination actions, training, market research, and product marketing. The program will not finance the purchase of any assets, such as inventories or equipment. The execution period for each project can last up to three or four years. During 2001, CORFO supported 445 projects through its network of agents. A total of 16,613 million pesos (approximately US$23 million) were invested through this program, in which 36 percent corresponded to State funding, and 64 percent to contributions from the 33,637 participating businesses. State contributions per project averaged US$3,166 in 2001. The magnitude of these investments makes PROFOs the dominant projects for SME networking in Chile.

**Programa de Desarrollo de Proveedores (PDP, Supplier Development Program):**

Also run by CORFO, this program provides incentives to link suppliers and larger firms that use their goods. Large firms provide training on quality standards and product design so that local small and medium firms can become reliable suppliers. During 2001, there were 82 projects in this program, the majority of which were in the agriculture and agro-industrial sectors. The government invested 1.46 billion pesos (approximately US$2 million), and business contributions amounted to 989 million pesos (approximately US$1.4 million). Of the 3,036 participating businesses, 94 percent were SMEs. The program has been better suited for the agro-industrial sector. Raw materials can be easily standardized, and producers are more homogeneous, allowing for easy dissemination of quality standards and reduction of implementation costs.

**Programas Territoriales Integrados (PTI, Integrated Territorial Development Programs):**

Begun in March, 2000, the objective of this regional program is to promote and coordinate the use of a range of CORFO instruments available for private sector development. PTI-sponsored activities are intended to result in productivity gains for the specific region. It combines training activities, innovation, infrastructure, technical assistance, and business and finance networking. In 2001, the PTI financed nine projects, at a total public expense of about US$565,000. In 2002, ten projects were financed, at an approximate expense of US$820,000. The PTI has carried out projects in most Chilean regions. The most impressive example is the “Lamb of Magallanes” project which successfully promoted this product’s entry into the Chilean market.

**Programa de Fortalecimiento y Creación de Organizaciones Gremiales (Program for the Creation and Strengthening of Business Associations).** SERCOTEC started this program on 2001 to strengthen SME networks and support the creation of new associations. To participate in this program, each organization must present to their
SERCOTEC regional director a proposal aimed at modernizing the organization, training its leaders, or increasing the professionalism of the services provided to its members. The projects receive up to 500 UF (about US$12,500) and can be executed in a period of up to three years. During that time, businesses must contribute 30 percent of the cost of the project. Evaluation of the program is scheduled for 2004. In the meantime, in an interview for this study, the President of CONUPIA\textsuperscript{38} asserted that this program has been relevant given its positive impacts on the mentality of organization leaders. He also considered it to be an outstanding success among the commitments reached between the government and the private sector at the Public-Private Committee.

\textit{Fondo para la Modernización de las Relaciones Laborales y Desarrollo Sindical} (Fund for the Modernization of Labor Relations and Union Development). This project has been managed by the Ministry of Labor since 1999, and is expected to cease operating in 2004. Its objective is to finance training and provide technical assistance to legally constituted labor unions in all sectors of the economy. Micro and small business associations also qualify for support (up to a third of total resources have been assigned to these associations). According to the Ministry of Labor, in 2002, the fund was to allocate over 900 million pesos (around US$1.4 million) to finance these activities.\textsuperscript{39}

\textit{Emprende Chile (New Productive Activities Program)}. SERCOTEC coordinates this effort, with FOSIS, INDAP, SENCE and CORFO. It is intended to articulate programs from each of these institutions to promote the establishment of an enabling environment for micro and small businesses in a specific region. Its ultimate objective is to advance the quality of life and income level of the inhabitants of participating communities, improve labor conditions and competitiveness of micro and small enterprises, and enhance overall territorial development capabilities. It first identifies and evaluates business and employment opportunities for selection. Based on the socio-economic characteristics of the territory in question and the actors involved, it identifies the employment and entrepreneurship support mechanisms that can be used to link micro and small firms with markets and commercial networks. As of late 2003, the program has been implemented in 75 communities throughout eight Chilean regions. Since its creation three years ago, it has benefited 8,000 families.\textsuperscript{40}

The PROFO model has produced significant results in productivity and profitability. A recent evaluation by the University of Chile identifies the positive impact that these instruments have had on the member companies, in the short and long term. Companies that participated in PROFOs increased their annual sales by 12.9 percent between 1996 and 1999, while similar companies in a control group registered a reduction of 2.1 percent in sales during the same period. The PROFO system is also noteworthy because it offers one of the few independent evaluations with panels and control groups in the entire portfolio of government private sector support programs.

Participating firms were much more likely to gain access to public funding, and take advantage of technical resources from universities and other sources. A survey of 290 firms participating in PROFOs (Benavente, 1998) found major differences between participating firms and a control group in improved marketing strategies, labor organization, and the introduction of quality control automation and production planning. The biggest problem was management turnover, which reduced the program’s impact on the firms’ ability to negotiate with customers, worker training and product enhancement. When a private agent was involved (ASEXMA), marketing strategies were more developed. When public sector agent, SERCOTEC, was involved, greater improvements were seen in worker safety and training. Benavente concludes, “the cost-benefit analysis suggests that the program

\textsuperscript{38} German Dastres, President of CONUPIA, interviewed in June, 2003
\textsuperscript{39} Ministry of Labor news bulletin. June 9, 2002. Available at \url{www.mintrab.gob.cl}.
\textsuperscript{40} Ministry of Agriculture news bulletin, June 25, 2003. Available at \url{www.agricultura.gob.cl}.
is ‘socially profitable’ and does not involve massive government budget spending, which is more than offset by the increased revenues thanks to the taxes generated by the companies involved.”

On the other hand, there have been at least two highly successful PROFOs without government intervention (wine and pharmaceutical industries). These experiences demonstrate the importance of promoting the concept as well as the monetary incentive. To insure the efficient use of government funds, it is important to differentiate between those sectors where PROFOs will take place organically, from those that need a stimulus.

There is no available information on how many PROFOs “graduate” from Government subsidies to independent, self-financing status as a network. While there is anecdotal evidence of success, there is no systematic collection of information on PROFOs related to improved profitability, new markets, new product designs, and other concrete impacts for participating firms. The successes identified, such as wine production and pharmaceuticals, have used the methodology without relying on government subsidies, which are typically for financing a manager and some operating costs. How have PROFOs fared during periods of economic recession? A new evaluation, using the survey data developed by the University of Chile and expanded to include sectoral and regional subsets, would be an important step toward identifying the “graduation potential” of PROFOs and the limitations on the networking methodology. This would enable CORFO to better target the medium term support offered through this mechanism.

The effects of regional network promotion programs on firm growth and productivity are less clear. To deepen the local ownership of private sector development products, CORFO pushed for the creation of local resource allocation committees (Comités Regionales de Asignación de Fondos, CARs). These are presided over by the Regional Intendent, and composed of local authorities and the regional directors of CORFO, INDAP, FOSIS, SENCE, SERNATUR, SERNAPECAS, as well as regional micro enterprise officials from BancoEstado and the Regional Secretariat for Planning and Coordination (Secretaría Regional de Planificación y Coordinación, SERPLAC). The CARs are responsible for articulating the various private sector development initiatives with regional development strategies and local priorities. Finally, CORFO created the Integrated Territorial Program (Programa Territorial Integrado, PTI) to support regional development coordination with local governments and other development institutions and take full advantage of synergies between the initiatives. No in-depth evaluation of the PTI has been carried out yet, so it is still unclear whether such synergies have been produced through this coordination mechanism. An impact evaluation of this program would be advisable.

OECD countries have used a rich set of experiences in cluster and network development to codify policies and principles, which can strengthen Chile’s approach to networking. These findings have led to a series of policies to promote networks in general, and clusters specifically (summarized in Box 3.1 below). The focus of OECD networking efforts has been for the government to serve as a catalyst, with a limited resource contribution and a timeframe of three to four years. Private sector leadership is essential, and a low risk early return approach helps to build the firms’ commitment to the network. It is important to create a mechanism to terminate an initiative, if early results are poor or the private sector’s interest drops off. Finally, these networking initiatives should not be used to “introduce distortionary industrial policy inteded to target ‘national champions’ [or] ‘sunrise sectors’.”

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Box 3.1 The OECD has policy guidelines on cluster and network development

Policy towards networks

- Implement broad campaigns to introduce the networking concept to businesses. Networks, to create demand, should address precise market-driven objectives.
- Modest financial support (for feasibility work, start-up activities, and the costs of network brokerage), is to be expected. Funding should be phased out as participants obtain benefits.
- Work with realistic time frames: a significant business network program usually requires a commitment of 3 or 4 years.
- Ensure the presence of experienced network brokers. Broker teams can help maintain effectiveness and motivation.

Policy towards clusters

- Facilitate local partnerships involving private actors, NGOs and different levels of government to assign responsibilities.
- The private sector should lead cluster-development, with the public sector as catalyst.
- Match initiatives to the most suitable level of government. Ideally, this will correspond to the geographic scope of the cluster. The “right” level of government should be determined by who has direct contact and substantial influence over relevant programs and expenditures.
- Prioritization among clusters is necessary due to limited resources (selection criteria includes the value added by the sponsor and the level of existing organization of a cluster.
- Initially adopt a low risk/early return focus. It is useful to generate early small but evident gains. Later, higher risk/longer term activities can be introduced.
- Seek to lock in benefits of existing or embryonic clusters by:
  1) Reducing the risk for corporate property investments in industrial real estates.
  2) Promoting the establishment of suppliers associations and learning circles, often the result of proximity of firms.
  3) Supporting university–industry linkages including new incentive structures that promote increased business applications.
  4) Ensuring access to specialized infrastructure, communications and transport.
- Local investment may help stimulate a cluster. If seeking to attract investments:
  1) Encourage local, regional and national agencies to disseminate information about the cluster and the locational advantages it offers.
  2) Focus investment promotion efforts on linkages within a cluster to address weaknesses (such as gaps in the chain of local suppliers).
- Adjust surveys and other statistical collection instruments to illustrate the geographic concentration of related groups of firms.
- Support initiatives at the regional and international levels to promote SMEs participation in broad innovative clusters.
- Conduct ongoing evaluations to measure progress and identify midcourse corrections.
- Create a mechanism to terminate an initiative if it fails to produce results or attract significant private sector commitment after a reasonable period.

Cluster Policies to Avoid

Policy makers should refrain from seeking to build entirely new sector-specific clusters of firms. There should be an element of market testing before significant public resources are committed to a cluster. This practice will minimize situations in which sub-national bodies compete to establish identical clusters. Similarly, cluster initiatives should not be used to introduce distortionary industrial policy intended to target “national champions”, “sunrise sectors”, etc.

There little doubt concerning the importance of management and worker training, and significant proof of the positive relationship between in-firm training and SME productivity. It is therefore important to review the experiences of SENCE, the management programs, and especially in-firm training experiences in Chile and elsewhere, to increase the pay-offs to private sector investment in this area.

The SENCE Tax Incentives Program provides a massive amount of assistance, but is not a focused intervention. The National Training System has identified 116,000 enterprises that used tax incentives for human resources training in 2002—an increase of 42 percent over the previous year’s total of 81,790 firms. Between 1988 and 2002 the number of enterprises that have used tax incentives for training has grown from just over 17,000 to over 110,000. The fundamental cause of this massive expansion of coverage has been the inclusion of formally registered microbusinesses in the last three years, mainly through training loans provided by banks. However, while the SENCE tax incentive can be used to lower the firm’s tax burden, it does not necessarily add to the skills of workers and managers. There appears to be no requirement to show that the person trained is employed by the firm.

With five programs, management training is a central part of CORFO’s SME development policy. The five programs are (i) the Fondo de Asistencia Tecnica (FAT), (ii) the Programa de Asistencia a la Gestión, (iii) the Proyecto Asociativo de Fomento (PROFOs, discussed above), (iv) the Proyectos de Desarrollo de Proveedores (Supply Network development, PDP, describe above), and (v) Programa Territorial Integrado (PTI, described above). CORFO seeks to standardize and streamline the application processes for these programs, to attract additional participant firms by reducing the level of uncertainty, costs and processing times.

The Management Centers Program (CEGES) began in 1995 with the purpose of supporting to small and medium producers to improve their business management skills. Professional multidisciplinary business teams that deliver specialized courses and technical services to center members operate the centers. An evaluation of the project has proposed some adjustments and enhancements.

Chile has made the shift from cooperative to state-led, demand-driven worker training systems, a rare transformation in Latin America. Changes since 1976 have contributed to a more competitive approach for training investment funds. Chile is already a leader in vocational training or formal education as sources of human capital development. In terms of vocational training, Chile is an exception to the dominant Latin American model. Along with Mexico and Uruguay, Chile favors private sector solutions to skills improvement through training. Since 1976, INACAP (Instituto Nacional de Capacitación) has had to compete for training investments from private sector firms on a level playing field, facing stiff competition from more than 2000 universities, schools, centers, and consulting firms. For formal education, the level of spending on education as a share of GDP rivals East Asian leaders, exceeding Singapore and only slightly behind Korea. Chile is also a regional leader in terms of access to secondary and tertiary education.

Chile could benefit from improvements in in-firm worker training. A large body of analytical studies using cross-country comparisons and firm level time series data has consistently concluded that human capital investments by firms yield higher levels of total factor productivity (TFP). For instance, between 1993 and 1999, a period of increased investment in human skills development, TFP in Mexico increased from under 0.09 to 0.17 (Tan 2002). In addition, the gains from investments in human capital by firms are amplified when changes in technology are involved, especially under open economy conditions. In general, World Business Environment Surveys from around the world have found that foreign-owned firms are more likely to bring new technologies, and to train workers. The survey also found that exporting enterprises are more likely to invest in both worker skills training and

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42 de Ferranti, et.al (2002), Table 4.4, page 84.
technology; given the pressures they face to remain competitive. Firms need to invest and innovate to remain competitive—and improving worker skills converts innovation into increased productivity.

**There is supporting evidence of the importance of worker training from national level studies.** For example, in Mexico, the relative wages of skilled to unskilled workers is higher in firms that upgraded their technology through licensing agreements (Harrison and Hanson 1999). A study in Chile compared firms in 1979 and 1986 to measure the effects of this combination of investments (Pavcnik 2002). Firms that were exposed to new technology from other countries were more likely to invest in skills upgrading of workers and management. Skills upgrading in Chile was positively linked at statistically significant levels to the adoption of these new technologies (measured by patent use, importation of foreign inputs, and foreign technical assistance). This implies that workers can benefit directly from these international relationships. In addition, those countries that reduced tariffs significantly in the 1980s and 1990s (Mexico, Brazil, Colombia, Chile, and Argentina) were able to attract a greater amount of foreign direct investment, usually with a significant technology content (World Bank, de Ferranti, et. al., 2003). Such firms also tended to provide training to workers, to enable them to raise productivity as they adopted the new technology.43

**Studies find that in-firm training is strongly correlated with improvements in productivity.** In Malaysia and Colombia, firms that provide in-house training are 25 percent more productive than firms that do not offer such training (Tan and Batra, 1995). In Guatemala and Nicaragua, the training premium is estimated to be almost 50 percent. Productivity effects are higher in lower income countries, given the scarcity of skilled workers. The powerful conclusion is that “most of the productivity gains came from training in private firms from private training institutions and in-firm training programs” (Batra 1999).

**Box 3.2 Best Practices Study by CINTERFOR/ILO (2001)**

The CINTERFOR Program of the International Labour Organization generated a best practices report on training in 2001. Based on a review of practices around the world, the study concluded that effective training has strong links to technological innovation, and stronger links to formal education. On-the-job training is more likely to build productivity-oriented skills than pre-employment institutional training. Private skills training providers are beginning to dominate the market, due to economic changes and government policies. Finally, the financing of such training investments has diversified from a base of training levies and government financing to include incentives, rebates, matching grants.

Source: CINTERFOR/ILO 2001

**There are three sources for worker skills training.** For those firms committed to improving worker skills, there are three sources: public sector agencies, private firms and in-firm training programs. In Latin America, the preferences are country-specific, with a strong preference for private sector providers in Uruguay (over 60 percent of the firms in the regional sample) and Chile (50 percent), with a regional average of about 42 percent. In Nicaragua, Trinidad and Tobago and Belize, public agencies provide a significant amount of worker skills training (about 20 percent in each case), with a regional average of 15 percent. In-firm training is also popular throughout the region, averaging about 42 percent of the firms in the sample (Batra 2002). The trend in Mexico from 1992 to 1999 seems to be taking hold throughout the region. Reliance on public agencies is dropping, in favor of in-firm programs (with a 66 percent share of worker training investments), private providers and industry associations (Tan and Lopez-Acevedo 2002).

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43 The Chilean Government has demonstrated its willingness to invest in innovation, science and technology, and the inclusion of doctorate scholars in the private sector, as shown by the investment of US$100 million for a Bank-supported project that will fund research in science and technology, while supporting the government in its efforts to establish an integrated approach to scientific learning and technological innovation.
Why don’t firms invest more in worker skills? The CINTERFOR-ILO study (2001) identifies several reasons for the lack of investment, including (i) poor information on the benefits of training workers, (ii) high training costs for smaller firms, unable to take advantage of economies of scale, (iii) an absence of competitive pressures, (iv) a lack of information about accessible sources of worker training and related support programs. In markets, countries and sectors where labor mobility is high (barriers to changing jobs are low), managers are less likely to invest in worker training, whether through external or in-firm programs. The reason is obvious; they don’t want to benefit competitors who may hire those workers in the future.

Chile’s in-firm training culture is relatively strong, but the outreach of available programs is weak. Based on the level of in-firm training and overall investments in training, Chile has been cited for its strong training culture, comparable to Japan, Korea, Singapore, Germany, the Netherlands, Scandinavia and Brazil. The relatively high level of education in Chile reinforces this tendency. The wide range of government support programs, many targeting small and micro businesses, reinforces this culture. However, the effectiveness and acceptance of such support can be limited by the ways in which they are promoted. A study by Fundes Chile found that only about 20 percent of the firms could identify at least one support program (See Chapter 4 for a summary of these MSME support programs).

Financing in-firm training has implications for the level of acceptance of training by firms. Like other Latin American countries, Chile uses payroll levies to provide an incentive for training. The notable difference is that the Chilean model encourages associations of smaller firms along sectoral lines to take full advantage of the assistance programs financed by the levy. In most of the Latin American countries, larger firms dominate the use of payroll levy-generated funds. These levies can be used in a variety of ways to achieve different objectives. In Austria, Germany, Morocco and Turkey, payroll levies are channeled as subsidies to smaller firms and training services providers. Levies are used to co-finance training investments with a variety of providers in Argentina, Brazil, Colombia, Singapore and Taiwan. Best practices are (i) keep employers in charge, and keep the system voluntary, (ii) increase competition to foster a wide range of providers, (iii) earmark funds strictly, using levies rather than government grants, and (iv) ensure that smaller firms are eligible for and informed about available services.

While Chile has done well in the first three areas, there may be some useful lessons from Mexico’s Integral Quality and Modernization Program (CIMO). CIMO uses an active outreach system for small and medium sized firms, rather than promoting programs through regular, more bureaucratic channels. While Chile has chosen a predominantly private sector approach over a mixed public-private one, the Mexican example offers four lessons (see Box 3.3). First, it is possible to reach a significant number of SMEs through a direct promotional approach. Second, a focus on SMEs seems makes a difference in the firms’ productivity. Third, evaluations to track the changes at the firm level can be revealing and should be considered more often as part of the analysis of the effectiveness of the programs. Finally, policymakers working on in-firm training and other SME labor skills development options should link up with management, to exchange experiences, evaluation techniques and innovations on a regular basis.

Entrepreneurs have a positive view of innovation and have introduced improvements in their products during the last three years. However, one principal cause of SME failure is the relative lack of human capital at the managerial level (Cabrera et. al. 2002). A UNESCO study (date?) found that the basic skills among the Chilean adult population are inferior to those in developed countries. In addition, the process of training small entrepreneurs is time-consuming and often not effective. One conclusion by Bravo et. al. (2002) was that the majority of entrepreneurs identified the availability, quality and costs of human resources as one of the least important obstacles. For technology, innovation and quality issues, the majority of entrepreneurs also see this as relatively unimportant.

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44 Others include Argentina, Barbados, Brazil, Colombia, Costa Rica, Ecuador, Honduras, Jamaica, Paraguay, Peru, and Venezuela.
Box 3.3 Mexico’s Integral Quality and Modernization Program (CIMO)

Established in 1988, CIMO has become a leading model of support for the training needs of small and medium sized firms. The objective is to upgrade worker skills, thereby contributing to improvements in productivity, and the quality of products of participating SMEs. CIMO support can be provided through private training consultants and government and private training institutions. What began as a pilot quickly became a national effort. In 2000, more than 80,000 SMEs received an integrated package of extension services and training.

The process begins with a diagnostic evaluation of the firm. The resulting support package may be organized along sector lines for groups of SMEs, or as an integrated package of support, including information on technology, new production processes, quality control techniques, and marketing. An evaluation using a control group found that firms that participated in CIMO usually entered with lower productivity levels, but met or exceeded the levels of the control group within two years. Improvements were also evident in profitability, sales, capacity utilization rates, lower labor turnover rates. Micro and small firms were the ones to benefit most from the CIMO system.


Technology Access

As for technology investments, firms typically cite factors such as time, cost, absorptive capacity, and technical expertise as the constraints they confront. Other factors appear to be the level of competition in a sector, the effectiveness of innovation-related institutions, relationships among producers, subcontractors and clients, and the overall level of education of the population (World Bank, de Ferranti, 2002). The importance of education is especially dramatic—a 1 percent increase in education in the region led to a 5.8 percent increase in TFP in low research and development (R&D) sectors, and a 10.9 percent increase in high R&D sectors (Schiff and Wang 2002).

The Program of Development and Technological Innovation explicitly recognizes the needs of SMEs. The objective of this initiative is to narrow the productivity gap that separates Chilean SMEs from those in other countries, such as the OECD (Dini and Stumpo 2003). For the first time, SMEs are explicitly mentioned and treated preferentially in national programs dedicated to technology promotion, and access to information on production technologies that can raise productivity significantly.

The Fondo de Tecnología (Technology Fund, FONTEC) is considered to be one of the most effective programs in the field of technology promotion. In the past 11 years, it has provided assistance to more than 5,000 companies, with an estimated 80 to 85 percent classified as SMEs (Dini and Stumpo, 2003). The results of the independent evaluations of FONTEC have been positive. Since 1995, for every peso invested by the government through FONTEC, eight pesos in value added taxes have been generated through the sale of new products. A second evaluation in 1998 indicated that the results of the 15 most successful projects financed all operational costs of the fund (Dini and Stumpo, 2003). Between 1992 and 1997, private sector matching contributions to innovation projects financed by the Fund grew from 43 percent to 67 percent.
ACCESS TO CREDIT AND OTHER FINANCIAL SERVICES

Access to credit, for short-term working capital needs and long term investment credit remains problematic. The Chilean financial system is considered one of the deepest and most developed in the region. The financial sector reforms begun in the 1970s have lead to a significant increase in the rate of coverage by commercial banks.45 BancoEstado has demonstrated that microbusinesses can be bankable clients and become more than a “boutique” market niche.46 However, in other parts of the financial sector, there is a lack of innovation in financial markets, as seen by an absence of significant venture capital facilities and “angel capital” (both of which are discussed below).

Compared to SMEs in other countries, Chilean SMEs have a high rate of access to credit from financial institutions. A high percentage of small and medium businesses hold at least one kind of debt with the financial system, a fact that places Chilean SMEs in a situation comparable to that of SMEs in the most developed countries.47 There are indications that this is predominantly short-term credit for micro and small businesses. While less than 40 percent of the formally registered micros have access to credit, access goes up rapidly with firm size. It is noteworthy that the trends are declining for access for all sizes of firms between 1996 and 2000. However, assuming that some SMEs have no interest in credit, the rate of firms that seek credit and receive it is probably higher than reflected in Table 3.1.

Table 3.1 Compared to other countries in the region, Chilean SMEs have impressive access to bank loans.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>41.7</td>
<td>42.1</td>
<td>39.4</td>
<td>28.4</td>
<td>39.3</td>
</tr>
<tr>
<td>Small</td>
<td>66.5</td>
<td>63.6</td>
<td>61.8</td>
<td>40.3</td>
<td>45.2</td>
</tr>
<tr>
<td>Medium</td>
<td>77.5</td>
<td>73.8</td>
<td>72.1</td>
<td>52.3</td>
<td>39.2</td>
</tr>
<tr>
<td>Large</td>
<td>84.3</td>
<td>79.6</td>
<td>78.3</td>
<td>55.5</td>
<td>58.6</td>
</tr>
<tr>
<td>Total</td>
<td>55.7</td>
<td>51.6</td>
<td>43.5</td>
<td>43.7</td>
<td></td>
</tr>
</tbody>
</table>

Source: I&G (2000). Based on data from the Súper Intendencia de Bancos e Instituciones Financieras. Peru, Guatemala and Nicaragua Investment Climate Assessments, based on national surveys of over 400 firms in late 2003

Compared to OECD countries, SME access to bank loans is high, but for different reasons. OECD countries tend to have well developed alternatives to bank loans for SMEs, including factor, leasing, overdrafts, and external investments. SMEs in France and Germany rely more on bank loans, while Irish and Swedish SMEs turn to overdrafts. Leasing is popular throughout the region (with the exception of Sweden). Factoring is popular in France, but almost non-existent in Germany and Sweden. Whatever the combination of financial services available, they go far beyond traditional bank loans in the OECD countries.

Relatively high SME access to bank loans in Chile was confirmed by commercial bankers, who state that it is not common to set a lower boundary on the size of the firm that can qualify for a loan. According to interviews with senior bank managers, sales volume is only one of several figures taken into account in assessing the creditworthiness of a firm. Based on their commercial policies, it should not be a problem for small businesses to qualify for loans with maturities of up to three years. Also, there is no requirement for firms to open a checking account to qualify for a line of credit.48

46 Financial analysis of Banco del Estado, interviews with senior management.
47 Berger, A. Et al. (1998) report that—based on 1993 data—in the USA only 54.2% of small businesses have any type of credit with a financial institution.
Table 3.2 SMEs in European countries have alternatives to traditional bank lending

<table>
<thead>
<tr>
<th>Country</th>
<th>Bank Loans</th>
<th>Overdrafts</th>
<th>Leasing</th>
<th>Factoring</th>
<th>External investors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>66</td>
<td>47</td>
<td>43</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Spain</td>
<td>58</td>
<td>8</td>
<td>48</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>France</td>
<td>63</td>
<td>36</td>
<td>47</td>
<td>32</td>
<td>7</td>
</tr>
<tr>
<td>Ireland</td>
<td>39</td>
<td>70</td>
<td>48</td>
<td>14</td>
<td>19</td>
</tr>
<tr>
<td>Sweden</td>
<td>37</td>
<td>70</td>
<td>29</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>34</td>
<td>59</td>
<td>42</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>TOTAL (15 countries)</td>
<td>46</td>
<td>50</td>
<td>39</td>
<td>11</td>
<td>9</td>
</tr>
</tbody>
</table>


SMEs pay a higher rate of interest for short-term bank credit. Smaller firms frequently pay a higher rate of interest, based on elevated administrative costs incurred by banks and a perceived risk that the small business is more likely to fail. The credit review process restricts SME credit to short-term maturities, when banks use consumer credit models for to assess small firms. 50

Chile’s financial programs for SMEs focus on socially and operationally oriented instruments, while OECD countries invest more in transformational support to SMEs. There is an active debate concerning the role of government in the financial sector, ranging from direct intervention (retail lending by state banks, for instance) to a marginal role (maintaining macroeconomic stability and market-determined interest rates). On this continuum, Chile is among the most active in financial markets. While OECD and other countries have as complete a menu of programs, Chile’s financial programs for SMEs are more operationally oriented, and less oriented toward structural changes to promote SME productivity improvements. The Chilean portfolio of programs also lacks a philosophical underpinning and internal consistency, compared to approaches in Australia, Ireland, and Scotland (Box 3.4 and Table 3.3).

A gradual shift from socially oriented to a two-pronged approach in poorer regions would not lead to unfair competition, subsidized credit, or other distortions in financial markets. In poorer regions of the country, most credit programs remain focused on operational requirements (expansion of existing product lines, for instance). Socially oriented credit should be replaced by asset building transfers targeted to people with potentially profitable projects and the necessary minimum level of productive skills.

Box 3.4 OECD and other developed countries define the role of government as a facilitator of SME financing

In developed countries, the Government’s role in expanding SME access to credit has evolved significantly over time, moving from direct provision of loans and guarantees to leaving financing up to specialized private institutions.

- Australia limits it financial assistance to fiscal incentives for R&D and promoting innovation investment funds, excluding almost all subsidies and grants.
- Scottish Enterprise activities are based on the belief that private sector financing is best, thereby avoiding any financial market distortions. The agency provides a range of business development services and finances consultancies directed at SMEs.
- Enterprise Ireland formally maintains a loan guarantee program, but in practice abandoned the practice in the 1990s. It facilitates businesses’ access to venture capital and business development services.

These interventions can be separated into three groups—socially oriented programs, operational intervention for R&D and innovation, and transformational support to SMEs.

49 Government of Chile, Comité de Fomento de la Micro y Pequeña Empresa, “La situación de la Micro y Pequeña Empresa en Chile” (2003), P. 36, Box 20
50 Foxley, J. (1999). The author found differentials of up to 6 percent in the spreads between loans of up to 200 UF and loans of more than 2.000 UF.
programs, and those that promote SME transformation and major changes in productivity. Social programs focus on a specific disadvantaged target group (rural women, the unemployed, urban youth) and are characterized by subsidized interest rates. Operational programs typically offer short-term working capital financing, supporting “business as usual.” Transformational programs (venture capital, “angel capital”, and support for private sector research and development) focus on technology adoption, innovative business processes and high growth opportunities.*

Similarly, these governments have promoted among financial intermediaries the supply of other financial instruments such as factoring, leasing, and insurance, and access to lower cost funding through financial mechanisms such as securitization.

*Refer to section 5.3 “Innovation Finance” by the European Comisión (2002b) for a detailed review of the increasing role of the state support to venture capital funds and “angel investors” among different economies within the European Union. The UNCTAD (2001) report also provides relevant information regarding the development of these topics in the USA and other developed countries.

Table 3.3 The Continuum of Government SME Services in developed countries (see footnote for descriptions)51  

<table>
<thead>
<tr>
<th>Type of Service</th>
<th>Chile</th>
<th>Australia</th>
<th>Canada</th>
<th>Finland</th>
<th>Hol.</th>
<th>Ireland</th>
<th>Spain</th>
<th>Sweden</th>
<th>Taiwan</th>
<th>UK</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subsidies to unemployed for start-ups</td>
<td>x a</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Subsidized interest rates for SMEs</td>
<td>x b</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Operational</td>
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<td></td>
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<tr>
<td>State loans or mutual guarantees for SMEs</td>
<td>x c</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>State banks for SMEs</td>
<td>x d</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Microcredit funds</td>
<td>x e</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Transforming</td>
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<tr>
<td>Loans to potential high growth SMEs</td>
<td>x f</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Research and dev. loans and grants</td>
<td>x g</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Govt aid to risk capital funds</td>
<td>x h</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Fiscal incentives for “angel”, other investors</td>
<td>x i</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Data bases, “angel” networks</td>
<td>x j</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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</table>


The lack of SME audited financial information increases the costs and risks of lending. Financial intermediaries incur additional costs when they review SMEs as borrowers. SMEs often fail to maintain accurate financial statements, and many SMEs do not have annual independent audits to verify their accounts and the value of their assets. SME access to market-priced credit would improve greatly, if they could provide such financial information

51 For this Table, the following sources were used: a) Programa de Reinsersión Laboral y Empleo, Línea de Trabajo Independiente, by FOSIS (executed US$ 5 million in 2001, equal to 1.7 percent of of the 2001portfolio; Generación de Alternativas Laborales para Ex Trabajadores Portuarios, by SERCOTEC, represented in 2 percent of the resources and had 500 beneficiaries in 2001. b) INDAP’s loan programs; c) FOGAPE.; d) BancoEstado; e) SERCOTEC’s Programa para el desarrollo Competitivo de la Microempresa (business lines accounted for 1 percent of the resources executed in 2001, with around 7800 beneficiaries); f) Line 1 of CORFO’s FONTEC; g) All lines of CORFO’s FONTEC, CORFO’s Fondo de Desarrollo e Innovacion, and CONICYT’s FONDEF h) CORFO’s FIDES (the funds allocated in this program are equivalent to only 0.3% of the total loan and guarantee support provided by the portfolio as a whole), and ENAMI’s venture capital program for the exploration of mineral reserves (the funds allocated in this program are equivalent to around 60% of the loan support granted by ENAMI; however, it is only 0.35 percent of the total loan and guarantee support provided by the portfolio as a whole)
Transparent information about potential clients builds a lender’s confidence and enables accurate measurement of repayment capacity and loan pricing without a high risk premium. Sharing information between financial intermediaries on client indebtedness and performance also makes it more cost-effective to lend to SMEs. Functioning credit bureaus play an important role in minimizing information-based lending risks, by sharing the credit histories and levels of indebtedness of individual clients. Since SMEs are considered to be relatively risky clients, such systems can help strong performing SMEs to lower the cost of capital and obtain loans with longer maturities. This helps SMEs develop a documented credit history and compensate for less formal accounts and financial statements, a lack of audits, and inadequate business plans. The following box summarizes different techniques and systems used to overcome information asymmetry in loan contracts.

**Lenders point to the low life expectancy of SMEs as a reason for a risk premium.** Taking into account the long delays and high costs of liquidating assets in the case of bankruptcy, it is a reasonable concern of commercially oriented lenders (Doing Business database, 2003). However, there is no significant proof, in the case of Chile, that SMEs are more likely to fail. However, the study only included the manufacturing sector, and failed to separate the results for SMEs and microbusinesses. A study by Crespi (2002) covers all economic activities, and confirms that the average survival rate for micro businesses is very low. This finding did not extend to SMEs.

**The lack of physical guarantees with verifiable value and clear title also obstructs SME access to longer-term credit.** Banks usually consider a firm’s assets, offered as collateral, to be insufficient insurance. Thus, creditors commonly require collateral that is exogenous to the firm, either third party endorsements or personal assets belonging to the entrepreneur.

**The Fondo de Garantía para la Pequeña Empresa (FOGAPE) provides loan guarantees for micro and small businesses.** The main mission of FOGAPE is to facilitate access to credit for smaller firms, especially those that do not possess sufficient or no guarantees at all. It also assists new firms or firms with less than a year in operation, and intends to promote long-term credit. The fund of US$50 million guarantees loans for up to ten times the guarantee amount. While the fund did not attract commercial banks at the beginning, a series of legal and regulatory adjustments in 2000 have led to an annual guarantee of US$220 million on such loans, covering credits amounting to US$300 million. The keys to its acceptance have been the set of general selection criteria for clients and a streamlined bidding process. This avoids a more traditional system of overlapping, time-consuming individual client evaluations by both the financial institution and the guarantee facility, and lowers transaction costs to the financial institution. The BancoEstado, a commercially oriented government retail bank, manages this fund.

**FOGAPE offers a modest incentive for longer-term loans, which seems to have mixed results.** More than 80 percent of the loans have maturities of less than three years. This brings into question the usefulness of the FOGAPE guarantee, since most banks already provide a significant amount of loans to SMEs for short-term business needs. Even though the majority of credits assigned are short and long term, these can be renovated up to a limit of 10 years, which is the time ceiling guaranteed by FOGAPE. According to data from FOGAPE, the term of credits is in line with the needs of small entrepreneurs, given that more than 75% of these needs are for working capital, in contrast to only 25% for investment projects. In this regard, it would be useful to evaluate whether there has been a major increase in SME lending by institutions that turn to FOGAPE guarantees. It is likely that, to some extent, banks use this facility to hedge their SME operations at a relatively low cost (while the maximum fee is set at 2 percent of “saldo de capital caucionado,” the current charge is only 1 percent, making this a very inexpensive mechanism for banks).

**FOGAPE’s portfolio remains healthy, suggesting that the participating banks value the mechanism.** Since there is no minimum loan amount under FOGAPE, banks with specialized SME platforms are most likely to turn to this program for loan coverage. BancoEstado is the main client of FOGAPE, having been the pioneer in commercial SME and microbusiness lending. The average loan guaranteed by FOGAPE is only 320 UF (about US$7500).
Box 3.5 Practices employed in developed countries to alleviate information asymmetry

Credit Scoring
This statistical technique measures the probability of repayment of a certain loan applicant based upon historical data of existing debtors. The objective of this analysis is to recognize debtor characteristics associated with the probability of a particular debtor defaulting on his/her obligations, such as business sector, capitalization, assets, and years in operation among others. Based upon the results from the study, and using a previously specified weighted average, each application is assigned an individual score, which is employed to easily approve or reject the granting of the loan.

This technique, originally developed to evaluate consumer credits, has become a standardized practice among the principal financial institutions of the United States, Western Europe, Mexico and Japan. In fact, Wells Fargo, one of the first banks to apply credit scoring to SMEs, increased its loan portfolio in this sector by 61 percent between 1993 and 1995. In 1997, 92 percent of the financial intermediaries surveyed employed both credit scoring and automatized mechanisms to allocate loans.

Credit scoring needs a vast amount of historical data on debtors (both performing and non-performing) to deliver an adequate statistical analysis. Given that on an individual basis the financial intermediaries frequently lack a sufficient volume of SME loans within their own portfolios to adequately perform the statistical analysis, the use of credit bureaus has expanded substantially. Credit bureaus accumulate historical data from a significant number of SME loans originated by different intermediaries, and allow each of these intermediaries access to the databases to evaluate the loan applications they receive. One of the most notable examples of these bureaus is the Small Business Scoring Systems (SBSS) in the United States, which is used by more than 350 financial intermediaries.

The main advantage of credit scoring is that it permits an accurate and almost automatic evaluation of the credit risk of a large number of loan applications, at a lower cost per application. The manual evaluation of a loan application in the United States takes on average 12 hours at a cost between US$ 500 to US$ 800. In contrast, credit scoring permits the evaluation of an application in only 15 minutes at a cost less than US$ 100, thus liberating banks’ resources and permitting the processing and approval of more loans. In addition, further models have been developed to allow the evaluation of credits offered by suppliers.

Credit self-evaluation
Self evaluation of credit profiles is becoming another approach to evaluating credit risk. In this case, a series of standardized formats are developed by the financial institutions. These formats are completed by the SMEs by themselves or with the help of financial advisors. The results allow the entrepreneurs to become acquainted with their own risk profile, and to understand why their loan application would ultimately be rejected or approved, as well as the reasons behind the risk premium to be assigned in case of approval. Such information allows entrepreneurs to identify internal issues that’s should be addressed to enhance their credit profile and thereby access lower costs of capital. This format was initially developed by the Forum of Private Business in the United Kingdom and is currently employed by several banks in their dealings with SMEs. This initiative has received substantial acceptance among European Union authorities, which have promoted its introduction at the European level.


Business networks form mutual guarantee associations (MGA) to provide guarantees and offer business technical assistance to members. An international comparison by UNCTAD in 2001 reveals that there are about 70 guarantee schemes mainly operating in Western Europe and the United States. They have been classified as mutual guarantees (supported by member-based private groups) and public guarantees (financed completely by the government). Mutual Guarantee funds are most popular in Italy (573) and France (115, involving 300,000 businesses), with smaller numbers in Germany (24), Spain (18, with 30,000 businesses), Belgium (17) and Denmark (12). Austria has eight mutual guarantee funds formed along regional lines. Switzerland has ten regional cooperatives for the
crafts sector, and one national cooperative providing guarantees for the industrial sector.\textsuperscript{52} Membership fees largely finance MGAs.

While an important motivation of these MGAs is to generate profits for the business association, MGAs usually remain engaged during the investment period, and provide technical assistance to borrowers, this relationship between the MGA and members insures a high rate of success and safeguard the business association’s reputation. MGAs can exert pressure on borrowers to repay on time, and can lobby to address concerns that arise, since they are usually well connected and well informed about the local business environment. The Spanish case is indicative of portfolio quality—with a default rate of only 1.5 percent of guaranteed loans.

Critics of public guarantees point to the likelihood of creating market distortions, the moral risk involved, and questions about their value added. In addition, there can be high administrative costs due to the duplication of client and project creditworthiness assessments, a low level of efficiency on the part of government staff, and delays in claims payments (which result in low credibility with participating banks).

SME guarantee funds offer advantages to governments, especially in terms of postponing the budgetary implications. Such programs rely on the liquidity of participating banks, and only have to finance the share of the loan portfolio that becomes classified as in default. However, the entire loan portfolio under guarantee becomes a contingent liability for the government, raising questions about a guarantee program’s true fiscal cost and sustainability. For instance, natural disasters, the collapse of a key international commodity price (such as coffee), or a general economic recession can lead to massive local or even national default, dramatically raising the cost of the guarantees (Li, 1998).

Outsourcing the evaluation and processing of guarantee applications may drive down fund administrative costs. The UNCTAD study (2001) argues that many of the operational problems may be overcome by adequately training the staff charged with monitoring the portfolio of guarantees. Issuing partial guarantees, and distributing the risk among the government fund, the financial intermediaries and the borrower and capital market can control moral hazard. This is the approach adopted by the United States Small Business Administration (SBA) for SME guarantees. Public sector guarantees are less prevalent, but the national scope often increases their scale beyond the coverage of mutual guarantee funds. Austria, Belgium and the United Kingdom offer national funds, while France has a region-specific guarantee system. One of the largest is the SBA Loan Guarantee (Section 7.a.), with wide outreach through 71 offices and loan guarantees in 2003 of US$11,267,689,000.

<table>
<thead>
<tr>
<th>Box 3.6 The U. S. Small Business Administration (SBA) has a flexible guarantee product and local offices to determine appropriate levels of support</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Small Business Administration generally does not make loans. The SBA guarantees loans submitted and made by financial institutions, generally banks, based on the following loan and guarantee characteristics.</td>
</tr>
<tr>
<td>• Maximum loan size of US$750,000, with a maximum guarantee of US$562,500.</td>
</tr>
<tr>
<td>• No minimum loan size, but in practice commercial bank requests are rarely below US$50,000</td>
</tr>
<tr>
<td>• For loan requests of US$150,000 or less, the guaranty is 85%; for loans over US$150,000, the SBA guarantees 75% up to the maximum.</td>
</tr>
<tr>
<td>• The prospective borrower is required to provide a capital contribution of 30% to 50% of the total capitalization of a business start-up or 30% of project investment amount.</td>
</tr>
<tr>
<td>• An existing business will be required to provide financial statements showing that the business is profitable, has not delinquent taxes, and, with the loan, would have a debt to net worth ratio of less than 4:1.</td>
</tr>
<tr>
<td>• Guarantees are not provided for partial purchase of a business, lending institutions, real estate investment or rental, or to religious organizations.</td>
</tr>
<tr>
<td>• The SBA charges the lender an incremental guarantee fee up to 3.5 percent on the guaranteedobbled</td>
</tr>
</tbody>
</table>

\textsuperscript{52} Data taken from Camino and Cardone (1999), Stevenson and Lundström, 2001, UNCTAD (2001)
portion of the loan and 0.5% monthly fee on the outstanding balance of the guaranteed portion. SBA policy allows the lender to pass these fees on to the borrower. There is sometimes a US$1,000 packaging fee as well.

- The guaranteed loan program interest rates are based on the prime rate, according to the following schedule: (i) the interest rate for loans of less than 7 years are set at no more than the prime rate plus 2.25%, and (ii) Loans of 7 years or more cost no more than Prime plus 2.75%.
- The SBA guaranteed loan maturity ranges from seven years for working capital, ten years for equipment loans, and up to 25 years for commercial real estate loans.
- A business plan is required, and should include financial projections, market analysis, a detailed description of the product and services, the qualifications and financial background of the management team, and the size of the loan required.

Source: Small Business Administration (2004)

FOGAPE’s value added is in extending the frontier of lending to SMEs. Streamlining FOGAPE would encourage more banks to participate. It would be important to quantify the value added aspects of additionality of FOGAPE guarantees, to ensure that the government investment in FOGAPE becomes more than a convenient mechanism for banks to finance existing clients. The ultimate measure of FOGAPE’s success would be an increased SME portfolio among commercial banks without the guarantee, after clearly defining the SME lending frontier with the guarantee.

Building on the example of BancoEstado, other commercial banks should be encouraged to develop specialized lending platforms. These platforms would have to include cost-sensitive client assessment and delivery mechanisms, but would be supported in the early stages by the FOGAPE guarantee. The development of this SME demand-driven product would require a significant amount of technical assistance in the market analysis and product development and testing stages.

The government could also support the lengthening of the maturity of commercial bank loans to SMEs by purchasing subordinated bonds with a quasi-equity character. The quasi-equity feature would be attractive to commercial banks, allowing them to maximize the leveraging aspects of this arrangement. These bonds could be issued by the participating banks at a premium linked to the channeling of funds to longer-term projects presented by SMEs. In fact, CORFO carried out two of these operations in the past at low cost and successful results in terms of the increase in operations with SMEs.

There are synergies in linking the different government support systems together in a systematic way—in this case, guarantees or other financial programs and the firm’s participation in a network (PROFO). A study by Foxley (1999) reports that banks favorably evaluate those businesses that participate in a PROFO sponsored by CORFO. The need for a database that tracks a business’s participation in different programs clearly offers a risk reduction edge for such firms, in the eyes of commercial banks. This combination of changes would encourage SMEs and the financial institutions that lend to them to focus on investments that contribute to increased productivity, adoption of innovative processes and technologies, and the development of new products.

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THE ELUSIVE VENTURE CAPITAL MARKET

Chile has more entrepreneurs than Japan, France and Spain, which should make the country fertile ground for a venture capital market. However, the results on the ground have been disappointing. According to a recent Fundes Chile study, 25 percent of Chilean universities have programs or courses dedicated to entrepreneurship. The lack of dynamism in venture capital may be explained by business projects not adequately presented to investors or that their profitability is below what venture capitalists would expect, given the combination of country, sector and other risks. It may also be a result of a lack of venues for investors and businesses to meet, or a lack of bankable technology-intensive projects offering high rates of return.  

Although the legal framework that created Fondos de Inversion (Law 18,815) began in the late 1980s, it proved to be inadequate to jumpstart this new financial sector industry. These funds were later renamed Fondos de Inversión en Desarrollo de Empresas (Enterprise Development Investment Funds, FIDES). In 1997, CORFO launched a credit line to stimulate the creation of FIDES specialized in emerging technology firms. This product offers a 1:1 match equal to the capital raised by a fund administrator. In addition, following the example of the Yozma Fund in Israel, attempts were made to attract foreign investors to establish funds in partnership with domestic investors. The success of this initiative was limited, due to the excessive restrictions placed by the regulatory framework of FIDES. The chief problem was the impossibility of assessing value to the firm’s intangible assets appropriately. This limits investments in firms whose underlying value is primarily linked to innovative ideas.

Box 3.7 OECD Support Programs cover both the demand and supply side of the equation

- **Even when funds are supply-led, private, risk-taking investors should complement public funds.** It is important to minimize the risk that public funds might “crowd out” interested private investors. This leads some to advocate venture capital that focuses on industrial segments critical to national development that have high risks that are unattractive to private sector investors.

- **Public lending to private funds is an alternative mechanism.** However, since it is debt-based rather than representing a risk-based equity position, investors are typically less interested and there can be high financial costs to the Government.

- **Guarantees are offered to investor funds, which specialize in riskier industries.** The guarantees can multiply the funds available for such targeted investments, but again the private sector contribution is critical to the long run viability of the fund. The guarantees need to be diversified across industries, to avoid concentrated exposure in a single risky type of investment.

- **Fiscal incentives can be offered at the start or end of the investment process.** At the beginning, tax deductions are offered for investors in venture capital funds or other certified firms. At the end of the process, there may be a partial exemption from capital gain tax from asset sales or when shares are sold to new investors. Incentives placed at the end of the process are more adequate to encourage investor supervision over fund managers. However, during the initial and take-off stages of a new industry, offering the incentive early in the process may have a greater impact.

**OECD Demand Support Programs**

- **Some programs respond to firms with innovative projects, but lack the funds to fully develop business plans.** This initial support is supposed to result in a greater chance of investment by private venture capital funds.

- **Other programs provide technical assistance to venture capital funds** to improve their

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54 This study was conducted worldwide by Babson College and the London Business School and reported in a public presentation at the Universidad de Los Andes in Santiago, Chile.

55 The case considered to be the most massive and aggressive is that of South Korea where these incentives exist at both ends of the investment process.
capacity to evaluate risky investments.

- **Specialized incubators range from “virtual” versions to the more traditional physical space** provide workshop infrastructure, administrative and technical assistance, and access to scientific, technological and financial networks. According to a benchmarking elaborated by the European Union, the most successful incubators serve a broad clientele, not just firms with technology-intensive products.  

- **Technology parks primarily serve mature enterprises, but some have adjusted their services to attract new firms.** These “firm hotels” enable new firms to benefit from interactions with well-established firms. The new firms often respond to the need for inputs and specialized services to larger firms.  

- **Angel investor networks link businesses to groups of individual investors with substantial funds who seek an equity position.** In addition to decreasing the cost of identifying viable projects, these networks can share knowledge about entrepreneurs, business evaluations, and may lead to joint investment. This can be a low-cost, high payoff government investment.


OECD countries use a combination of supply-led and demand-driven programs and incentives to channel resources and attract private investment to riskier, innovative sectors of the economy. Starting in the late 1980s, most OECD countries set up programs and developed policy frameworks to promote a vigorous venture capital market. Both supply side and demand-driven approaches have been used to spark markets. Demand-driven approaches have been less popular. Examples of both types of OECD programs are provided in Box 3.7.

The United States experience shows the importance of venture capital fund management skills. An impressive list of firms that began with venture capital—Microsoft, Compaq, Federal Express, Amazon.com, Apple Computers and Genetech. In fact, 30 percent of firms in the United States that go public have relied on venture capital to get off the ground. The real value of the venture capitalists is often not financial: it is the scarce managerial know-how that partners seek to incorporate. In a survey, 17 percent of firms listed recruiting management skills as the most important outcome of a venture capital link, and 54 percent listed this among the top three benefits (Carvalho, Gledwon, and Amaro de Marcos, 2002, cited in de Ferranti et. al. 2003).

In Chile, key adjustments in the legal framework have been used to encourage more vibrant private sector participation in venture capital markets. In late 2000, legal framework changes provided much greater freedom to private investment funds. These funds can now rely on their own bylaws to set the rules of the game. At the same time, the Emerging Industries Stock Exchange (Bolsa Emergente) was formed. Registration in this stock exchange is streamlined and provides more protection to minority investors (Ley de OPAS, 2000). The Second Capital Market Reform (Reforma de Capitales 2) permits secures all bond and other instruments issued by qualified Fondos de Capital de Riesgo, for up to twice their original equity. These funds can also issue stock options under the new framework. Moreover, it exempts stock transactions carried out by these firms from capital gains tax (up to 10,000 UF, about US$270,000, in cases when more than one third of equity is involved) for up to three years. This benefit is transmitted to the holders of “cuotas” (similar to shares) from the Funds. It also allows pension fund managers to invest in these funds. However, this proposed reform fails to include “angel capitalists” as potential beneficiaries.

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56 In 2002, Cyprus initiated a program to attract Soviet scientists to participate in incubators specifically created to accommodate them. Each scientist receives US$ 80,000 to begin his/her work.


58 Good examples of this phenomenon are Austin, Texas with Dell, and to a lesser extent, Costa Rica with Intel.

59 See Título VII, Ley 18.815 currently in force. These Funds are annually audited by external auditors accredited with the Superintendencia de Valores y Seguros (Securities and Insurance Superintendency).

60 At the moment of preparing this report, it was announced that there were two firms ready to begin quoting in the Bolsa Emergente. It must be noted that CORFO counts with a subsidy to aid firms in the adaptations the must implement so as to be able to quote in this stock exchange.
Given the lack of private venture capital, CORFO launched the Seed Capital program to support business start-ups and those in early stages of development. It provides financing for up to 35 million pesos (US$ 50,000) for activities such as market research, publicity, legal registration, business plan preparation, management technical assistance and even prototype design and testing. It is a non-reimbursable subsidy whose objective is to offset the lack of private venture capital. Proposed projects are presented by sponsoring agents who act as a “filter,” receiving a payment for assisting the applicant business. These agents or agencies receive about US$450 per month for their technical input. There have been problems in implementation related to the incentives and the lack of clear roles for the agents and CORFO. A higher degree of delegation to the agents and a requirement for them to invest would align the incentives for their participation. Another alternative would be for CORFO to define eligible types of businesses and bid out the funds to those private agencies that provide matching funds. This would increase the viability of the program, by promoting private sector learning about how to serve business start-ups.

The lack of specialized business managers who can turn innovative projects into successful businesses appears to be the most important bottleneck. CORFO has initiated a national network of business incubators, to help those with potentially profitable ideas to move to the business start-up stage. Academic and technological institutes have been invited to link their services and knowledge to these incubators. Informed observers agree that there are adequate resources for innovative businesses—what is lacking is a critical mass of attractive innovative projects. At the same time, the first group of angel investors are frustrated by a lack of critical mass in the markets, and the complexity of evaluating proposed investments.

In conclusion, despite recent legal framework adjustments, the venture capital market remains stagnant and underdeveloped, due to a lack of support that would enable entrepreneurs to take a good product or service idea to the start-up stage and beyond. Given Chile’s attractive business environment and relatively high levels of FDI, the constraint is not obvious. However, it appears that there are few entrepreneurs who are able to persuasively present their potentially profitable innovative ventures to investors.

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61 Competition among promotion agencies would protect entrepreneurs from agencies, which would like to use their role as CORFO intermediaries as leverage in their negotiating positions.
62 CORFO could add a subsidy for hiring and training expert staff.
63 This subject was stressed in interviews with angel investors, who cannot participate in more projects due to time, cost and staffing constraints, particularly at the investment management stage.
CHAPTER 4: ACHIEVING LONGLASTING RESULTS THROUGH A STREAMLINED SME PORTFOLIO

4.1 Chile invests US$ 400 million to $600 million annually in private sector support programs, ranging from loans based on firm size or sectoral activity to grants for technology adoption or networking. But, what are the unifying factors and underlying philosophy that ensure that this enormous investment yields concrete benefits? And are participating firms more likely to dramatically increase productivity, competitiveness, and employment? The current portfolio includes at least 90 different programs, run by CORFO, INDAP, SERCOTEC, ENAMI, and several other government agencies. In line with the Ministry of Economy’s mandate to rationalize the existing portfolio of projects, this chapter proposes a much sharpened portfolio private sector support projects to eliminate duplication, lower administrative costs, and increase the likely impact of this investment.64

4.2 The portfolio review was based on formative evaluation techniques, which evaluate the delivery method rather than measurable results. In contrast to an impact evaluation, which focuses on the program's results, formative evaluation focuses on how a program is delivered.65 This type of evaluation provides an assessment of a program based on (i) the objectives; (ii) outreach; (iii) internal processes; and (iv) service delivery mechanisms. Formative evaluations are used when there is a lack of standardized data, time series data, and control groups. The available data set for the majority of programs included both administrative and operational aspects of the programs and overall outreach statistics.

4.3 Three types of sources were used: a standardized survey instrument, interviews with key government officials, and focus groups with small business managers. The majority of government programs were not able to provide actual information on clients, client satisfaction, administrative costs, and other quantitative and qualitative aspects of the programs. In the few cases when independent impact evaluations were available, the methodologies are not standardized, making it impossible to compare the performance of these programs.

4.4 The methodology for the review included the following four steps:

- Development of a database, which collected quantitative and qualitative information, with direct input from the managers of each program
- Formation of a “positioning” map to classify the programs according to key characteristics (sector, geography, implementing institution, target client group, the nature of the product (grant, matching grant, or credit), delivery mechanism (groups, individual firms), and the market failure they purport to address
- Identification of anomalies within each program; and
- Construction of private sector portfolio proposal, including a justification of the elimination of some programs, the merging of others, and the adjustment of others.

4.5 The four criteria for classification of programs were (i) sectors, (ii) market failures, (iii) target firm size and (iv) delivery mechanisms. The first step of the qualitative analysis was to construct a “positioning” map (see Technical Annex 4). The map allowed a straightforward comparison between the programs along the lines presented below.

Economic sector
- Fishing

64 Actual impact studies are not possible, given the lack of control groups (firms with the same characteristics, but without access to government programs) and the poorly developed firm tracking systems.
• Agriculture and animal husbandry
• Mining
• Commerce, restaurants and hotels
• Cross-sectoral (programs not focused in a particular sector)
• Special (objectives unrelated to Private Sector Development)
• Social Assistance (objectives unrelated to Private Sector Development)
• Not received / Aggregated (no significant data was received on the programs, or it was reported aggregating data for several distinct programs already reported).

Market failure addressed by the program
• Information: refers to information asymmetry on aspects that are vital to the functioning of a firm, such as bureaucratic procedures, taxes, domestic and international markets, and availability of government support
• Networking: related to the barriers that entrepreneurs face in associating between themselves to achieve common goals such as access to supplies and markets
• Innovation: pertaining to the difficulties associated with the assimilation, use, and development of new technologies
• Human Resources: concerning obstacles in human capital formation through training for labor force and managerial capacities
• Commercialization: obstacles related to access to distribution channels and markets, as well as competition advancement
• Environmental: related to the difficulties that firms face in complying with environmental regulations
• Financing: hurdles to firm access to short, medium and long term loans, as well as to venture capital
• Multiple market failures: refers to programs that are aimed at simultaneously addressing two or more market failures.
• Others

DELIVERY MECHANISM SUBCATEGORIES

4.6 The “Positioning Map” aligns programs according to the combination of characteristics and the target clients for each program. Target clients include micro, small, medium and large firms, or combinations of these clients. Since many of the instruments employ more than one delivery mechanism to address perceived market failures, a differentiation was made between the primary and secondary delivery mechanism employed. The budget and the number of clients served on an annual basis were key indicators in the quantitative analysis of the portfolio. An analysis of each project was carried out in terms of its “fit” with the overall private sector program portfolio (synergies, complementarity, and logical links to other programs) and whether it overlaps another program. A weighting exercise was undertaken with Ministry of Economy specialists. No data were available to allow an econometric analysis yielding more precise weights for each indicator. These subcategories differentiate between the different delivery mechanisms employed to address each market failure. Table 4.1 below lists the mechanisms identified and relates each delivery mechanism to a particular market failure. Table 4.2 provides a summary of the criteria and indicators used to classify the programs. The definitions of the criteria are provided below.

Table 4.1 Delivery Mechanism Subcategories

<table>
<thead>
<tr>
<th>Market Failure</th>
<th>Delivery Mechanism Code</th>
<th>Description</th>
<th>Basic Portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information</td>
<td>INFO</td>
<td>Facilitation of access to information regarding bureaucratic procedures, taxes, domestic and international markets, and availability of government support</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 4.2 Criteria and indicators for quantitative analysis

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Addresses a perceived market failure</td>
<td>Yes / No</td>
</tr>
<tr>
<td>b) Focus on either micro, small, or medium firms</td>
<td>Percentage of resources assigned to micro, small or medium businesses.</td>
</tr>
<tr>
<td>c) Coverage</td>
<td>Percentage of beneficiaries attended in relation to the universe of potential program beneficiaries.</td>
</tr>
<tr>
<td>d) Budget execution</td>
<td>Percentage of resources executed in relation to budgeted resources.</td>
</tr>
<tr>
<td>e) Data availability</td>
<td>Yes / No</td>
</tr>
<tr>
<td>f) Spending efficiency</td>
<td>Percentage of administrative spending in relation to executed resources or loans or guarantees assigned</td>
</tr>
<tr>
<td>g) Risk distribution</td>
<td>Percentage of beneficiary monetary contribution in relation to total cost of selected project.</td>
</tr>
<tr>
<td>h) Asset recuperation</td>
<td>Percentage value of non-performing loans in relation to total value of loans assigned.</td>
</tr>
</tbody>
</table>

Definitions of Criteria:

(a) **Addresses a perceived market failure.** A guiding principle for the Ministry of Economy is that state-sponsored programs should only exist as a response to perceived market failures. The assumption behind this argument is that, there are activities or areas that generate positive social externalities but present a series of barriers, which inhibit private sector investment. Thus, to take advantage of such externalities, the state must intervene. Accordingly each PSD program should
clearly state the market failure it is intended to address. Programs that do not have a defined market failure focus, should be revised.

(b) **Focus on micro, small, or medium firms.** In general, the Chilean policy for PSD programs is to focus on those firms more likely to be affected by market failures. Such is the case of micro and small firms, and to a lesser extent, medium firms. Even though a number of Chilean PSD programs manifestly support these segments of firms, in reality their delivery mechanisms end up allocating funds to larger firms. To be consistent with official objectives, the eligibility requirements and delivery mechanisms of PSD programs should clearly address the barriers that affect smaller firms. Several PSD programs in Chile, mostly related to innovation support and new technology assimilation, target firms of all sizes. The particular nature and strategic importance of promoting access to innovation and technology to all firm sizes could be arguably justified. In such cases, a program’s broad firm focus should be clearly defined and justified.

(c) **Coverage.** In general, a PSD program should serve a significant number of beneficiaries out of the universe of potential beneficiaries that are likely to need support. Thus, to appraise the outreach of a program, a universe of potential beneficiaries should be defined beforehand. This process, in turn, should facilitate the calculation of the resources needed to adequately serve the beneficiaries. Ideally, coverage assessment should also entail discerning over time whether benefits are delivered to a growing number of different beneficiaries, or if the benefits are repeatedly provided to the same beneficiaries. Unfortunately, many of the programs lack sufficient data to differentiate whether their beneficiaries are different from each other over time, and hence promote firm “graduation” from PSD support. This stresses the importance of counting with a comprehensive database on PSD programs and their beneficiaries.

(d) **Budget execution.** A number of Chilean PSD programs under examination drew a budget that surpassed to some extent the resources they actually executed. This suggests that resources were assigned to programs in excess of their institutional capabilities to actually execute them, or that demand for such resources did not meet the expectations of program designers. The immediate consequence of this situation is that significant resources, which could have been allocated for other more useful purposes, were held idle during the fiscal year.

(e) **Data availability.** The main obstacle found in this study was the lack of readily available and reliable data on each program. Data availability allows assessing the effectiveness and efficiency of the resources allocated by each program through time. At a minimum, a program should readily count on a clearly defined mission in terms of market failure, the sector it addresses, information on the type and number of beneficiaries it serves, the amount of resources it has allocated in the form of benefits and administrative expenses, and ideally, the impact the program has generated. Data gathering mechanisms should be set in the case where programs lack such historical data, so as to justify their relevance and that of the resources they execute.

(f) **Spending efficiency.** A significant number of the programs under scrutiny lacked information differentiating administrative expenses from benefit allocations. This clearly impeded the assessment of efficiency on the use of funds. In fact, this information was available in only 28 cases (out of 103). In a few of these cases, administrative costs represented up to 50 percent of the resources executed in 2001. Ideally, lower administrative costs should liberate resources to be allocated as actual benefits to the targeted population. A high ratio of administrative costs versus executed resources could indicate some anomalies in the administration or delivery of program benefits, which should be corrected.

(g) **Risk distribution.** This criterion is intended to measure the extent to which a beneficiary is committed to the success of a project that receives PSD support. Risk distribution entails that firm owners participate not only in the benefits resulting from PSD support, but also in their costs. This purportedly assures that business owners will be
committed to maximize the use of the program in question. A greater commitment on the part of beneficiaries, in terms of their absorption of the program’s costs, is likely to increase the chances of achieving the program’s objectives. On the hand, a smaller degree of commitment reduces the chances of attaining such objectives.

**Loan recovery.** In the case of PSD credit programs (which include guarantees), the loan recovery ratio is a valuable proxy to a program’s capacity to sustain itself over time, and of the liquidity risk that the respective institution is acquiring. It also allows defining, in practical terms, whether the institution in question has the will or capacity to demand repayment on the loans, or rather opts to allow such obligations to become subsidies over time by relinquishing their claims. This has been the case of INDAP, whose credit programs presented in 2001 a non-performing portfolio up to 33 percent. According to Chilean officials interviewed, there has been a tendency in INDAP to forego such claims to avoid upsetting members of the agriculture sector, given the poverty conditions. Similarly, a credit program managed by ENAMI presented in that same year a non-performing portfolio of 62%. The indicator used, percentage of non-performing portfolios, is defined as the annual percentage of the financial portfolio that has not been served in more than three months.

4.7 The existing PSD Program portfolio includes 73 grant programs and 23 credit programs, composed largely of agriculture, livestock, and multi-sectoral programs. Including the socially oriented initiatives, there were 103 private sector support programs, making it easy to understand why coordination and duplication of efforts are a major concern. Table 4.3 presents the composition of the existing portfolio by sector and grant or credit support.

**Table 4.3 The dominance of grant programs reveals the high cost and the risk of private sector dependence on non-reimbursable assistance from the Government**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Grant Programs</th>
<th>Credit Programs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fishing</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>2. Agricultural and animal husbandry</td>
<td>16</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>3. Mining</td>
<td>2</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>4. Commerce, restaurants and hotels</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>5. Cross-sectoral</td>
<td>38</td>
<td>12</td>
<td>50</td>
</tr>
<tr>
<td><strong>Total PSD programs</strong></td>
<td><strong>60</strong></td>
<td><strong>22</strong></td>
<td><strong>82</strong></td>
</tr>
<tr>
<td>6. Special</td>
<td>8</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>7. Social assistance</td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total reported programs</strong></td>
<td><strong>73</strong></td>
<td><strong>23</strong></td>
<td><strong>96</strong></td>
</tr>
<tr>
<td>8. Not received / Aggregated</td>
<td>7</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>73</strong></td>
<td><strong>23</strong></td>
<td><strong>96</strong></td>
</tr>
</tbody>
</table>

4.8 Of the 103 programs identified in 2002, only 82 were strictly private sector programs, based on their objectives and target beneficiaries. The rest were either socially oriented or did not have sufficient information to include them in any meaningful analysis. These included cultural programs, environmental programs with no private sector focus, and general institutional development instruments. A review of these programs with government authorities led to the conclusion that they were not significant in terms of investment or the number of clients served.

4.9 Of the 82 programs constituting the PSD portfolio, 60 were grant programs and 22 were credit programs (which comprise guarantees as well). An important feature highlighted by the sectoral composition of the positioning map is the special attention reserved to certain economic sectors, specifically fishing, agriculture, mining, and commerce. According to the data collected, the resources executed in 2001 by the 60 grant programs (which were still operational in 2002) amounted to 13,149.145 UF (or US$328.7 million as of late 2001). The SENCE training deduction, irrigation and drainage programs, and soil conservation led the way, followed by the agriculture sector.

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67 The exchange rate at the time of this part of the study was US$25 per UF. As of March 2004, it is US$27
technological innovation, and networking programs. These resources are concentrated in 13 programs, as Table 4.4 shows.

**Table 4.4 A training tax deduction program, irrigation and drainage, and soil conservation amount to 50% of the total portfolio investment**

<table>
<thead>
<tr>
<th>Grant Program</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Franquicia Tributaria a la Capacitación, SENCE</td>
<td>36.4%</td>
</tr>
<tr>
<td>Ley Nº 18.450 Fomento al Riego y Drenaje, CNR</td>
<td>9.7%</td>
</tr>
<tr>
<td>Sistema de Incentivos para la Recuperación de Suelos Degradados , SAG</td>
<td>6.2%</td>
</tr>
<tr>
<td>Programa para la recuperación de suelos degradados, INDAP</td>
<td>5.3%</td>
</tr>
<tr>
<td>Programa de Promoción de Exportaciones, PROCHILE</td>
<td>4.5%</td>
</tr>
<tr>
<td>FONDEF, CONICYT</td>
<td>3.8%</td>
</tr>
<tr>
<td>Servicio de Asesorías Técnicas, INDAP</td>
<td>3.8%</td>
</tr>
<tr>
<td>Fondo de Desarrollo e Innovación (FDI), CORFO</td>
<td>3.7%</td>
</tr>
<tr>
<td>Proyecto Asociativo de Fomento (PROFO), CORFO</td>
<td>3.5%</td>
</tr>
<tr>
<td>FONTEC, CORFO</td>
<td>3.5%</td>
</tr>
<tr>
<td>Subsidio Ley 19.561 a la Forestación, CONAF</td>
<td>2.3%</td>
</tr>
<tr>
<td>Fondo de Asistencia Técnica (FAT), CORFO</td>
<td>2.3%</td>
</tr>
<tr>
<td>Programa Riego, INDAP</td>
<td>2.2%</td>
</tr>
<tr>
<td>Others</td>
<td>12.8%</td>
</tr>
</tbody>
</table>

Source: Almeyda and De la Barra (2002). See Annex B.

4.10 **The grant programs provided an average of 612 UF (US$15,300) per client firm in 2001.** However, the standard deviation in the amount provided per client firm was 2.016 UF. Outreach was impressive—there were a total of 1,095,206 beneficiaries in 2001. However, due to the lack of an integrated information system to track clients, it is impossible to know the degree of overlap in the outreach of the various programs.

4.11 **The 22 loan and guarantee programs represented an investment of 25,741,183 UF (US$643.5 million in late 2001).** The one-time CORFO SME debt reprogramming initiative represented 62 percent of the total, and is unlikely to continue (since it was a response to a crisis caused by a sudden economic downturn). FOGAPE guarantees for BancoEstado loans represented another 19 percent of the investment, and in a more normal period would be a higher percentage of the total investment. Table 4.5 provides a breakdown of the credit programs.

**Table 4.5 Distribution of resources executed by Credit Programs**

<table>
<thead>
<tr>
<th>Credit Programs</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reprogramación de deudas PYME, CORFO</td>
<td>62.3%</td>
</tr>
<tr>
<td>FOGAPE, Banco Estado</td>
<td>19.1%</td>
</tr>
<tr>
<td>Financiamiento de Inversiones de las medianas y pequeñas empresas (línea de crédito B.11), CORFO</td>
<td>5.6%</td>
</tr>
<tr>
<td>Crédito corto plazo individuales y organizacionales, INDAP</td>
<td>3.6%</td>
</tr>
<tr>
<td>Financiamiento al comprador extranjero de Bienes Durables y Servicios de Ingeniería chilenos. (Línea de crédito B.21), CORFO</td>
<td>2.2%</td>
</tr>
<tr>
<td>Crédito a largo plazo individuales y organizacionales, INDAP</td>
<td>2.1%</td>
</tr>
<tr>
<td>Construcción y Mejoramiento Obras de Riego (Ley de Riego). Crédito de Enlace, INDAP</td>
<td>0.8%</td>
</tr>
<tr>
<td>Crédito de reprogramación de pasivos de pequeñas empresas (línea de Crédito B.13), CORFO</td>
<td>0.8%</td>
</tr>
<tr>
<td>Others</td>
<td>3.4%</td>
</tr>
</tbody>
</table>

Source: Almeyda and de la Barra (2002). See Annex B.
4.12 In 2001, the credit programs provided an average of UF 9,171 (US$ 22,900) per borrower. The standard deviation of resources per beneficiary stood at UF 19,160, much higher than the variance for grant programs. This is a reasonable finding, since credit for larger firms would be dramatically higher than for micros, while technical assistance grants tend to be more standardized. According to the data collected, credit programs reached 92,152 clients in 2001.

4.13 The proposed portfolio includes 30 grant and 13 credit programs, meets requirements for legally mandated programs, and potentially represents an enormous reduction in overall administrative expenses. This portfolio was developed through the analysis described above. The first analytical step was to identify duplications and eliminate the smaller of the programs. Those programs with very limited outreach, and those that did not target SMEs or formally registered micros, were also removed from the new program portfolio. Programs with high non-performing loan portfolios, large administrative expenses, and low budget use were also removed from the list.\textsuperscript{68} Wherever possible, very similar programs were marked for merger. An illustrative example of redundancy between the programs is related to the irrigation projects. With small adjustments to Ley Nº 18.450 and the timing of the subsidy for irrigation, the other three programs could be eliminated or merged with this one. A similar situation could be found with a number of programs aimed at promoting the timber industry.

- \textit{Ley Nº 18.450 Fomento al Riego y Drenaje} provides for a subsidy for irrigation works, managed by the CNR. Since it is legislated, it is difficult to make adjustments to the product. It is paid to the participant retroactively—so it is built on the assumption that small farmers have the cashflow necessary to build the required structures.
- \textit{Preinversión Riego} (Pre-investment in irrigation) finances feasibility studies for irrigation, and is managed by CORFO. Again reimbursement mechanism, making it difficult for small farmers to finance such studies.
- \textit{Crédito de Enlace para Construcción y Mejoramiento Obras de Riego} (Loans for Irrigation Construction and Improvement) is a “bridge” loan that provides prompt financing for irrigation works which would eventually be covered by the CNR subsidy under Ley Nº 18.450.
- \textit{Programa Riego}, managed by INDAP, subsidizes those projects not covered by Ley Nº 18.450.

4.14 There is a tension in the proposed portfolio between general products with special lines for specific sectors and a more sector-driven approach. While the general approach would be easier to promote and deliver in some ways, there are important advantages from focusing some programs on specific sectors (including fishing, mining, and agriculture, which are strategic industries for Chile).

4.15 Along this line, a Proposal for PSD Portfolio Rationalization was constructed using as a reference the “First Phase of PSD Portfolio Rationalization” and the “Basic PSD Portfolio.” This proposal was intended to follow both simplicity and sectoral criteria. The resulting proposal would consist of 43 programs, of which 30 would be grant programs, and 13 credit programs. Table 4.6 summarizes the 30 grant programs and 13 credit lines. Annex A provides greater detail.

### Table 4.6 Proposal for PSD Portfolio Rationalization

<table>
<thead>
<tr>
<th>Sector</th>
<th>Grant Programs</th>
<th>Credit Programs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fishing</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>2. Agriculture and animal husbandry</td>
<td>10</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>3. Mining</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Commerce, restaurants and hotels</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>5. Cross-sectoral</td>
<td>17</td>
<td>6</td>
<td>23</td>
</tr>
</tbody>
</table>

\textsuperscript{68} For a detailed description of each PSD program, please refer to Almeyda and de la Barra (2002), in Annex B.
4.16 An important limitation to this exercise is the lack of an integrated information system with comparable indicators on program performance, in terms of cost-benefit analysis, impact evaluations and more clearly defined outreach and administrative expenses. Such a system would enable firms to create a kind of credit and technical assistance history, enabling strong performers to attract the attention of financial institutions. The lack of such firm level tracking creates an incentive for dependency on government subsidies, rather than a “graduation” path as the firms overcome the constraints to higher productivity.

4.17 To overcome the information imperfections, a consulting firm specializing in information systems was engaged at the same time as the portfolio review and rationalization. The objective was to implement a transparent, comparable database in each institution (starting with CORFO, SERCOTEC and INDAP), and allow inter-institutional comparisons. Unfortunately, despite significant efforts to develop an integrated system, the initiative met with considerable institutional resistance.

4.18 A related proposal would be to set up a review mechanism for proposed private sector support schemes. The institution sponsoring this proposal would need to explain the unique features that contribute to high value added for the new program. The implementation of the information system (database) and the continuous updating of the “positioning map” would be an important step towards the institutionalization of evaluation practices similar to those conducted in OECD countries.

**Box 4.1 Guidelines for Evaluation of PSD Promotion Programs in OECD Countries**

- Identification of the problems that the program intends to address, and the expected impact.
- A specialized third party conducts impact and process evaluations.
- Evaluation methodologies are adapted to the particular characteristics of the program and the context (cultural, political, economic).
- The subject under evaluation participates in the evaluation (participatory techniques).
- Online systems allow the collection of data regarding beneficiaries, the instruments they have used, and resources employed, among others. This data allows the monitoring of the programs and the support provided to entrepreneurs, and provides a hard basis for evaluation work.

**INSTITUTIONAL ANALYSIS: CORFO, INDAP AND SERCOTEC**

4.19 Program design is an ideal—one that can be dramatically affected by the systems, personnel, and practices of the institution charged with program implementation. This section analyzes CORFO, INDAP and Sercotec, the three most important implementing institutions. Each institutional analysis is based on detailed interviews with senior management, a review of available documentation and statistics.

4.20 The performance of the three institutions varies tremendously. The Corporación de Fomento de la Producción (CORFO) was created in 1939. CORFO’s mission is to advance economic development in Chile by promoting competitiveness and investments, contributing to the generation of jobs for skilled workers, and insuring equal access to services promoting business modernization (CORFO 2002). CORFO is a leader in Latin America in credit and guarantee schemes for the private sector, targeting SMEs through alliances with commercial banks and private technical assistance agents. Nevertheless, there are serious questions about the value added of the instruments provided by CORFO. INDAP has failed to develop a viable loan portfolio as a retail financial institution in rural areas. It should transform itself into a wholesaler of financial services in rural areas in more developed regions, providing commercial financing (at an inter-bank rate) to local financial cooperatives and other viable retail financial institutions. Finally, SERCOTEC has a good understanding of its special

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69 Germany, France, USA, Japan, Ireland, and UK. For a broader discussion of evaluation practices, refer to Annex B: Comparative Study of International Practices in Program Evaluation.
client base, formal microbusinesses. However, in practice, SERCOTEC has become an agent of CORFO, adapting the CORFO product line slightly to better match the needs of microbusinesses. The analysis suggests that SERCOTEC should re-examine its mission, and develop specialized products that better fit the technical assistance needs of microbusinesses, rather than functioning primarily as a public sector agent for CORFO programs. Its strategy is reflected in the following lines of action:

- Advancement of technological research and development.
- Promotion of business networking and cooperation, specially amongst small and medium firms, so as to enhance their competitiveness.
- Facilitate the modernization of management practices to increase firm access to different markets.
- Support access to financial resources and new financial instruments for new firms, smaller firms and exporting firms.
- Contribute to development of the different regions of Chile, by stimulating private investment through programs specially designed according to local conditions.

4.21 To carry out this strategy, CORFO designed and implemented a series of private sector development programs and outsourced their delivery to public agencies and private partners (agents). However, CORFO directly manages a set of instruments dedicated to innovation promotion and regional development, through a network of regional offices.

4.22 The principles that shape CORFO’s activities are largely based on market demand and market imperfections. The first principle is that the State should only intervene when there are clear market failures. In addition, CORFO does not discriminate between economic sectors or geographical regions in the allocation of its resources. Finally, all products should be demand driven, as demonstrated by private sector ownership and co-financing. Within these guiding principles, CORFO has emphasized three programmatic areas -- innovation, business networking, and managerial skills training.

4.23 Given that there is no unified registry of firms that participate in CORFO programs, it is not possible to determine accurately the total number of beneficiary firms, and the distribution of benefits by firm size. CORFO’s 2001 annual report states that 28,570 firms were served during the year. Nevertheless, it is very likely that this overestimates the actual number of supported by CORFO, since each firm can simultaneously use different programs offered by the institution.

4.24 CORFO has a very large menu of services, covering most sectors of the economy, all sizes of firms, and all regions of the country. According to its 2001 financial statements, CORFO spent a total of 43,753 million pesos (US$72.9 million) in 2001, and required 14,346 million pesos (US$ 23.9 million) in administrative expenses. In other words, for every peso of administrative expenses, just over three pesos of services were provided. This compares favorably to figures for 2000. The value of services provided was 34,777 million pesos (US$57.9 million), while administrative costs were 13,760 million pesos (US$ 22.9 million). For every peso spent for administrative support, 2.5 pesos in services were offered to clients. This level of efficiency is partially attributable to the use of private technical assistance agents and commercial banks to deliver services. Unfortunately, it is difficult to compare this cost-to-benefit relationship to similar institutions in the region, because many of CORFO’s products are not offered in other countries.

4.25 CORFO’s financial base, the state enterprises, raises issues about how to streamline management for a more accurate picture of the costs and benefits of CORFO’s private sector programs. In addition, the Ministry of Agriculture provides about US$10 million per year to finance

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70 In most cases, firms are the direct beneficiaries of PSD programs. However, in a minority of cases institutions are the direct beneficiaries, such as business incubators run by universities, professional associations, or technological institutions, and firms are recorded as indirect beneficiaries.
71 Annual Peso/USD average exchange rate stood at 540 pesos in 2000 and 635 pesos in 2001 (according to data series posted in the website for the Banco Central - www.bcentral.cl)
networking programs and technical assistance. This amount represents about 40 percent of the budget assigned by CORFO to agriculture related projects.\(^{72}\) CORFO’s Council manages the Public Enterprise System (Sistema de Empresas Públicas, SEP), the. A separation of the administration of the SEP might yield better results in both state enterprise performance and private sector programming. However, any discussion of the separation of these functions should take into consideration the need to ensure sufficient resources for CORFO’s valuable technical assistance and financial services operations.

**CORFO’S PSD PROGRAMS**

4.26 **This section analyzes the private sector development programs managed by CORFO.**\(^{73}\) The allocation of funds for these programs is based on the following principles.

- (h) Guaranteeing transparency and enforcing non-discretionary rules for assigning resources;
- (i) Ensuring that the program does not distort market dynamics;
- (j) Accurate appraisal of the costs involved in delivering a specific product;
- (k) Standardization and simplification of processes, with standard eligibility criteria and automatic allocation mechanisms.

4.27 **Despite these principles, CORFO officials have noticed a number of obstacles to efficient delivery of the products.** The current system of incentives is not sufficient to engage agents strategically, making interventions more ad hoc than systematic. CORFO’s actions seem to value the participation of agents more than the solutions to the business problems of the firms. The experiences of the Integrated Territorial Development Programs (Programas Territoriales Integrados, PTI) highlight the need for stronger regional coordination of the various products offered by CORFO and other government agencies. Since regional activities have to be adapted to local conditions, they do not lend themselves to standardization. It becomes important to differentiate between those functions and programs that can be standardized and those of a more strategic character. This would require the design of two distinct mechanisms of incentives and operations.

4.28 **Standardized activities include payment collection from clients, project evaluations, monitoring technical assistance provision, and exit interviews.** Standardized technical assistance would include predefined characteristics for certain products, such as the length of time involved, the type of consultants involved, the content, and the costs.

4.29 **Decentralization of certain functions would help CORFO to standardize its activities and lower administrative expenses.** By standardizing the incentives to agents and administrative processes, CORFO could economize significantly. The main obstacle to this regionalization is the set of restrictions imposed by the Controlaría General concerning the delegation of administrative tasks. Any move to decentralize such functions would have to be negotiated in light of the existing requirements. Strategic functions that do not lend themselves to standardization include region-specific strategies, impact evaluations, good practice development and dissemination. The links between the Pro Chile Program and regional development illustrates how such integration can benefit programs in terms of outreach and financing (half of Pro Chile’s budget comes from the National Fund for Regional Development).

4.30 **CORFO’s intermediation model, using agents, has generated savings and led to innovative approaches, but also has important limitations.** Most of the experts and government officials interviewed agreed that the system has increased CORFO’s outreach substantially without increasing administrative costs. However, agents tend to limit their work to more standardized functions, and do not contribute to the strategic side of CORFO operations. There have also been

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\(^{72}\) This inter-institutional agreement represents an important bureaucratic modernization step, whereby the Ministry “hires” CORFO to operate these programs, rather than to create a whole new institution to operate them.

\(^{73}\) For a detailed description of each program, refer to Almeyda and De La Barra (2002) in Annex B.
complaints that agents offer what they know, but this may not always be what the business needs to become more efficient or profitable.

4.31 Even though CORFO is very committed the systematic evaluation of its programs, a number of deficiencies still persist. The lack of a unified database makes it impossible to evaluate the changes of a firm that participates in one or more programs. There remain critical unanswered question about the firm level impact of CORFO’s work. For instance, do firms that have a short-term credit from one of CORFO’s facilities with a commercial bank out-perform similar firms in terms of efficiency and productivity? Are firms that attend a course organized by an agent of CORFO more likely to invest in a new technology or develop a new product, market, or business plan?

INDAP: FROM RETAIL TO WHOLESALE

4.32 The Institute for Agricultural Development (Instituto de Desarrollo Agropecuario, INDAP) was created in 1962 to provide service in rural areas. Its mission is to contribute to the development of small agricultural producers and families and rural producer organizations, and integrate them into the national economy. Specifically, INDAP does the following:

- Offer training in entrepreneurial skills, innovation and management for agricultural producers;
- Provide credit to small agricultural producers and families;
- Improve local infrastructure, and support environmental conservation activities;
- Promote the improvement of agricultural products and services;
- Encourage business networking for productive and representative purposes.

4.33 INDAP serves all 13 Chilean geographic regions, and is structured according to four main areas: (i) financial services; (ii) services for the development of productive and entrepreneurial capabilities; (iii) services for the development and improvement of productive resources; and (iv) development services targeting vulnerable populations.

4.34 The universe of potential INDAP clients is about 279,000 agricultural households and enterprises, representing 1.2 million people. Small agricultural producers and families control about 25 percent of the arable land in the country and 45 percent of rural productive resources. They contribute between 25 and 35 percent of agricultural GDP, which is equivalent to 1.2 of the gross domestic product (INDAP 2003). Sixty-three percent of those agricultural units are considered to be commercially viable, with sufficient resources to generate a minimum income. INDAP’s beneficiaries are small agricultural and forestry producers in rural areas. These producers use less than 12 hectares of land and have assets worth less than 3,500 UF (around US$90,000). Their income comes primarily from agriculture, whether they own the land or rent it. The client definition has been legally mandated (Ley Orgánica N° 18,910, modified by Ley N° 19,213).

4.35 INDAP’s organizational structure includes a central office, and a well-developed network of regional offices and local agencies. INDAP’s budget in 2001 was US$180 million, with US$ 141 million coming from the national budget allocation and US$ 38.8 million from loan repayments. During the past two years, INDAP has undertaken management reforms to simplify administrative procedures, and increase the efficiency and transparency of the Institution, including the following specific steps:

- INDAP’s portfolio of programs has been streamlined by merging similar programs and eliminating redundant ones.74
- Application processes have been simplified.

74 For example, the Bono Ganadero (Cattle Raising Bonus) and the Bono de Diversificación Productiva (Productive Diversification Bonus) were merged into a single instrument, known as Modernización Agrícola y Ganadera or Bono de Modernización (Agricultural and Cattle Raising Bonus).
The concept of integral attention has contributed to more efficient service delivery. Previously it was possible for a farmer to receive a subsidy for land reparation, but no working capital loan to purchase the necessary inputs (such as seeds, fertilizer, rented equipment).  

All businesses must carry out, with a qualified external consultant they select, a diagnostic study to insure that the most appropriate technical assistance is provided.

Technical assistance projects are formulated by the firms themselves rather than by consultants.

Historically, the INDAP retail loan portfolio has performed poorly. In the past decade, an estimated US$ 1 billion in loans has been disbursed through INDAP’s credit programs. Given problems with portfolio quality and transparency of the credit operations, INDAP senior management introduced serious reforms, which are summarized below.

Senior management believes that INDAP should remain as a first-tier (retail) financial institution, given the lack of other sources that could insure that agricultural producers and rural households have reliable access to financial resources. In order to develop a credit market for this productive sector, the Bono de Articulación Financiera 76 (BAF – a subsidy covering retail financial transaction costs) has been introduced. This should help to develop a wider range of financial institutions willing to lend to rural producers.

INDAP must improve credit management systems, especially for long-term loans. Although performance indicators are very poor by international standards (the risk of the loan portfolio was 14.4 percent in 2002, and the annual loss was 10.04 percent), senior management points to improvements in loan recovery in 2002.

At the same time, INDAP senior management has expressed interest in the feasibility of moving from retail credit operations to a second tier (wholesale) role in regions where there is a critical mass of private commercial or non-profit retail institutions.

This would entail strengthening existing financial intermediaries and cooperatives with operations in agricultural areas. Financing for agricultural micro firms and SMEs possess particular characteristics that must be taken into consideration both from the perspective of a cooperative or other financial intermediaries, such as banks. Intimate knowledge of the rural clients, their ability to generate profits in the face of cyclical commodity prices, their level of risk in normal times and under unusual circumstances are all required to be a successful lender to such clients. Cooperatives are membership-based local institutions, which under most circumstances already possess such knowledge of the crops, markets, and producers.

A precondition for reorienting INDAP to a second tier financial institution is that an adequate number of potential financial intermediaries with broad geographical distribution, and appropriate qualifications are present in the region. However, there are a few regions that do not have well-developed cooperatives or other financial intermediaries. Under such settings, there is no alternative but to maintain a retail INDAP operation. However, it should be re-engineered to take advantage of the increasing number of rural finance institutions in the world. At the same time, a medium term plan should be developed to foster first tier private financial institutions, through partnerships, management contracts or other mechanisms. INDAP should not be engaged in both first tier and second tier operations in the same region, since this opens the door to unfair competition and could undermine commercially oriented retail financial institutions.

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75 As an example of these inefficiencies, it would be possible for a firm to receive a bonus for the modernization of its land track, but not the working capital necessary for the ensuing production.

76 This program counts with a leverage capacity of 1/17 (each peso worth of subsidy generates 17 pesos worth of credit). It is focused on the largest AFC segment for short-term loans and annual crops.
There currently exist a total of 13 financial institutions suitable for serving the small agricultural sector in the medium or long term: 6 are banks, and 7 are loans and savings cooperatives. Three of the banks already participate in lending to the rural productive sector (BancoEstado, Banco del Desarrollo, and Banco Santander Santiago through its subsidiary BANEFE). Senior managers of three others (BBVA, BCI, and CORPBANCA) expressed their interest in starting rural lending operations.

Eight cooperatives cover most regions of the country, with the exception of Regions I, IV, X, and XII. Those regions that lack suitable local cooperatives could be served by the commercial banks or by COOPEUCH, a cooperative with national outreach. Even though COOPEUCH specializes in consumer lending, senior management showed interest in launching first tier operations sponsored by INDAP, if adequate guarantees were offered.

From the perspective of the cooperatives defined as “suitable”, there exist a number of weaknesses that limit their ability to lend to agricultural microfirms. These weaknesses could be addressed through technical assistance to help the cooperatives with market studies and product development.

In addition, banks identified as “suitable” identified different types of limitations and institutional weaknesses that would limit their lending operations with smaller agricultural producers. These perceptions are the result of previous intermediation experiences they had in lending to smaller clients, with support from CORFO or SERCOTEC. The first column in Figure 4.1 presents the problems identified by the banks, while the second column lists the solutions proposed by the banks to address these concerns.

SERCOTEC: SPECIALIZED PROGRAMS AND SECTORAL POLICIES

SERCOTEC is a public agency set up to run like a private corporation. The objective is to provide services that increase micro and small firms’ sales, their competitiveness, and managerial capacities. SERCOTEC has developed innovative services for non-agricultural microbusinesses. Among these initiatives are the following:

- Integrated actions linking public and private agents;
- Integration of private sector data from public institutions, particularly SENCE and FOSIS;
- Systematic operational procedures in regions and other localities;
- The promotion of policies that promote an enabling regulatory environment for small and microfirms;
- Integration of information and communications technologies into support programs for micro and small businesses;
- Coordination with local governments to harmonize SERCOTEC’s actions with regional development strategies and priorities.

SERCOTEC senior management emphasized the importance of the SERCOTEC network (Red SERCOTEC), which provides technical assistance to microfirms, strengthens business associations and a national system of infocenters. SERCOTEC also assists municipalities that seek to simplify bureaucratic procedures.

SERCOTEC operates both as a public agency, designing and executing a number of its own programs, and as an intermediation agent for some of CORFO’s PSD programs (Almeida and De la Barra 2002). This study found that some of SERCOTEC’s own initiatives were redundant with those CORFO programs already operated by SERCOTEC itself. This signaled the need for the SERCOTEC

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77 Their suitability for participating in first tier operations sponsored by INDAP was defined following interviews conducted with officials from these institutions. The findings presented here are solely for exploratory purposes.

78 SERCOTEC focuses primarily on micro and small firms in the fishing and commercial retail sectors.
to revise the portfolio of programs it offers to its beneficiaries. It also stressed the need for a clear definition of SERCOTEC’s role among other institutions regarding the strategies for private sector development in the micro and small business sector. In response to this confused identity, SERCOTEC has recently undergone a process of strategic redefinition, which has enhanced the definition and attention of its target market.

4.47 SERCOTEC receives a relatively small budget for its micro and small business support operations. It would be important for the government to reconsider its commitment to SERCOTEC in light of the vital employment role played by micro and small businesses (as shown in Chapter 2). At the same time, SERCOTEC would benefit from greater independence, allowing it to move beyond its role as an agent for CORFO programs. SERCOTEC could also take on a greater role in defining policies for the sector.

**Figure 4.1 Problems and solutions related to the participation of commercial banks in INDAP’s first tier financial operations**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Solution</th>
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| Lack of information about risks and opportunities of lending in rural markets | • Improved market research skills and initial support in testing new markets, new products  
• More efficient credit risk assessment models, linked to accumulated rural market experience  
• Specialized management information system support |
| Risk reduction                                                          | • Guarantee funds  
• Training in loan portfolio diversification techniques |
| High transaction costs and bureaucracy can make some cooperatives uncompetitive; bad reputation among some clients | • Streamline internal procedures (less requirements from repeat borrowers)  
• Improve supervision techniques (from INDAP in the future) to build greater confidence in the cooperatives |
CHAPTER 5: INTEGRATING SMES IN A NATIONAL INNOVATION SYSTEM

5.1 Chile faces significant challenges as it moves toward an economy based on the creation and use of knowledge to stimulate growth and productivity. It is organized in four sections: (i) the National Innovation System (NIS) and the possibilities and limits of public promotion of innovation; (ii) technology funds; (iii) a proposal to stimulate private sector innovation; and (iv) recommendations.

NATIONAL INNOVATION SYSTEM

5.2 According to the World Economic Forum, Chile outperforms all other Latin American countries on microeconomic and innovation indicators. This success includes introduction of new technologies, technology transfer, quality of the business environment, and company strategy and operation. However, some similar-income countries in East Asia and East Europe—for example, Malaysia, Thailand and Latvia—perform better than Chile in these areas. Their overall investment climates are more conducive to business development, thanks to highly skilled labor forces, better access to business information, more advanced infrastructures, and more competitive environments, among other things. Their overall innovation frameworks are also more sophisticated, as proven by greater attraction of foreign technology through licensing and foreign direct investment, greater investments in public and private research and development and, most importantly, successful collaborations between scientific institutions and local firms. It would be useful to understand why Malaysia, for instance, is ranked as more competitive, even though it lacks the strong entrepreneurial culture of Chile.79

5.3 The National Innovation System (NIS) is the set of government and private sector policies and incentives that generate much of a country’s research and technological innovation. The National Innovation System in Chile can be improved, particularly in terms of the low level of private sector investment in research and development, labor skills and education deficiencies, and a lack of collaboration between businesses and research institutions. Table 5.1 shows the strengths and weaknesses of the Chilean NIS.

<table>
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<tr>
<th>Table 5.1 Strengths and Weaknesses of the Chilean National Innovation System</th>
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<tr>
<td><strong>Strengths</strong></td>
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<td>Broad University Network</td>
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<td>Strong competitive environment</td>
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<tr>
<td>Open economy</td>
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<td>Strong foreign direct investment</td>
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<td>Free Trade Agreements and complementary economy with the European Union, the United States, Canada and Mexico.</td>
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<tr>
<td>Export orientation</td>
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<td>Availability of public resources to promote innovation</td>
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Source: Brunner (2001); Mullin et al. (1999); Mullin et al. (2000); Bitrán (2002); Benavente, and Crespi, (1998), and interviews with experts.

79 World Economic Forum, 2004; Chile: New Economy Study, Volume 1, Executive Summary and Policy Recommendations, World Bank
5.4 Three factors limit the National Innovation System—relatively low levels of education in reading and mathematics, a very small investment rate in applied technology, and an even lower commitment from private firms. An important weakness of the Chilean National Innovation System is the low quality of education, reflected in low comprehension reading levels and knowledge of mathematics, compared to countries with similar GDP levels. In addition, given its impact on the process of transition to an innovation economy, a more worrisome aspect is the very low amount of resources dedicated to technological innovation—only 0.7 percent of GDP. This is far below the two percent average in OECD countries (Brunner, 2001). In Chile, the private sector only contributes 25 percent of the total amount and the high concentration of resources applied to basic research. This translates into a very low amount invested in applied research or transfer activities, which should translate into higher firm performance in a country at Chile’s level of development.

5.5 Innovation for its own sake is not the answer—business applications are what matter. Businesses compete in the global economy. Chilean firms are well aware of this, given the importance that exports have in the national economy. But if firms do not integrate technological innovation into their business plans, the multiple activities of the public sector to create an intensive knowledge-based economy will be ineffective. Moreover, the resources assigned to science and technology may not produce the desired results, because of the lack of concrete applications or relevance. Innovative technologies with business applications promise much more, in terms of a modern economy, significant jobs creation and increased exports.

5.6 Market deficiencies related to technology innovation range from the nature of knowledge to a need for collaborative behavior and economies of scale. The key issues include the following:

- Knowledge is a public good and does not lend itself to being fully captured by private investors.
- Innovations can produce positive externalities from which the developers cannot profit.
- In highly competitive industries, a race to innovate and a lack of coordination among firms can result in much waste of resources.
- Innovation is subject to uncertainty and can result in high returns with a significant volatility. Moreover, in some cases commercial success depends on the simultaneous development of supply and demand. All of this makes access to financing for innovative investments difficult and business tend to opt instead for low-risk projects.
- In general, firms do not have the incentive to share the technological advances they have either developed or acquired.
- Innovation requires a critical mass, to take advantage of the innate economies of scale and scope. The use of external agents to push innovations is limited by information asymmetry and moral hazard risks.

5.7 Chile is a leader in some areas of scientific research, but not in business applications that may result from the research. Chile's scientific community garners well deserved respect in the region and internationally, and is moving toward a leadership position in research among industrializing countries. While progress has been substantial it has not yet matched the country’s

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80 Chilean students placed 35 out of 38, in the Third International Mathematics and Science Study (TIMSS) in 1998. Although Chile was the only Latin American country to participate, the difference compared to other emerging market countries (including East European countries such as Hungary), was notable. On the other hand, according to the OECD's International Literacy Survey, only 20 percent of the adult Chilean population has the reading comprehension to conduct routine or day-to-day activities.

81 In the OECD countries, the private sector’s support of R&D fluctuates between 40 and 70 percent. See Bitrán, E. (2002). In Chile more than 55 percent of the resources in Science and Technology are dedicated to basic research. In Korea, the figure is 12.6 percent; in Spain, 22 percent and in the United States, 18.3 percent. See De Ferranti, et. al. (2003).

82 A counter example occurs when a firm requires its providers to adopt select production technology or product to improve its own process, as is typical in agriculture.

83 The problem of moral risk occurs when the objectives of the participants diverge and it is costly for the Principal to provide incentives for his Agent to implement the desired action (not directly verifiable). Thus, the firm is interested in obtaining a commercial result and the researcher’s goal is scientific progress.
aspirations and much remains to be done. Although, there are no specific observed inequities in Chile’s advanced research system, the country’s education system has room for improvement. In higher education, gender equity has been attained, but there is still an uneven concentration of enrollment in the upper income brackets, reaching 25.6 percent in 2000. Chile produces fewer than 100 Ph.D.s per year and would need to produce on the order of 3,000 per year to reach a level comparable to the knowledge-based OECD economies. Similarly, Chile has one scientist for every thousand economically active inhabitants, while the developed world has an average of five scientists per thousand.84

5.8 Responsibility for formulating and overseeing Chile’s strategy for scientific and technological development is vested formally with the National Commission of Science and Technology (CONICYT) and the Presidential Scientific Advisory Commission. However, several ministries currently coordinate or participate in science and technology initiatives. As a result, Chile has developed myriad policies, programs and policy instruments for research and innovation. The government would benefit from devising an overall strategy and coordinating its initiatives in these fields, aligning managerial responsibilities with accountability for results, and introducing consistent budgeting and monitoring process. To make the strategy more effective, representatives of the beneficiaries—research institutions, universities and private firms—should be involved in the design and implementation of this strategy. CONICYT’s ongoing program with World Bank support could be one strategic direction to link research institutions and the private sector, allowing for two-way communication to insure that there are business applications to the research outputs.85

<table>
<thead>
<tr>
<th>Box 5.1</th>
<th>CONICYT and the World Bank are addressing the lack of linkages between research institutions and the private sector</th>
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<tr>
<td>The Science for the Knowledge Economy Project for Chile seeks two development objectives, which, in agreement with the Government's strategy, are expected to place Chile on the path to a knowledge-based economy. First, and foremost, the project will support the development of an effective innovation system. It will do so by establishing a strong and coherent policy framework, promoting high-quality and relevant science and technology activities and by supporting key interfaces in the innovation system, especially between the public and private sector as well as international linkages. Second, and subordinate to the first goal, the project will improve the stock of human capital in the Chilean science and technology sector, a development objective which is highly complementary to the establishment of an effective innovation system and per se a critical precondition for establishing a competitive knowledge-based economy. The project development objectives will be pursued through the implementation of three components: (i) improving Chile’s science, technology and innovation system; (ii) strengthening Chile’s science base; and (iii) enhancing public-private linkages.</td>
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5.9 Many countries with which Chile would like to compete have established five and 10-year action plans to encourage technological development. These exercises include broad consultations with national and international experts and with active private-sector and university participation. These include real strategic agreements that establish a diagnostic and propose a set of measures to be implemented over time. They have been driven by an integrated and macro level approach to innovation, limited resources and the need to generate a minimal critical mass to obtain relevant research and development results.86 Two Chilean experiences have been guided by this logic: the Presidential Commission on the Development of New Information and Communication Technologies (Comisión Presidencial para el Desarrollo de las Nuevas Tecnologías de la Información y la Comunicación); and the recent Biotechnology Development Commission (Comisón para el Desarrollo de la Bio-tecnología). Participants in both efforts judged the experiences positively. It is

86 This effort is coordinated by: FORFAS in Ireland; the Ministry of Science and Technology in New Zealand and the Department of Trade and Industry (DTI) in the United Kingdom.
important to identify clearly the institution that will lead these exercises and will provide monitoring and periodic reports.  

Box 5.2 The National Innovation System of Israel shows how to “crowd in” private sector research investment, while the NIS of Finland focuses on research with cluster applications.

Both Israel and Finland had per capita incomes similar to Chile when they began spectacular takeoffs in research and development (R&D). These surges were the result of a conscious decision to target a level of R&D investment, building the national innovation system around this central concept.

For Israel, subsidies for R&D began in 1968 with the establishment of the Office of the Chief Scientist. Industrial R&D increased by an average of 14 percent over the next 20 years. In 1985, with the adoption of the Law for the Encouragement of Industrial R&D, the sector received another boost. Matching funds of up to 50 percent for existing firms and 66 percent for start-ups “crowded in” private sector investments of 41 cents for every dollar of subsidy. Successful firms must repay 3 percent of annual sales up to the dollar-indexed value of the grant. Products must be manufactured in Israel. Know-how acquired in this way cannot be transferred to third parties.

In the case of Finland, a national target was established—to increase R&D investment from 1.5 percent of GDP in 1983 to 2.7 percent by 2000. The National Technology Agency (Tekes) was set up in 1983 to finance applied and industrial R&D investments, especially through clusters. To strengthen coordination with the private sector, the Science and Technology Policy Council was established in 1987. Subsequently, to address the lack of a fully functional venture capital market, Tekes began to finance up to 40 percent of R&D investments in its projects. This subsidy is intended to strengthen the strategic and operational links between businesses and research institutes.


TECHNOLOGY FUNDS

5.10 Since the early 1990s, the Technology Funds have served as the primary public policy tool to encourage technological innovation by firms. The funds receive proposals through a competitive process or in unsolicited submissions, and evaluate and fund proposals based on their feasibility and likely impact. The main funds are described below. In broad terms, FONDEF and Fondo de Desarrollo e Innovación provide pre-competitive research grants. FONTEC and FIA support technology transfer projects closer to final implementation. The four funds share the requirement of private sector co-financing.

- **Fondo Nacional de Desarrollo Tecnológico y Productivo (National Productivity and Technolgical Development Fund, FONTEC)**. Housed in CORFO, FONTEC finances innovation projects of private firms. In 2001-2002, FONTEC’s annual budget was around US$8.5 million, supporting an average of 250 projects per year.

- **Fondo de Desarrollo e Innovación (Development and Innovation Fund)**. Operated by CORFO, its mission is to fund innovation and technological change projects in strategically important industries that contribute to both economic and social development. It mainly supports research centers and enterprises, providing US$10 million in 2002 to 62.

- **Fondo de Fomento al Desarrollo Científico y Tecnológico (Science and Technology Development Fund, FONDEF)**. CONICYT operates the FONDEF program. FONDEF approves and strengthens the scientific and technology capacities of universities and technological institutions to improve the competitiveness of businesses. During 2001-2002, its budget was around US$12 million, financing and average of 70 projects per year.

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87 In this regard, the Presidential Commissions have diluted responsibilities; hence the importance of placing in charge an institution or Ministry.
- Fundación para la Innovación Agraria (Foundation for Innovation in Agriculture, FIA). Its mission is to promote innovation in a variety of agricultural activities. During 2001-2002, its budget was around US$4.3 million, and FIA supported 150 projects.

5.11 To evaluate the operation and impact of the funds, the following criteria are considered: administrative efficiency, additionality, flexibility, relevance, impact, and overall fund coherence. Administrative efficiency focuses on the operational costs of doing business (promoting services, reviewing proposals, selection and monitoring). Amount the merits of the Chilean Funds system is its low administrative costs, representing only 6 percent of the total value of fund investment (including private sector contributions). This impressive level of administrative efficiency is explained by the use of outside experts and information technologies in operations management.\(^{88}\)

5.12 Nevertheless, low administrative expenses have some important costs and implications:

- The shortage of qualified personnel and resources increases the time required to respond to proposals. This can be a high cost for business operators, who often face tight production deadlines imposed by clients. Significant delays discourage them from turning to these funds for assistance.
- Outside evaluators are often paid below market rates, which leads to a high turnover of evaluators. This results in a loss of confidence in the quality of the reports (particularly in the case of FONTEC). Also, given the small size of some segments of the technology market, all potential evaluators have vested interests.
- The funds are not able to offer sectoral diagnoses or maintain a technical and strategic dialogue with participating firms because the funds are seen as sources of operational advise and funding. This is a constraint to the emergence of comprehensive research and technology transfer programs.

5.13 Additionality refers to value added content and pricing that do not disrupt markets (through “crowding out” of commercial providers of services). The existence of public grants is always subject to questions of redundancy and displacement of long-term market solutions. After all, a firm has incentives to solicit public funds even when it has the financial means to carry out technology improvements on its own.

5.14 FONTEC provides direct support to projects that adopt or adapt innovation, more than pre-competitive research and development. In these types of initiatives, it is more likely to observe replacement of private funds by public resources. One study of enterprises supported by FONTEC concludes that public resources have provided the incentive to realize projects that would not otherwise have been done.\(^{89}\) Moreover, Benavente (2002), using databases from two surveys of innovations in applied technologies of more that 450 Chilean manufacturing enterprises, identified crowding-in by public innovation subsidies.\(^{90}\) The study compared innovation between a base year (before using fund support) and later years and found that the businesses increased their spending on innovation more than the original public contribution. Firms that did not use the funds did not invest as much in innovation spending. The final results showed that for every dollar from FONTEC, the firms invested US$1.30 of their own funds.\(^{91}\)

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\(^{88}\) Applications can be found on the websites of each Fund.

\(^{89}\) ILADES (1998).

\(^{90}\) The surveys were completed in 1995 and 1998.

If the funds offer relevant services, the private sector responds with complementary investment. The figures on private sector contributions to the technology and innovation projects are impressive. Nevertheless, in the cases of pre-competitive projects, this conclusion should be understood as relative, since many of the projects are financed through the universities and technology institutes. These institutions support the projects with existing equipment and installations and count the man-hours of existing staff members, taking the pressure off private firms. By not providing new resources, the involvement of the businesses in the results and general orientation of the projects is less than expected. The result is that the researchers, not the private sector, control the R&D projects, practically without oversight.

Universities and technology institutes have learned how to submit winning applications for grants from FONDEF and Fondo de Desarrollo e Innovación. However, the true motive is to continue to finance their operations, rather than moving findings into business applications. This is consistent with the analysis that led to the World Bank-supported project with CONICYT, which includes strategies for private sector insertion of technology experts from technology centers and universities. The Funds have responded to this “indifference” to private sector business applications with new products. Fondo de Desarrollo e Innovación created the “proyectos empresariables”, while FONDEF initiated the technology transfer product line. These initiatives are too recent to be evaluated.

One way to raise the relevance and leveraging of public programs could be to require a larger co-pay from participating enterprises. However, this option should be considered carefully since, with a larger private contribution, the projects will probably lean towards less risky technology, greater private appropriation of the results and less externality (and, as a result, diminished social profitability). In some measure, this could already be occurring in the case of FONTEC. The progressive decline of the Fund’s support as a proportion of the total project cost and a reduction of the transferred amounts could result in narrowing the list of participating firms to larger enterprises and financing less innovative activities. The only way to be sure of the effects of changes in the co-pay requirement would be to carry out an impact evaluation of the program.

The funds have demonstrated their flexibility, adjusting to changing conditions. The Fondo de Desarrollo e Innovación is the best example of this flexibility. To apply for resources, the FDI uses open competitions, thematic and regional competitions, bid tenders for specific topics or one-stop windows. This flexibility is well received by clients because it permits a rapid response to their requests. Some complaints persist regarding the Fund’s operational variability. Moreover, when new products are developed, the Fund does not tend to close down older products with less demand. The result is “growth by aggregation,” leading to confusion among potential clients.

Public resources channeled through the Funds generate a positive social impact greater than alternative projects. Evaluations of the impact of FONTEC, FONDEF and Fondo de Desarrollo e Innovación measure firm earnings and consumer surplus by the shifting of resources to other activities, which is the result of efficiency gains from innovation. Using conservative assumptions on the diffusion of innovation, and restricting the support of the Funds exclusively to the innovation’s progress during the implementation period (which is thought to be between two and a maximum of four years without fiscal support), the results of the evaluations are broadly positive, revealing a high social benefit.

Chile’s SME portfolio does not demonstrate a high level of coordination among the Funds, which would avoid duplication or overlapping activities. Chile does not have a formally declared and accepted technology innovation policy. Nor does it have a mechanism to coordinate the activities to be carried out in the areas of science, innovation, and technology. The lack of a central

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92 See in particular, Mullin et al. (1999), Crespi and Rau (2000) and INVERTEC-IGT (1999).
93 This situation is not bad by itself, but there are suspicions that the costs were artificially elevated.
94 An Inter-American Development Bank mission charged with evaluating advances science and technology made this observation. See INVERTEC-IGT (1999).
authority to coordinate the innovation and technology efforts and provide a strategic framework with
unifying principles leads to a loose ad hoc coordination between the funds. 96 It would be far more
effective if there were a forum for exchange, a shared diagnostic and a strategic framework to incur
efficient use of resources, minimize mixed signals to potential product users, and maximize business
applications that result from innovations and technology efforts. 97

5.21 The Government would benefit from evaluating the results of current e-business
innovation programs, and should continue driving diffusion of ICT among micro, small and
medium businesses through direct use of ICT. Chile has a significant number of programs to
support business innovation and digital development. An ongoing World Bank study identified 90
public sector development programs with productive purposes, some of which promote ICT
development (e.g., Internet FAT). 98 According to preliminary findings of the World Bank study, these
programs receive favorable ratings from most users but are not broadly known, and significant
portions of the allocated funds have gone unused. The government may want to conduct an evaluation
of these programs, including their use of funds for ICT initiatives and their impact on micro, small and
medium businesses. Promoting the creation of online production chains linking financial institutions,
large firms and micro, small and medium businesses could improve the focus of existing programs
supporting e-business adoption. This would give small firms better access to larger markets, the
opportunity to increase liquidity by receiving advances on their credits, and increased efficiency
through faster order processing, reduced error rates and lower transaction costs. 99

PRIVATE SECTOR PARTICIPATION

5.22 While the technology and innovation funds have been performing well, there is room for
greater private sector participation. A careful balance has to be struck to avoid “capture” of the
facilities by certain sectors, regions, or business networks.

5.23 The promotion of foreign direct investment (FDI) is one way to speed up the
incorporation of knowledge in a country’s economic activities. FDI is usually composed of
investment capital, combined with management experience, product design and process advances.
Chile has been very successful in attracting FDI, particularly since 1990. Its public security level,
institutional transparency and well-established democracy make it an attractive choice for international
investors. The disadvantages that partially balance these features include a small domestic market and
the distance from key markets in North America and Europe.

5.24 Many countries have tried to compensate for specific disadvantages with generous
incentives, 100 but too many subsidies have the risk of attracting investments that are not based
on a country’s advantages. These investments eventually become uncompetitive in international
markets. The investors stay only as long as the subsidies last and do not develop important linkages
with the local economy. 101 Incentives should be reserved for those sectors that offer a long-term
prospect for competitive production, but due to industry-specific requirements would not attract
sufficient FDI naturally. The most effective incentives for investments with a technology component

96 Another significant development is that there have arisen various sectoral Funds housed in the Ministries. Among these,
are the Fund for Innovation in Public Works, a Fund for Innovations in Health and a Fund to improve plant health
administered by the SAG.
97 The area of patent promotion is a case where problems can occur and is a major shortcoming. FONDEF includes patent
resources among its product lines, but restricted to those executing projects with its support.
Almeyda and De La Barra, (2002).
100 This practice exists in developed and underdeveloped countries. An analysis of the incentives offered to large
transnationals during recent years can be found in UNCTAD (2002) p.205.
101 In addition, Bloningen and Van Kolpin (2002) find evidence that in the face of strong stimuli to reduce costs, enterprises
can modify technology processes and reduce their innovation activities. This phenomenon is aggravated if, in addition, there
is no critical mass of enterprises that favors the benefits of clustering.
support include training and capacity building, support for research and development, high quality infrastructure and, in general, high impact incentives that support the enterprise’s business. 102

5.25 Strong international competition to attract FDI has made it an area of growing specialization. Ireland, Sweden, Costa Rica and various Asian countries have been especially successful because they have special agencies dedicated to attracting foreign investment and have established offices in the markets in which they concentrate their promotion efforts. Efforts to attract FDI can benefit from general dissemination campaigns on the country’s image, but they also require face-to-face work. This is particularly true for countries that are still not on the “mental map” of the decision makers. Promotion efforts should be sustained in time, providing updated information to established contacts.

5.26 CORFO manages two programs that seek to attract FDI in specific sectors: (i) the TODOCHILE program and (ii) the High Tech Investment Attraction Program. The TODOCHILE program promotes investments outside the Metropolitan Region, and analyzes sectors with high development potential. TODOCHILE has regional offices to attract investment and to search for foreign investors. The High Tech Investment Attraction Program was designed to portray Chile as a strong market for investments in information and communication technologies. Under this program, Chile would become an anchor for FDI in this sector, and would maximize local linkages by supporting local businesses involved in ICT activities. Although there have been some successes in the area of software development, the business segment that has received the most investment has been in the areas of call center and shared services centers. This type of activity develops qualified employees and uses intensively the facilities provided by the country’s telecommunications infrastructure.

5.27 Despite such promotional efforts, the low availability of engineers and qualified technicians is a limiting factor. 103 Foreign companies with investments in high tech sectors have been able to hire sufficient skilled personnel for the early phase of development and production. However, due to inadequate numbers of skilled technicians, firms are frequently unable to expand their activities. To overcome this obstacle, some companies have reached agreements with local universities to train professional staff. Since CORFO already has a broad menu of technology support programs, these could also be part of an attractive package of incentives to attract FDI in high tech sectors. 104 Another option would be for the government to ease immigration restrictions to enable firms to attract skilled technicians from other countries.

TECHNOLOGY ADOPTION, ADAPTATION AND INNOVATION

5.28 There are three options to develop a technology-rich business environment—adoption, adaptation or innovation. 105 The most profitable strategy for the majority of Chilean companies is to adopt technological innovations from the large international innovation centers. This permits business applications without the enormous research and development costs incurred by inventors. This strategy is also the most profitable because it saves time and resources.

5.29 There are a select number of sectors in which the country has succeeded in exploiting its comparative advantages as an extension of research and development investments, including wine production, mining, and forest products. These sectors have sustained the export growth of the last two decades and are operating very close to the international frontier of knowledge for the

103 According to the Ministry of Education, around 2,200 engineers graduate each year, among whom, around 1,400 are civil and industrial engineers and only around 500 are electrical, electronics and computer engineers. To these, there must be added around 600 students (four-year programs) in those areas.
104 For example, the Programa de Desarrollo de Proveedores of CORFO's is conceived of as an instrument to strengthen suppliers of firms that show significant sales, but not to support the creation of suppliers for start-up firms. Therefore, CORFO should consider elaborating performance agreements to develop R&D activities with foreign enterprises established in the country, instead of forcing them to participate in tenders whose methods of operation are cumbersome for start-ups.
105 There is a great deal of discussion on technology adoption, adaption and creation in de Ferranti, et. al., Closing the Gap in Education and Technology, World Bank, 2003.
sector. Research and development efforts should be concentrated in those sectors, since they are natural candidates for dynamic, endogenous innovation. This will result in the production of creative knowledge and new sources of wealth, and is in the spirit of the regional and international free trade agreements. These sectors are also candidates for cluster development, since they link research institutions and firms to boost Chile’s innovation capacity, according to a number of international studies. At the same time, these strategic production chains would benefit from an analysis of the technological bottlenecks, trends in international competition, and the relationships between key actors.

5.30 Based on a ranking of problems and opportunities, technology programs can be structured with objectives defined by the companies themselves. The programs can include collective or individual research and development projects (with different incentives for each case), investments in improved research capacity, training and technology transfer programs to improve suppliers, among others.

5.31 Public technology institutes can be strengthened and reoriented to play a more central role in innovation development. There are six public institutes with research and development programs, five of which focus their efforts on natural resources industries. Several of these institutes lack a sufficient number of high-level specialists, are in a precarious financial situation, and have few venues to transfer their findings to the private sector. The lack of private sector links represents a major problem for the technology institutes, since their purpose is to develop applicable technologies.

5.32 How can the public technology institutes be reoriented to serve private sector needs? The first priority should be to focus on institutional development. The institutes should also build strategic alliances with international firms, identified through a competitive bidding process. These partners could contribute skilled personnel, cutting edge technology, and business applications. To encourage these links and build long-term programs, the government should consider incentives, such as matching grants.

5.33 The public interest activities of some of these institutes, such as the generation of information that contributes to regulations) should be combined in a single public institution concerned with natural resources issues. Given the importance of this area in the nation’s business sector and in exports, an institution of this nature is fully justified. The new institution could assume research and development activities and participate in applied technology transfers with foreign counterparts and the private sector. This increased participation by the private sector should be accompanied by some public or academic presence to reduce the risk that the private business interests will “capture” their capacities. Fundación Chile could serve as an example in this regard.

5.34 To take on this more focused role, the public technology institutes require more resources to build capacity and hold on to key staff. Although they can obtain an important part of their resources from competitive projects and the sale of services, they need additional resources to develop their systems and services. Otherwise they run the risk of not being widely connected and respected. One way to implement these transfers is to establish performance contracts between the institutes and an authority that acts as a client.

106 Aquiculture, Vinculture, Mining, forest sector, wood-derived products, etc.
107 Stern et al. (2000), p.3
108 They are: Centro de Investigaciones Minero Metalúrgicas (CIMM); Centro de Información de Recursos naturales (CIREN); el Instituto de Fomento Pesquero (IFOP); Instituto Forestal de Chile (INFOR); Instituto de Investigación Agropecuarias (INIA); Corporación de Investigación Tecnológica (INTEC). Fundación Chile, a private entity of which the State is a partner, can be added to this list. Presently, INTEC is in the process of becoming a part of Fundación Chile. Except in the case of INIA, which has a budget of around US $ 25 million, the public institutions manage projects with less than US3 million per year.
109 A detailed discussion can be found in Mullin et al. (2000).
110 Fundación Chile has the advantage of being a private institution; even through public sector representatives are on the board of directors. Fundación Chile is able to start companies, and is tightly linked to the private sector.
CHAPTER 6: REORIENTING THE PARTNERSHIP TO BUILD SME PRODUCTIVITY

6.1 The overall conclusion of this report is that the Government is providing a great deal of assistance based on traditional approaches and in an uncoordinated ways, with little proof of impact. This section presents a new streamlined partnership approach under the leadership of the Ministry of Economy to channel the Government’s support mainly to SMEs that are prepared to invest in productivity-enhancing innovations. In addition, this section offers a summary of the recommendations, proposed policies and actions developed in the previous sections. These recommendations are intended to strengthen the work of the institutions responsible for the development of SMEs in Chile, and to encourage higher productivity, innovation and integration of the SMEs themselves.

6.2 Market interventions by the Government that target SMEs are justified due to market imperfections and the firm size biases of existing regulations. The Government’s role should be to provide short-term incentives for risk-taking SMEs to innovate, rather than supporting “business as usual” marginal expansion by inefficient SMEs. The Government can serve as a catalyst, encouraging the firms themselves to make the medium and long term investments and commitment required to become efficient and to create new market relationships that could lead to long term growth. The Government should also take action to address existing regulations that introduce biases in favor of large firms.

6.3 Interventions to develop markets for financial and non-financial services will only be successful if the long-term effects of SME efficiency and innovation outweigh the distortionary effects of Government interventions in markets. This argument points to the need to gain an in-depth understanding of the structure and performance of existing markets and to leverage existing institutions and business networks. To weigh the costs, benefits and distortionary effects, there must be independent evaluations of the impact of Government interventions in terms of institutional performance, the development of efficient markets providing rational signals and incentives, and the ability of SMEs to innovate and compete in these markets. To avoid long term market distortions, this study concludes that the role of the government should be to promote (i) linkages among SMEs themselves and between SMEs and large firms; (ii) the adoption by SMEs of technologies and innovative processes that can raise their productivity and competitiveness, and, to the extent possible, (iii) mechanisms to lessen SME vulnerability during economic downturns.

6.4 The Government’s SME support portfolio should be reoriented to invest more in transformational support to SMEs. Transformational programs should dominate the portfolio and the investment in SMEs. There will still be a need for a select number of well-targeted socially oriented programs (to help marginal businesses survive and slowly build asset stocks, or to spark economic activity in a marginal region of the country). Some standard operational support programs for SMEs might be justified, but these should have a clear timeline for the “graduation” of an individual firm. The institutions managing the SME support programs should be able to differentiate between those sectors that need help to resolve networking or other problems, and those that can resolve them with no external input (such as wine and pharmaceuticals in the case of network development).

6.5 There should be a clear definition of limitations to the Government’s role, with greater “buy-in” from private sector firms and business associations. The government should address the regulations that accentuate the differences among companies of different sizes, as well as helping to correct the inefficiencies and deficiencies of the market. In addition, the government should identify and adjust the laws, which require multiple products from different institutions to solve a single sectoral issue (the case of soil conservation is provided as an example in Chapter 4, Table 4.4, and the Technical Annex). As is the case with the PROFOs, SMEs should contribute more over time, as a specific intervention demonstrates its effectiveness. For instance, SMEs should be expected to adopt new technologies, invest in in-firm training, and make quality, packaging and labeling changes. SMEs
should be encouraged to “graduate” from most types of government-supported interventions. For example, network support programs (such as the PROFOs) should provide the SMEs incentives to “graduate” within a reasonable period of time (three to four years). The network should be on the path to self-financing from the start.

6.6 An integrated information system would permit the Ministry of Economy, with the mandate to manage the private sector support portfolio, to make performance-based comparisons and efficient allocation decisions. To provide leadership in the proposed reorientation of private sector support programs, the Ministry of Economy will require standardized information collection at firm and institutional levels to compare the cost-benefit of each program. All institutions would have to move beyond anecdotal evidence to control groups, time series studies, and other statistically significant evaluation methods. This could also be achieved with independent evaluations (with evaluation capacity built within the Ministry of Economy or outsourced periodically with an experienced private firm). For the public sector institutions (CORFO, INDAP and SERCOTEC), the annual programming and administrative budgets could be based largely on proven results and cost savings from streamlined systems—starting with real costs rather than budget allocations. Indicators should include (i) the actual number of clients served (rather than annual estimates); (ii) independent client satisfaction surveys; (iii) administrative efficiency; (iv) additionality; (v) impact in terms of SME efficiency, innovation and integration; and (vi) overall portfolio coherence.

6.7 The Ministry of Economy should develop the capacity for ongoing international benchmarking with OECD countries in transformational types of support activities. Key areas for ongoing comparison include SME networking, innovation and technology adoption, and the development of markets for venture capital and angel capital.

6.8 Finally, the Ministry of Economy should coordinate the development of a National Innovation System that unites all private sector support programs of all Government agencies toward common goals. Innovation for its own sake is not the answer for a country like Chile—it is business applications that matter. Many countries have established five and 10-year action plans to encourage the adaptation and adoption of new technologies with business applications. Chile has recently taken on the challenge of improving research facilities and building links between those centers and the private sector. However, there are still relatively few engineers and qualified technicians, and they are concentrated in institutions with few or no links to the private sector.

DEVELOPING A NATIONAL INNOVATION SYSTEM LINKED TO THE PRIVATE SECTOR

6.9 To remain competitive, Chile must move beyond the existing approach to private sector development to a broader view of the role of the private sector in the national economy. An essential tool for this evolution is the national innovation system—the set of policies and incentives that support the national, academic and other institutions that generate much of a country’s research and technological innovation. Chile is a regional leader in several areas of scientific research. However, the necessary linkages between research and the private sector are lacking. While innovation can be worthwhile for its own sake, business applications are much more important as a stimulus for economic growth, jobs creation and competitiveness. If firms do not integrate technological innovation into their business plans, the multiple activities of the public sector to create an intensive knowledge-based economy will be ineffective. Moreover, the resources assigned to science and technology may not produce the desired results, because of the lack of concrete applications or relevance. Innovative technologies with business applications promise much more, in terms of a modern economy, significant jobs creation and increased exports.111

111 The Chile Science for the Knowledge Economy Project implemented by the National Comisión for Science and Technology (CONICYT) supported by a loan from the World Bank. The project development objectives will be pursued through the implementation of three components: (i) Improving Chile’s Science, Technology and Innovation System; (ii) Strengthening Chile’s Science Base, and (iii) Enhancing Public-Private Linkages.
Three principal factors limit national innovation—low levels of education in reading and mathematics, a very small investment rate in applied technology, and an even lower commitment to technology investment by private firms. To overcome these limitations, Chile should consider establishing a five- or 10 year action plan to encourage technological development, as many of its competitors have. These exercises include broad consultations with national and international experts and with active private sector and university participation, with real strategic agreements that establish a diagnostic and propose a set of measures to be implemented over time. Examples in Ireland, New Zealand and the United Kingdom offer instructive models in this area. They were driven by an integrated and macro level approach to innovation, limited resources and the need to generate a minimal critical mass to obtain relevant research and development results.

A key feature of a vibrant national innovation system is a set of coordinated policies and specialized institutions under the direction of a Government agency. In the Chilean case, there is no central institution charged with coordinating the various efforts and policies that jointly contribute to a national innovation system. In such cases, competition between different Government institutions blocks the necessary coordination and leads to a duplication of efforts, and confusing and inconsistent signals and incentives for private sector actors. This coordination should take place in four areas: (i) tapping into global knowledge, (ii) creating and adapting knowledge, (iii) disseminating knowledge, and (iv) applying knowledge.112

Strategic analysis and plans with a long-term focus should become the basis of all future work in the area of innovation and technology development. This strategy should include the following:

- Definition of medium and long term objectives in the field of innovation;
- Clear assignment of the authority charged with coordinating different programs to promote innovation, which would also be responsible for tracking the results;
- Establishment of clear, verifiable criteria for the programs (such as co-financing, measurable objectives, demand orientation, additionality, etc.);
- Wide dissemination of the information about resources available to support innovation, in addition to data on the projects benefiting from such support;
- Clear priorities in the fields of research and development and the transfer of technology;
- Clear definition of special strategies and courses of actions to promote innovation, such as intellectual property protection, specialized training, and technology institutes, among others;
- Organization of a system to propose policy changes based on program experiences.

This strategy would be built upon a consensus on what can be achieved in the country. Given limited resources available for this transformation, it becomes important to be able to evaluate and compare different instruments intended to promote innovation. This will insure the best use and efficiency of these investments. It will also be important to concentrate the efforts in research and development in those sectors with the highest potential for innovative, productive gains.

**IMPROVING ACCESS TO INPUT MARKETS**

**FINANCE SECTOR**

For Government interventions in financial markets, the emphasis should be on making SMEs more attractive and better documented candidates as new clients of commercial banks, finance companies and investors. Specific objectives should be: (i) to lengthen loan maturities; (ii) to lower the risks faced by commercial banks and finance companies which wish to experiment with

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specialized SME products and delivery mechanisms, (iii) provide a more supportive framework for mutual guarantee associations (MGAs), and (iv) improve venture capital incentives and mechanisms.

6.15 The key to longer loan maturities for small businesses is the Fondo de Garantía para la Pequeña Empresa (FOGAPE) guarantee system, which should be extended to cover long term loans. At present, only BancoEstado is using FOGAPE extensively. Banks and finance companies might be more interested in lending to small businesses if they were aware of recent studies that confirm that there are no high mortality rates for small business in certain sectors. However, FOGAPE should not be extended to cover start-ups or microbusinesses.

6.16 To help overcome the high costs of credit for SMEs, it would be useful to encourage the development of specialized platforms within the existing banks. One method would be to purchase subordinated bonds issued by these banks, which would have the character of quasi-equity, so they could be used like paid-in capital to leverage resources. A premium could be paid for bonds used to finance long-term SME sector activities. Banks and finance companies should also be provided with recent studies that show that small and medium sized firms have higher survival rates than previously thought.

6.17 International experiences should be highlighted that demonstrate the different systems for banks to evaluate loans to micro and small enterprise clients. For instance, special parametric models have been developed by several commercial banks in the region. Also, streamlined processing of subsequent loans, based on repayment performance, has lowered costs for commercial banks in Uganda, Indonesia and Nicaragua. Technology has also lowered the costs of serving SMEs and microbusinesses, such as using palm pilots to manage loan officer portfolios, using smart cards tailored to the debt capacity of SMEs, and setting up automatic teller machines in neighborhoods where there are concentrations of small businesses.

6.18 The regulatory framework for mutual guarantee associations (MGAs) should be reviewed. Mutual guarantee associations in OECD and other countries have demonstrated that they can provide access to financing for member firms. They are also able to strengthen the relationships between firms, which can in turn lead to other associative, productive schemes. These associations do not represent as high a risk to public finances, since the mutual guarantee is based on a high degree of information about sectoral risks and the individual firm’s credit history and profit potential.

6.19 All Government programs should contribute to a strong credit culture and the risk-based evaluation of loans, to prepare for periods of financial sector instability that can damage the private sector, especially SMEs. For the Government, this means a commercial approach to relationships with commercial banks and other financial institutions. For instance, SME debt forgiveness programs should be avoided. Under extreme circumstances, when such a program can be justified, a clear preference should be given to firms that repaid their loan obligations on a timely basis before the start of the crisis. Under no circumstances should a Government loan bailout be perceived as automatic for a region of the country, a sector, or a financial institution.

6.20 For venture capital, the small size of the Chilean economy and the relatively small inventory of available bankable innovative projects show that interventions are required. Policymakers should focus their efforts on promoting “classic venture capital,” where interventions are most likely to generate the greatest value added. The regulatory framework should encourage private investors to assist in the early phases of new businesses. The Government can act as an information broker, linking those with innovative ideas with those who have investment funds available, including foreign venture capital funds. For instance, the tax incentives in the Capital Reform should include qualified individual investors as well as institutional investors. Some interventions should be focused on innovative businesses and the “angel capital” investors, who could

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113 This is a variation on Bank Rakyat Indonesia (BRI) Unit Desa system’s interest rate rebate for sound performers. (Robinson, 2002).
114 CSES-ECEGD (2002)
cover the smaller market niches that are too small or specialized for institutional venture capital investors.

**WORKER TRAINING**

6.21  **It is increasingly clear that sound policies in labor, complemented by investments in education and technology promotion, establish a good environment for worker training investments.** Chile has made several key strategic decisions that have led to satisfactory results, such as placing INACAP in a competitive market, using demand-driven mechanisms, encouraging in-firm training investments. Beyond setting the right market-oriented tone, the Chilean approach has come up with useful incentives to encourage firms to train their workers, such as the SENCE system providing tax deductions for worker and management training investments.

6.22  **Improvements could be made in worker training by (i) targeting growth-oriented firms, (ii) establishing an evaluation system, and (iii) developing diagnostic tools to measure gaps in worker skills.** Firms that invest in technology upgrades should be targeted for worker training, including in-firm training support. This would enable those firms, already interested in improving productivity, to raise worker skills quickly to get the full productivity gain from the equipment and work process investments.

6.23  **An evaluation system should be put in place to monitor firm participation and measure the impact of the provision of in-firm training.** Ideally this would track investment amounts, the number of workers receiving in-firm training and external training, and the productivity gains resulting from such investments. The evaluation system could track over time those firms that receive support from government programs, those that invest without external support, and those that do not invest in worker training. This might focus on a subset of firms that have taken advantage of the SENCE incentives, to see under what conditions this system contributes to increased worker productivity.

6.24  **A basic worker skills diagnostic tool would enable SMEs to quickly identify gaps in worker skills and consider training options for addressing them.** This could be adapted to support the Programa de Desarrollo de Proveedores (Program for Supplier Development, PDP). Develop standardized diagnostic models for suppliers, with the participation of businesses that use the PDP mechanism. Other areas of specialized training that SMEs are likely to identify are in information and communication technology and computerized production machinery. (This diagnostic website could be linked to the one-stop call center described below.)

**TECHNOLOGY DEVELOPMENT**

6.25  **Chile can improve the use of technology funds by eliminating the sector focus of some funds, while the performance of technology institutes would benefit from links to international researchers with innovation experience.** There may be cases where a sector-specific fund has been developed, but a more general streamlined competitive technology fund might be more effective. FONTEC seems to have wide acceptance, and the Government should expand its budget without adjusting the private firm co-financing requirement. Performance-based incentives could be developed to encourage the development of technologies with productive uses. A web-based portal would be a useful means of providing information on potential technology investments to domestic and international investors. Finally, the Government could play a catalytic role in linking technology institutes to international partners, allowing Chile to move quickly from technology development to technology adaptation.

6.26  **Technology support should be channeled to the most productive sectors.** The tests for technology support should include clearly demonstrated comparative advantages, sustained exports in recent years, and the ability to operate on the frontier of worldwide knowledge (in many cases with the clusters model). This approach would generate dynamic endogenous innovations that would result in new sources of income. The facilitation of closer links between the research institutions and clusters could have a positive significant impact in Chilean innovation capacity, as shown in numerous
international studies. The principal production chains should conduct strategic planning exercises, defining the principal barriers and opportunities, and developing technology-based strategies that are linked to the national approach and defined by the participant firms themselves.

This is the time to strengthen and reorient the public technology institutes. To strengthen the research institutes, it would be important to have international bids to look for the best strategic partners, providing their know-how, specialized personnel, and experience to strengthen the local partners. It is also important to assure that the public research institutes are not “captured” by special interests.

NETWORKING

6.27 Networking by firms should become a principal strategy of government policy, not only for SMEs, but to insure the competitiveness of the entire production system. This approach should be systematized and cover the various regions, taking advantage of the unique productive opportunities of the different regions. This would create a synergy between specific support programs and would generate competitive advantages based on local productive systems. Specific proposals for the PROFO and PDP programs would be to improve the standardization of information for registration, tailor PROFOs to eliminate entry barriers and enable greater SME participation, and reconsider the use of PDPs for the commercial sector. To better understand the dynamics and opportunities, a comparative review of recent programs of INDAP, the PROFITO of SERCOTEC and the PDP of CORFO should be undertaken. A study of the PDP of Nacional Financiera (Mexico) could lead to useful changes in the Chilean approach.

STREAMLINING THE SME SUPPORT PROJECT PORTFOLIO

6.28 This study recommends the elimination of 39 SME and broader private sector support programs as part of a refocusing of the missions of three key institutions—CORFO, Sercotec and INDAP. The analysis of the existing portfolio of 82 programs found that these could be trimmed to a portfolio of 43 instruments. The new portfolio would include 30 grant-based programs and 13 credit programs. The smaller number of programs would allow for more effective dissemination campaigns, moving the programs closer to their respective target markets. Such a portfolio of SME support programs could be demand-driven, lower overall administrative costs, avoid duplication and inter-institutional competition, and meet all legal requirements for such programs. A central policy of the development of SMEs should determine the objectives and functions of an integrated Portfolio of Business Development programs. Table 6.1 provides a summary of the proposed Portfolio of Business Development instruments by sector.

Table 6.1: Proposed Portfolio of Business Development Programs

<table>
<thead>
<tr>
<th>Sector</th>
<th>Grant Programs</th>
<th>Credit Programs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fishing</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>2. Agriculture and Animal</td>
<td>10</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Husbandry</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Mining</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>4. Commerce, Restaurants, Hotels</td>
<td>18</td>
<td>6</td>
<td>23</td>
</tr>
<tr>
<td>Total Business Development</td>
<td>30</td>
<td>13</td>
<td>43</td>
</tr>
</tbody>
</table>

6.29 Since there is a strong tendency among Chilean public agencies to create new programs to meet the perceived needs of certain target groups, it is imperative to have in place a centralized review system for proposed SME support programs. A centralized monitoring system and a review by the Ministry of Economy, responsible for the performance of the programs, would
play an instrumental role in maintaining order and balance in the menu of programs for SMEs. This system would develop and employ minimum criteria and requirements before a proposed instrument could be included in the development program portfolio. It would also permit policymakers and clients to see the entire range of programs. In a subsequent phase, this system could compile standardized information to measure the delivery costs and coverage of each program, thereby enabling timely comparative evaluations between the programs.

REFOCUSING AND STREAMLINING KEY INSTITUTIONS

CORFO: A REGIONAL LEADER IN NEED OF SYSTEMATIC MONITORING

6.30 CORFO’s financial base—the income of the state enterprises it controls—raises issues about how to streamline management for a more accurate picture of the costs and benefits of its private sector programs. CORFO’s Council manages the Sistema de Empresas Públicas (SEP), which includes mining, coal, mail, wheat marketing, railroads, and oil companies. A separation of the administration of the SEP might yield better results in both state enterprise performance and private sector programming. However, any discussion of the separation of these functions should take into consideration the need to ensure sufficient resources for CORFO’s valuable technical assistance and financial services operations.

6.31 Decentralization of certain functions would help CORFO to standardize its activities and lower administrative expenses. The main obstacle to this is the set of restrictions imposed by the Controlaría General concerning the delegation of administrative tasks. Any move to decentralize such functions would have to be negotiated in light of the existing requirements. Strategic functions that do not lend themselves to standardization include region-specific strategies, impact evaluations, good practice development and dissemination. The links between the ProChile program and regional development illustrates how such integration can benefit programs in terms of outreach and financing (half of ProChile’s budget comes from the National Fund for Regional Development).

6.32 Integration of some CORFO programs would likely increase the impact for firms. The integration of some initiatives (such as Todo Chile) with region-specific strategies demonstrates that there is a great deal of potential in this strategy for CORFO. A plan should be developed to strengthen the CORFO regional offices, in terms of both infrastructure and specialized staff. In this context, the relationships with regional governments should also be evaluated.

6.33 CORFO’s intermediation model, using agents to implement its programs, has generated savings and led to innovative approaches, but also has important limitations. Most of the experts and government officials interviewed agreed that the system has increased CORFO’s outreach substantially without increasing administrative costs. However, agents tend to limit their work to more standardized functions, and do not contribute to the strategic side of CORFO operations. There does not appear to be consistency in the service intermediation model (Agentes Intermediarios de Fomento). There have also been complaints that agents offer what they know, but this may not always be what the business needs to become more efficient, competitive or profitable.

6.34 The agency system should be based on more open competition. The development and consolidation of the agency system used by CORFO requires clear expectations about the role and contribution of each of the parties. Private institutions that operate in the various regions of the country and offer enterprise development skills services should compete in a public bidding process, with clearly defined minimum quality outputs and higher prices for high quality products. To insure equal access to such bids, regions with less developed institutional bases should receive technical assistance to enable them to participate. Strong performers should also be recognized in terms of advanced certification in their areas of expertise.

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115 The management tool (arbol de posicionamiento) at the heart of this proposal is provided, along with justifications for specific recommendations for some mergers and the elimination of some programs, in the Technical Annex.
6.35 **A standard registration form, as part of an integrated database, would make it easier to track the performance of client firms.** A single registration form should be used for all firms that enter into contracts with the CORFO network. This would enable CORFO to create and maintain a single database, providing real time information on the participating businesses and the development program system’s performance. CORFO should invest in the documentation of the various development program experiences, and link to national universities for independent evaluations of the different programs (as was done with PROFOs). Based on the findings, CORFO should disseminate best practices and useful tools, and provide improved support using its development program network and regional offices.

**INDAP: CHANGING THE VISION FROM RETAIL TO WHOLESALE, WITH EXCEPTIONS IN MARGINAL REGIONS**

6.36 **INDAP’s performance as a retail financial institution has historically been poor.** Key problems include a low quality loan portfolio, difficulties in developing credible contracts, a lack of competition, subsidized interest rates, heavy targeting of credit, and high administrative costs. In the past, the strategic objective of INDAP seems to have been to disburse funds to eligible farmers and other rural clients, with little concern for the ongoing sustainability of the institution as a financial entity. Senior management is aware of these problems, and has begun to take a series of actions to address them.

6.37 **There is a question as to whether INDAP’s approach is more in line with development or social assistance (“asistencialismo”).** In other words, why is there a specialized institution dedicated to small-scale family and campesino agriculture offering a wider range of services than those offered to urban microbusinesses? If it is useful to maintain an institution working on small-scale family agriculture with campesinos, it is important to decide if it can fulfill both the development and social assistance needs of these clients and communities. It would be worthwhile studying the social, economic and financial impact of INDAP’s programs, as well as an internal institutional review that measures the ability of INDAP and its operators to adapt to market changes (especially in light of the new trade agreements). INDAP should focus on the productivity and competitiveness of firms that have development potential. The objective should be the modernization of the firms, with an increased specialization and technical level of production. The work should be based on a strategic evaluation of the firms and the promotion of productive chains and networks.

6.38 **It may not be appropriate for INDAP, with its new commercial orientation, to be charged with social tasks such as serving subsistence enterprises.** This task remains important, but the institutional approach should be reconsidered. In the case of subsistence enterprises, which require a more social type of intervention, emphasis should be placed on improving the quality of life and asset accumulation of the producers and their families. The approach may not help the firms to diversify or become more productive, but instead they may be encouraged to move into non-agricultural activities.

6.39 **To improve service to the estimated market of 279,000 agricultural producers, INDAP should take on a second tier role, in which it strengthens existing financial intermediaries and cooperatives with operations in rural areas.** Financing for agricultural micro firms and SMEs possesses particular characteristics that must be taken into consideration both from the perspective of a cooperative or other financial intermediaries, such as banks. Intimate knowledge of the rural clients, their ability to generate profits in the face of cyclical commodity prices, their level of risk in normal times and under unusual circumstances are all required to be a successful lender to such clients. Cooperatives are membership-based local institutions, which under most circumstances already possess such knowledge of the crops, markets, and producers, meaning they are better positioned to act as the first tier financiers.

6.40 **A precondition for reorienting INDAP to a successful second tier financial institution is the presence of an adequate number of potential financial intermediaries with broad geographical distribution and appropriate qualifications in a region.** INDAP’s operations should
be re-engineered to take advantage of knowledge generated by the increasing number of rural finance institutions in the world. At the same time, a medium term plan should be developed to foster first tier private financial institutions, through partnerships, management contracts or other mechanisms. INDAP should not be engaged in both first tier and second tier operations in the same region, since this opens the door to unfair competition and could undermine commercially oriented retail financial institutions. INDAP should develop the internal capacity to measure the risks and determine the creditworthiness of retail financial intermediaries, and to diagnose the institutional strengthening required for a retail intermediary to become sustainable. Only in those few regions with no significant retail intermediaries, INDAP must continue to play the role of a retail financial institution.

6.41 This reorientation will require greater institutional autonomy, a public awareness campaign, and a set of new commercially oriented relationships in the regions. For INDAP to re-establish credibility in its loan contracts will require greater autonomy for senior management. Also, to change its image as a socially oriented lender, INDAP should embark on a public information campaign that clarifies the new role of INDAP in both more developed and marginal regions and rural markets.

6.42 INDAP will also have to adjust its staffing mix, accounting systems, information system, and products to meet demand from retail financial institutions in more developed regions. INDAP will need a timetable for an exit from first tier operations in more developed regions, possibly selling the longer-term segment of its loan portfolio to existing financial institutions at a slight discount. INDAP should consider using the services of experienced international consultants with experience in rural second tier lending operations and retail financial cooperative development, to guide them through the re-engineering process. As part of the re-engineering process, INDAP will need to update its information management system. The institution should be able to establish objective quantifiable indicators to measure the impact of the products offered to productive business clients. This would enable INDAP to improve its systems and products on an ongoing basis and become more responsive to its clients.

6.43 INDAP should also conduct an ongoing benchmarking exercise for its retail financial institution partners. The internationally accepted indicators for retail financial institutions include coverage, portfolio quality, efficiency, and sustainability after adjustments for subsidies. There are regularly updated benchmarking systems in place for financial cooperatives (using the PEARLS system developed by the World Council of Credit Unions) and for retail financial institutions (Microbanking Bulletin, with indicators developed by the Consultative Group to Assist the Poorest).

SERCOTEC: ADDING BUSINESS ENVIRONMENT ADVOCACY TO PROGRAM DELIVERY FOR MICROS

6.44 SERCOTEC’s efforts have been diluted due to two competing roles—an agent for CORFO and a specialized provider of technical assistance services to microbusinesses. This study found that some of SERCOTEC’s own initiatives overlapped with those CORFO programs operated by SERCOTEC in its role as a CORFO agent. SERCOTEC should coordinate closely with CORFO to avoid duplication, but should no longer serve as a CORFO agent. This change signals the need for SERCOTEC to revise the portfolio of programs it offers to its beneficiaries. It also stresses the need for a clear definition of SERCOTEC’s role among other institutions regarding the strategies for private sector development in the micro and small business sector. In response to this confused identity, SERCOTEC has recently undergone a process of strategic redefinition, which has enhanced the definition and attention of its target market.

6.45 SERCOTEC would benefit from greater independence, allowing it to move beyond its role as an agent for CORFO programs. SERCOTEC receives a relatively small budget for its micro and small business support operations. In light of the vital employment role played by micro and small businesses, the Government should strengthen its commitment to SERCOTEC. At the same time, SERCOTEC could also take on a greater role in defining policies for the sector, since it is the Government agency with the closest relationship to the sector. It should be responsible for suggesting
adjustments to existing CORFO programs to insure microbusiness access (for instance, suggesting ways to overcome the entry barriers perceived by many microbusinesses to the PROFO program).

THE PATH TO A MORE DYNAMIC SME SECTOR IN CHILE

6.46 This study finds that many of the elements required for improved SME efficiency and productivity are already in place, but without improved coordination there will only be isolated gains. To build on national successes and capacity will require a clear mandate for the institution charged with improving the overall effort to improve SME performance. The required changes begin at the strategic level, with a conscious effort to create a National Innovation System with complementary policies and programs, coordinated and led by a single institution. However, without far greater coordination, the large Government investment in support of a more dynamic SME sector will continue to lead to sporadic gains rather than a systemic change. Other important adjustments need to be made in the SME support institutions (CORFO, INDAP, and SECOTEC), which are often duplicating efforts rather than specializing in demand-driven responses to their distinct client groups. Greater attention should be given to the “graduation” of clients, networks, and associations and a more strict commercial approach to SMEs. The Government should reorient the overall portfolio of SME support programs from a mix of subsistence and operational support to more transformational forms of assistance. Finally, without better scorekeeping, in the form of an integrated management information system, it will remain difficult to analyze, assess, coordinate and streamline the SME program portfolio in the future. Potential savings from improved coordination and streamlining are likely to amount to millions of dollars annually for the Government. At the same time, the impact in terms of improved productivity, employment and linkages to export markets would be likely to improve as the SME support portfolio is rationalized and refocused to more promising sectors and firms.
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