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Public-Private Collaboration on Productive Development Policies in Argentina

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Abstract

This study discusses four cases of public-private collaboration (PPC) in the design and implementation of productive development policies (PDP) in Argentina. We find that PPCs have contributed to the success of most of the studied PDPs by facilitating information sharing and creating coordination devices that have improved the diffusion, transparency, and resilience of the policies and a more effective use of public funds. We also identify conditions that seem to be critical for a successful PPC. These conditions include the previous acquaintance and existence of trust relationships among the agents involved in the PPC, the alignment of their objectives and interests, and the emergence of clear leaderships in the private and/or in the public sectors. The stability of the PPCs, in turn, depends on the availability of public funding and the creation of formal governance mechanisms, while it is threatened by large disparities in the size, interests, and capabilities among the different private-sector agents involved in the collaboration.

JEL Classifications: O25, H11, L56, L8, L6

Keywords: Productive development policies, Public-Private collaboration, Argentina, Industrial policy, Economic development, institutions

1. Introduction

The design and implementation of productive development policies (PDPs) pose challenges for policymakers, especially in emerging economies. Although pervasive market and coordination failures pave the way for policy intervention, adopted instruments have often been less successful than expected since policymakers usually lack important pieces of information, they generally do not have access to rigorous evaluations of current and previous programs, and public-sector capacity is frequently weak. Moreover, there are often coordination problems between different agencies or levels of government. The emergence of rent-seeking and free-riding behaviors, agency captures, and corruption also explains the negative outcomes. The lack of resilience of public policies in light of frequent staff changes in the public sector and cyclical fiscal crisis also hinders the effectiveness of PDPs.

Public-private collaboration schemes (PPCs) may help to alleviate some of the factors that lead to problems in the design, implementation, and monitoring of PDPs, insofar as they may facilitate information exchange and coordination among the various agents involved, address some government failures, generate more transparency, and contribute to the resilience of those policies. PPCs may range from informal consultations with the private sector to the full involvement of the latter in the policy design, execution and monitoring stages, including schemes such as the participation of the private sector in advisory and supervisory bodies, technological and productive alliances, deliberation councils, and others.

In recent decades, Argentina has implemented a large and variegated number of PDPs, in the context of different economic regimes. After the dismantling of the import substitution regime, PDPs became less significant, and during the 1990s they were mostly aimed at solving market failures under a horizontal approach. Following the economic crisis of 2001, PDPs regained their relevance (in an international scenario which is also more friendly with the adoption of PDPs). Not only were new horizontal instruments created and resources allocated to existing ones often increased, but some new sectoral and targeted policies were launched.

In spite of a sort of PDP renaissance, PPC schemes are still not very common (Baruj et al., 2009). These authors point out that the weak interaction between the public and the private sectors is to some extent the result of the instability of institutions and policies, as well as of authorities and public agents. This discourages the development of linkages and networks and erodes mutual confidence and consensus, because all agents assume that once policy makers leave their posts, the policy framework will return to where it began. Moreover, these relationships often depend on personal relationships, and there are no formal or

institutional channels to develop them properly. Public agencies tend to act in an isolated fashion and are often reluctant to engage with the private sector, especially because of the risk of being captured by private interests. Finally, private sector representatives often lack the technical and professional staff to promote and implement any kind of PPC, and business associations are often more prepared to lobby the government than to cooperate in order to design, implement, and monitor PDPs.

In recent years, however, several cooperative initiatives have emerged. In addition to the cases analyzed in this research, the small and medium enterprise (SME) policies of the City of Buenos Aires, the clusters program sponsored by the Undersecretary of Industry, some initiatives of the National Agency for Science and Technology Promotion (ANPCYT), and the cases of the wine industry in Mendoza and the rice sector in Concepción (Sánchez et al., 2011), among others, include some sort of PPC.¹ The Competitiveness Forums launched in 2003 by the Secretary of Industry are another example of a PPC. Nine chains were selected, and all of the agents involved (from the public and private sectors and academia) were called to debate the main competitiveness problems affecting each chain and to develop strategic plans to address them. These were meant to be forums for the exchange of information and a tool for coordinating actions among all the different actors related to a production chain. However, the software and information services (SIS) sector was the only case in which a strategic plan was effectively designed and concrete actions were proposed (Gutman et al., 2006).

Devlin and Moguillansky (2009) and Ross Schneider (2010) provide analyses of PPC cases, highlighting the successes and failures and distilling lessons aimed at improving the efficacy of these arrangements. From the discussion and evidence gathered in those papers, the following factors emerge as conditions favoring the success of PPCs:

- Strong support of government leaders
- Stability over time
- Limited number of participants in the deliberation and governing bodies
- Representation of all the relevant parties involved
- Existence of a professional and meritocratic civil service
- Competent technical staff
- Effective representation of business
- Adequate frequency and duration of interactions

¹ Devlin and Moguillansky (2009) discuss Fundación ExportAr and the (recently dissolved) National Investment

- Appropriate monitoring routines.

Notwithstanding these lessons, it is not easy to develop metrics that can measure the impact of the PPCs. As stated by Ross Schneider (2010), a possible metric would be whether the council promotes the desired policy outcome in greater quantity and quality than would be expected without public-private cooperation. However, it is difficult to establish the appropriate counterfactual for the baseline, and it is also difficult to separate the impact of the PPC from that of the policy itself. Another possible metric is the contribution of business-government cooperation to the quality of policies and policymaking. This is also somewhat problematic, as it is difficult to measure the quality of policy making through objective indicators. Given these drawbacks, it is not surprising that there are few evaluations of the impact of PPCs.

In spite of the difficulty of establishing adequate metrics, a cost-benefit approach may be useful to understand the impact of the PPCs. Participating in these arrangements implies costs in the form of time spent in meetings. The government may incur costs associated with ceding part of its decision-making authority, and the private sector may divulge information that it would prefer to keep secret. Only if the benefits associated with participation in PPCs (e.g., solving specific problems faced by the various stakeholders) outweigh these costs will there be incentives for agents to participate in them. However, benefits could accrue through rent seeking, which points to the need to establish institutional arrangements that minimize the scope for such behavior.

This study aims to contribute to the debate on the role of PPC in PDPs through a detailed analysis of four case studies in Argentina.² The case studies presented below include a brief account of the sector or activity to which the PDP is applied, a description of the PDP, and a characterization of the PPC mechanisms involved. It also presents analysis aimed at generating knowledge about, among others, the following questions:

- What are the conditions that may favor or deter the emergence of PPC mechanisms?
- What incentives and monitoring mechanisms are in the PDP?
- What is the degree of involvement and authority of the public and the private sectors?
- What are the characteristics of the public agencies involved? (e.g., flexibility, bureaucratic quality, isolated high-level areas, stability of key public servants, etc.).

² There are a few available studies on the subject in Argentina. Bisang et al. (2009) analyze private-public networks in the agriculture sector. Lengyel and Bottino (2010) study the emergence of partnerships in the agricultural machinery and biotechnology industries. McDermott and Corredoira (2010) discuss the case of the wine industry in Mendoza.

- Which are the characteristics of the private partners? (e.g., legitimacy, existence of prior consensus on relevant policy issues, technical capabilities, etc.).
- Have PPCs contributed to the improvement of the quality and the outcomes of PDPs? If so, how? If not, why not?
- Has the PPC generated other positive impacts beyond those originally envisaged? Has it, for example, become a platform for identifying new challenges and opportunities?
- What is the cost-benefit balance of participating in PPCs as perceived by public and private sector participants?
- Did rent-seeking and free-riding behaviors emerge? If not, what mechanisms were employed to prevent them?
- How is the PPC expected to develop in the near future?

The methodology employed includes analysis of data from secondary sources (official statistics, surveys, websites, publications, etc.) and interviews with the key agents involved in each case, which aimed to collect information on the following subjects:

- What were the problems faced before the PPCs were launched?
- What factors led to the establishment of the PPCs?
- Was the PPC directly associated with the PDP, or did it emerge during the PDP's implementation?
- What were the institutional arrangements chosen, and why? What types of issues are discussed in the context of the PPC?
- How did the public sector reorganize in order to adapt to the PPC?
- Does the PPC help the government gain access to valuable information from the private sector?
- Has the PPC led to the emergence of permanent public-private networks that may transcend the original objective of the PPC?
- What actions were taken, if any, to improve the resilience of PPCs?

The evidence gathered from the case studies will bring out common features that may lead to the success (or failure) of the PPC, as well as idiosyncratic features related to the objectives, actors or specific arrangements adopted in each case. The result of this analysis is presented in the final section, along with lessons learned that may be applied to other sectors and regions in order to increase the effectiveness of PPC schemes.

2. Empleartec: Human Capital for the Software and Information Services Sector

2.1. The Problem

Argentina has become a significant player in the software and information services (SIS) sector within the region. According to the International Monetary Fund (IMF), Argentina was the major Latin American exporter of SIS in 2010. After the 2001-2002 crisis, the SIS sector gained momentum, helped initially by the devaluation of the peso, which fostered exports, and then by the economic recovery, which led to rapid growth in the domestic market. Annual revenues grew from US\$830 million to US\$3 billion between 2003 and 2011, while exports rose from US\$170 million to US\$790 million, and employment increased from 19,000 to 64,000 employees, according to data from the Software & IT Services Chamber of Commerce (Cámara de Empresas de Software y Servicios Informáticos, CESSI). According to the Ministry of Labor, Employment, and Social Security (MTEySS), between 1998 and 2011, the SIS sector had the highest employment growth rate in Argentina's economy.

The sector's vibrant performance was reinforced by some specific PDPs. In 2003, the Ministry of Economy created the SIS Competitiveness Forum, with the aim of initiating a debate on the policies needed to improve competitiveness in the sector. The SIS forum led to the Strategic Plan for Software and Information Services 2004-2014, which identified challenges and opportunities and defined concrete actions to be carried out. Officials from the national, provincial and municipal governments, as well as representatives from the private sector and academia (Gutman et al., 2006), participated in the Forum. Subsequently, in 2004, two laws promoting the SIS sector were passed. Law No. 25.856 established software production as an industrial activity subject to possible tax exemptions, favorable credit terms, and other concessions. Law No. 25.922 granted tax benefits to SIS companies and created a Software Industry Promotion Fund (FONSOFT) aimed at financing R&D expenditures in SMEs, universities, and research centers. Furthermore, many Argentine provinces are offering their own tax benefits to SIS companies wishing to invest in their territories (e.g. the city of Buenos Aires, Córdoba, Buenos Aires, Santa Fe, and Tucumán).

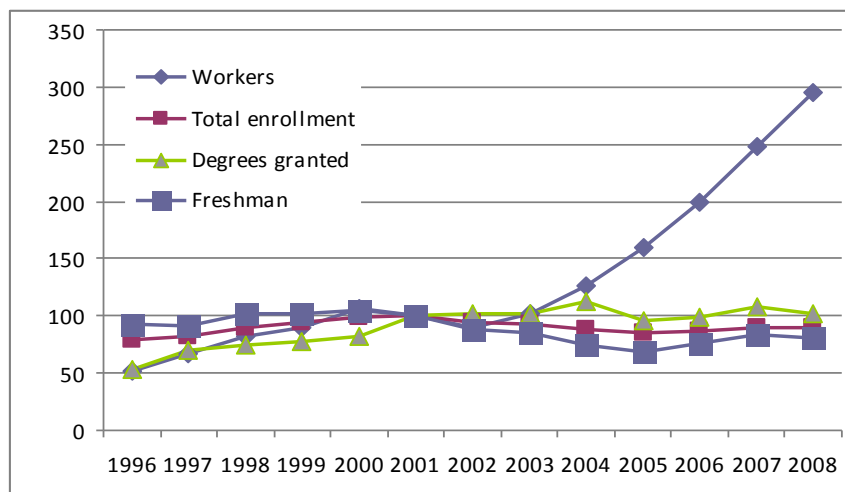
All studies dealing with export competitiveness and investment attraction in the SIS industry highlight the fact that access to skilled human resources is a key factor in this sector (Meyer, 2007; Doh et al., 2008; Nyahoho, 2010). Access to human capital is not only important from the point of view of knowledge, but has also a major impact on costs.³

³ Direct and indirect labor costs amount to more than 70 percent of total costs in the SIS sector in Argentina (OPSSI, 2012).

Although Argentina's educational system has been, to date, a source of competitive advantage in the SIS sector, increasing labor demand derived from the rapid growth of the sector has led to fierce competition for scarce human resources. In fact, there is broad consensus on the fact that the most important obstacle for further growth in the SIS sector is labor supply restrictions, which generate skilled labor shortages and wage pressures (OPSSI, 2010).

OPSSI (2010) estimates that in the past 13 years, the number of new students enrolled in graduate and postgraduate programs in informatics has been stable at an average of 22,500 entrants. Since only some 15 percent of new entrants graduate, there are only about 3,000 new IT professionals annually. In turn, employment in this sector increased at a rate of 6,000 jobs per year in recent years (Figure 1). This gap is even wider given the fact that approximately 50 percent of graduates do not work in software and computer service firms, but rather in other sectors, in the government, in other institutions, or are self-employed.

Figure 1. Employment in the SIS Sector and Students, Graduates and Freshmen in IT-related Degrees (1996-2008, 2001=100)



Source: OEDE-MTEySS and Secretary of University Policy.

The lagging supply of IT workers is due mostly to the lack of interest in the field on the part of young people. Although this is a problem in many Western countries, there could also be specific factors at stake in Argentina. López and Ramos (2008) point to flaws in secondary education, such as poor performance in mathematics and science in Argentine schools, as measured by Program for International Students Assessments (PISA) test scores. This may deter students from entering into IT-related careers. Another factor, according to

these authors, may be imperfect information about labor market conditions, which leads to a flawed perception about the growing demand for IT professionals.

2.2. The Program

2.2.1 Background

In order to try to solve the labor force bottleneck, the government and the private sector have been taking actions to provide training opportunities in the IT sector and IT-related programs of study (López et al., 2010). These policies are often launched and managed in public-private cooperation schemes, which was to some extent a legacy of the intense interaction between the government and the private sector in the Competitiveness Forum as well as in the development of the Strategic Plan for the sector and the enactment of laws designed to foster the development of the industry.

The key private actor in this cooperation is CESSI, created in 1990. Today, CESSI brings together more than 350 companies and institutions representing 80 percent of revenues and over 85 percent of the employment in the sector. Twenty-five regional and provincial organizations representing the software sector in their jurisdictions are also affiliated with CESSI (thus, another 400 firms are indirectly associated to CESSI).

At the end of 2005, CESSI and the Ministry of Education, Science and Technology launched the *InverTI en vos* (Invest in Yourself) program, aimed at promoting the new employment and educational opportunities in IT-related fields among high school students. Scholarships programs were also launched. The Becas Bicentenario grants scholarships to students wishing to enter into priority fields, including many IT-related ones. Another program is the PNB TIC (Programa Nacional de Becas para Carreras de Grado en Área TICs), which grants scholarships to students in IT-related fields of study.

Between 2004 and 2006, there were two relatively large training programs in operation: the +Mas Plan (sponsored by Microsoft, co-funded with the MTEySS, and jointly organized with CESSI) and the Entertech Plan (sponsored by Oracle and Sun, with the participation of MTEySS and CESSI). More than 3,500 people were trained in these programs. A second version of the Entertech Plan was launched in 2008, which trained 1500 people. In 2007 the InverTI en Vos program trained 800 people. Oracle, CESSI, and the MTEySS managed it. Some provinces also took action to promote IT-related studies.

There are no evaluations of the impact of these programs. Although some of them may have surely helped to alleviate the scarcity of qualified human resources, from the above

analysis it would appear that they failed to make a significant change in the labor supply for this industry.

2.2.2 Case Presentation

The most ambitious training initiative adopted in this sector in Argentina's history is the scholarship plan initially known as Control F/A, currently called Empleartec. This initiative is jointly managed by the MTEySS through its program called Formación Continua (continuous training) in conjunction with CESSI and some leading private firms (Cisco, Microsoft, Oracle, IBM, Red Hat, and local firms such as Calipso, Globant, Snoop, and G&L Group).

The MTEySS, with the support of the World Bank and the United Nations Development Programme, launched the Formación Continua program in 2007. The MTEySS co-finances the program. Control F/A is one of the four largest programs of the 40 such initiatives currently managed by the MTEySS. These programs are mainly aimed at young people who have difficulty finding employment or who are unemployed, but they are open to anyone over 18. In fact, as unemployment rates have been falling, the content of the Formación Continua program itself gradually changed, and now focuses more on upgrading job skills rather than entry into the labor market.

The launching of the Control F/A program was a natural follow-on to the previous collaborative experiences between CESSI, the MTEySS, and some private SIS firms. The first stage of the program included CESSI and five large SIS firms (Microsoft, Oracle, Sun, Cisco and IBM.)⁴ Later, other firms, universities and software poles and clusters were incorporated. Today, in addition to the abovementioned local and foreign firms, 16 poles and clusters and 14 universities and other educational organizations are involved in the program.

When the program began, its purpose was to train human resources in some specific areas defined by the five original sponsoring firms. The training was mostly on the proprietary technologies of those firms and it made use of teaching materials already available through the Control + F scholarships.⁵ Later, at the request of the MTEySS, the scope of the courses was expanded to include more technologies, including free and open source programs and applications, and the Control+A scholarships were created with the aim of providing basic training in the IT area, specifically, digital alphabetization.

⁴ According to those interviewed for this research, this is the first case in which these giant IT firms worked together in a training program (although they work individually on similar training plans with governments in other countries).

⁵ The courses offered under this modality aim at granting technical and functional training in areas such as computer programming, databases and operating systems administration, software development for mobile applications, videogames, ., web page design, software project management, ERP implementation, software testing, and others.

Currently, free training courses covering 40 different technological areas and levels are offered in the city of Buenos Aires, the Greater Buenos Aires and another 21 cities in 14 provinces. The courses are funded by the MTE&SS. They are mostly 80 hours long and official certificates are delivered to students who pass them. So far, \$32 million (approximately US\$7 million) have been transferred from the MTEySS to run the program. Since its launching in mid-2012, some 21,000 people have been trained. As part of the program, 43 institutions received 12 sets of state-of-the-art hardware equipment to install or improve computer labs where training courses are offered.

A recently launched stage of the program (renamed Empleartec in 2012) aims to train 30,000 people between 2012 and 2014. Besides including new thematic areas and placing more emphasis on digital alphabetization,⁶ this new phase will train teachers and professors in the use of IT and will promote the use of IT technology in the fields and courses that grant teaching degrees in Argentina. It will also establish linkages with other IT-related public programs and will gradually align the contents of the courses with the human capital requirements identified in other private-public partnerships in this sector (e.g., Strategic Industrial Plan 2020, run by the Ministry of Industry).

The Empleartec Program has five phases. The first includes basic planning, based on an analysis of the demand for skills and the available supply of courses and knowledge in different areas. CESSI invites its members and other partners to take part in the program, and a more detailed demand-supply analysis is made to determine the courses, the locations where they can be given, and the institutions able to teach them. A plan is then presented to the MTEySS. Once the proposal is approved, a framework protocol is signed between MTEySS and CESSI and specific agreements are signed with firms and educational institutions. Advertising campaigns are then launched and beneficiaries are selected.

CESSI selects the beneficiaries and then checks them with the universities, clusters, poles, and other educational organizations (“efectores” in the program’s terminology) and the sponsoring firms, based on the parameters previously defined with the MTEySS. People who complete the courses receive an official certification issued by the MTEySS and are entered into a database accessible online to people needing to hire personnel trained in the areas covered by the program. The Network of Employment Offices of the MTEySS also helps graduates find jobs and propose prospective students. Students evaluate the quality of the courses and educational institutions and provide feedback to CESSI.

⁶ All in all, digital alphabetization finally contributes to expand the market for IT firms.

The MTEySS and CESSI jointly define goals every six months, and disbursement of funds is subject to their accomplishment. The MTEySS verifies the actual delivery of the educational services and monitors the evolution of the program through a follow-up system in which its regional Employment Offices also take part.

The division of labor within the program is as follows: CESSI a) designs the program and presents it to the MTEySS; b) coordinates the design and implementation of the courses jointly with the firms, institutions, and universities participating in the program; c) administers the funds received from MTEySS; and d) monitors program performance and outcomes.

The roles of the sponsoring firms are: a) proposing the areas where knowledge and demand-supply gaps exist; b) determining the institutions that will give the training courses and when and where are they to be given; c) ensuring the quality of the courses and the teaching (in most cases, these firms define the course content and provide the teaching materials, while in others this is responsibility of the educational organizations).

The educational organizations and clusters that provide the training give the courses and provide the infrastructure and logistics. Instructors are paid by the hour, and the program pays the “efectores” for the use of their facilities.

As the most representative SIS sector business association, CESSI operates as coordinator of the program on behalf of the private sector and serves as the interface with the MTEySS. Besides financing the program, MTEySS’s role is mainly oversight. That is, it ensures that the design and aims of the program are aligned with their own policy objectives, supervises its implementation, helps disseminate employment opportunities among those trained, and includes them in databases where employers can look for prospective employees.

Although the original target audience of the Formación Continua program was young people who could not find employment, in practice, it was clear from the start that the Control F Scholarships were aimed at students who had at least completed high school, including those who already had work experience in the sector or who were employed in the IT field. According to some of those interviewed for this study, the average quality of the courses may have been rising. Basic IT courses are also given, as well as courses that allow students to enter relatively rapidly into the labor market by mastering certain technologies.

There was a learning process during the implementation of the plan. The composition, background, and interests of the students were not known a priori, so the firms and the implementers (“efectores”) had to adjust the nature and content of the courses in order to meet

the needs of the target audience. According to some of those interviewed, this process helped improve the courses and better define their audience.

An adaptation and learning process also occurred within the organizations involved in the program. The MTEySS had to adapt in order to work with a sector that employs people with higher educational credentials than the average of its other sectoral partners. Thus, at the beginning of the program, there was some reluctance in some areas of the Ministry, especially in its regional offices. CESSI, the SIS firms and the universities also underwent an adaptation process aimed at including in their training plans people with employment problems and/or with poor educational backgrounds.

Other lessons emerged during the evolution of the program that are now reflected in new commitments and aims included in the new phase of the program. The MTEySS wants the firms to adapt their manuals to make them more effective and pedagogical,⁷ and also aims to do a better job of monitoring teachers' skills. It has even incorporated an expert in curriculum. The MTEySS has also asked CESSI to make a technological adaptation of a software program that helps blind people to use computers and has installed a new lab aimed at running 3D simulation programs that will be used in the training programs of other sectors. Officials from MTEySS indicated that around 65 percent of the students trained under the Control +F program found employment or increased their wages after completing the courses. Although the program trained people not working in the SIS sector or who were unemployed and improved the capacity of people already acquainted with IT technologies, there is no single measure of the success of the program. In any case, when one compares the number of people trained (and the number projected in the new phase) with the total number of people employed in the sector, the program has the potential to have a major impact on the SIS labor market. The renewal and expansion of the program is a sign that both the private and the public sectors have a favorable view of its outcomes.

2.3 Case Analysis

2.3.1 Trust and Previous Relationships

The existence of prior linkages among all of the agents involved facilitated the creation and implementation of this program. Moreover, the need for trained personnel had been extensively discussed in many arenas, including the Sectoral Competitiveness Forum, and was identified as the main obstacle for progress in the SIS sector in Argentina. All of the agents that participated in the launching of the program had already been involved in training

⁷ The international firms use the same manuals employed in other parts of the world where they organize similar courses.

plans that were their direct precursors. This generated a valuable learning process about the supply and demand side of the training market in this sector.

2.3.2 Profile of the Private Sector Representatives

CESSI is a relatively young business association, and the profile of its members and directors is different from the average Argentine business association insofar as they are mostly academics who work in a sector in which technical change is rapid and the need to be aware of global business trends is more pressing than for the average Argentine firm. This could help to explain why CESSI has been so active in launching initiatives aimed at addressing the challenges faced by the sector (i.e., lack of skilled personnel, access to finance and foreign markets, incrementing R&D activities, etc.). Today, CESSI is widely acknowledged as representing the interests of the SIS sector, a status it earned through its actions and initiatives. The MTEySS officials interviewed for this study stated that CESSI was the most dynamic business association among all those with whom they had worked on sectoral training programs.⁸

2.3.3 Incentive Scheme

The main incentive for the private sector is the prospect of training human resources, a need felt by firms of all sizes and segments within the SIS industry. Costs are low and are mainly borne by CESSI, which assigns part of its staff to manage the program, and by private firms, which also assign staff and provide contents of the courses at little or no cost. Firms participating in the program have no monetary incentive to do so, although in some cases the courses teach technologies developed and sold by them (hence contributing to expanding their markets). Universities and clusters receive funding for their teachers and state-of-the-art equipment, which allows them to consolidate institutionally.

2.3.4 Governance, Management, and Operation

The private sector has broad involvement and ample authority both at the design and the implementation stage. CESSI, jointly with sponsoring firms, defines course objectives and content and invites universities and clusters to participate. The rationale behind the division of labor is that the private sector knows what skills are needed (which often change rapidly as a result of technical progress), and the institutions design high-quality courses and provide materials and content based on their technical knowledge. The government has access to

⁸ According to MTEySS officials, in the industrial sectors, trade unions (which do not exist in the SIS sector) are often more interested in promoting training activities than employers' associations.

information that otherwise would be very costly to gather. The MTEySS has access to funds that are not available to the private sector, can set up proper monitoring mechanisms, and has a wide network of agencies that can help disseminate the program and foster the insertion of trained personnel into the formal labor market. Universities and other implementing agencies have contacts with potential students and with the instructors.

2.3.5 Capture, Rent Seeking, and Free Riding

Although the program includes courses that train people in proprietary technologies created and/or owned by sponsor firms, the fact that the program is open to participation from all private firms reduces the risk that the program will be captured by a small group of firms which could use it to reinforce the use of their proprietary technologies at the expense of other firms. Even some open-source technologies, such as Linux, are part of the program. Likewise, although it would appear that large firms would benefit the most from this program since they are the largest labor demanders, the alleviation of the labor supply bottleneck favors all kinds of firms, since it reduces wage pressures and staff turnover. Moreover, some sponsor firms, such as Oracle, Microsoft, or Red Hat, are seldom interested in recruiting people trained under this program for their Argentine affiliates. Their major incentive is to train human resources that could use their technologies. That is, they are more interested in expanding their market share than expanding their work force in Argentina. In summary, although the SIS sector is largely heterogeneous in terms of firm size, specialization, strategies, and objectives, the concern about the lack of trained human resources is broadly shared, which lends legitimacy to this type of program. Thus, rent seeking and free riding do not appear to be associated with this program.

2.3.6 Resilience

This PPC experience has been ongoing for many years and has been renewed until 2014. This is a testament to the resilience of the program, even in the presence of big changes in the labor market in Argentina. This resilience has been favored by the legitimacy and capabilities of the private actors involved, as well as by the continuity of senior management in the MTEySS and the creation of a specialized section within the Ministry managed by a professional structure, which deals exclusively with this kind of programs.

2.3.7 Learning

A learning process has taken place during the evolution of the program. It has to do not only with the adaptation process that occurred within the public and the private sectors, but also with the emergence of new developments included in the new phase of the plan. These new elements are aimed at improving the alignment of the program's activities with the training needs of the local markets as well as generating some externalities that could benefit other sectors or some disadvantaged groups of the population.

3. Fashion Design

3.1 Introduction

The international competitiveness of differentiated products largely hinges on their design features, as these enable the incorporation of value added and contribute to achieving a better positioning in high-end segments of the international market. Product design plays a crucial role in the fashion industry. Over the past decade, part of Argentina's garment industry has gradually introduced design management as a systematic activity at firms, driving remarkable transformations in their business practices. At the same time, apparel consumers in Argentina have started to recognize original design. These recent shifts buttress a potential for export growth that was not present a decade ago.

This case study describes the PPC between the National Industrial Technology Institute's Textile Research and Development Center (INTI Textiles) and Pro-Tejer Foundation (Pro-Tejer) to promote fashion design. This collaboration includes a study entitled "Argentine Design Map" (henceforth, the Map), a program called "Street Design Circuits" (henceforth, SDC), and the "Signature Fashion National Design Survey" ("the Survey").

3.2 Argentina's Fashion Design Phenomenon

The Argentine fashion design phenomenon started in the 1990s and consolidated in the 2000s. At present, undergraduate design programs—graphic, fashion, and textile design—rank among the top ten public university programs, with the largest enrollment in the area around Buenos Aires (MECyT, 2005). In the 2000s, design increasingly became a key competitive factor in the apparel industry. Business startups launched by some 20 fashion designers with a university degree and the efforts made by large garment marketers (brands) raised design awareness among Argentine consumers.

Argentine designers entered the country's traditional clothing market with their own brands in 2001 (Saulquin, 2006). These designers offer high value-added products on a small scale and are known as "signature fashion designers." Initially, their products were sold at multi-brand stores located in Buenos Aires' commercial hubs, such as the trendy Palermo neighborhood. Some have grown sufficiently large to have their own stores in the leading shopping malls. According to the Survey (Marino et al., 2011), 200 firms manufacture signature design garments in Argentina. Ninety percent of them have annual sales below US\$400,000, while 30 percent export their clothes, primarily to Latin America, Italy, and Spain. For 5 percent of them, exports account for 80 percent of their output.

A large number of Argentine fashion brands have established themselves in the local market. Increasingly, brands view design as a key strategic component of their business and change their organizational, marketing, and production practices to incorporate design management as a systematic activity. Brands have professionalized their design capabilities. Some have incorporated designers to their payroll to help them develop their brand image. Others have also introduced original design in the styles they offer. Some brands have allied themselves with signature designers to create original designs for specific products lines. A feature that characterizes Argentina's fashion market is the number of local brands. While in other Latin American countries familiar consumer brands are largely international, in Argentina most renowned brands are domestic (Saulquin, 2008).

Consumers' greater appreciation for original design and the growing design professionalization of local brands has propelled the international dissemination of Argentina's fashion industry. National brands have successfully expanded across Latin America, opening stores and building regional franchises. In turn, signature designers have ventured into the U.S. and Japanese markets, selling their garments at specialty design stores. More Argentine brands and signature designers now participate in international fashion shows. These transformations have led to a new three-category segmentation of the market—mass market, brands, and signature designers—depending on the degree of originality and sophistication of the products' designs. While common in developed countries, this categorization is rare in Latin America, where apparel markets are only divided into two segments: mass market and brands. Firms competing in Argentina's mass market segment typically copy or adapt styles designed and marketed in developed countries, leveraging their Southern Hemisphere location to follow trend-setting countries counter-seasonally.

Argentina's garment exports have recorded steady growth since 2000. Totaling US\$87 million in 2010, these exports were primarily shipped to South America. The volume of

garment imports is considerably larger, reaching US\$328 million in 2010. China, Peru, and Brazil are the leading sources of imports. In 2005, Argentina's government established a non-automatic import license scheme to protect the domestic industry. This protectionist policy became substantially more stringent in the second half of 2011.

3.3. Case Description

3.3.1 Organizations

Pro-Tejer

Pro-Tejer is a non-governmental organization created to provide a political forum for the defense of Argentina's textile and apparel industry. It stands out among traditional business associations because it promotes a comprehensive view of the textile value chain.⁹ It was founded in 2003 by a 38-member board. Aldo Karagozian, TN&Platex's¹⁰ owner and Pro-Tejer's chairman from its inception to 2007, organized the founders. They came from companies all along the textile value chain and from a variety of organizations—such as universities, one research institute (INTI), and one labor union—related to the sector. Pro-Tejer's founding board intended to build an advocacy platform to represent the local textile and fashion industry before Argentina's government and public opinion after its chain became fragmented in the 1990s. Pro-Tejer soon became the industry's leading representative, championing policies that enhance the sector's competitiveness but particularly lobbying for trade protection. While this organization encompasses the entire industry, not all sub-sectors are equally represented or view it as representing their interests. In particular, thread mills weigh more heavily and wield considerably more power than designers and brands. Pro-Tejer is managed by an executive director, which currently relies on two outside advisors and a staff with professionals in economics, business administration, and communications.

Promoting design in the textile and apparel industry was one of Karagozian's main goals. Pro-Tejer's initial leadership viewed design as an essential driver for the industry's development and international competitiveness, building initiatives with public sector agencies, private firms, and universities. The organization's key move to foster design was its collaboration with INTI Textiles. In its early years, a few founders who primarily represented thread mills and fabric manufacturers established Pro-Tejer's policies. This did not hinder

⁹ The textile value chain encompasses fiber producers, thread mills, fabric manufacturers, garment manufacturers, designers, brands, and supply vendors.

¹⁰ TN&Platex is Argentina's largest cotton fabric producer and exporter.

efforts to promote fashion design at first, but, later, it curtailed their continuity, as these initiatives did not bring any financial gains to these two sub-sectors.

INTI Textiles

INTI is the nation's foremost industrial technology public research institute. It was created in 1957 as an independent institute to conduct industrial technology-applied research and outreach programs to enhance Argentina's industrial competitiveness. INTI Textiles is the center that promotes textile and apparel industry development, serving also as a technological benchmark for the industry. Since its inception in 1967, INTI Textiles has provided a number of services, including lab tests and training on textile and apparel manufacturing technologies, that effectively transfer knowledge and technology to firms, building trust-based relationships among individuals serving at both ends. Approximately 70 percent of INTI Textiles' funding comes from their own services, while the remaining 30 percent comes from INTI's budget. Labor relations at INTI are characterized by long-standing job stability. In fact, INTI Textiles' director and deputy director have served in those positions for over 20 years.

In 1997, INTI Textiles formulated a long-term strategy based on the promotion of fashion design, despite INTI's resistance. In pursuit of this strategy, INTI Textiles gradually introduced specific services for garment manufacturers, designers, and brands, refocusing its traditional operations. In 2001, it created a Trends Observatory (henceforth, the Observatory), which reports on international fashion and trends, researches Argentina's fashion design identity, disseminates Argentine signature designers' work in the domestic market, and trains apparel manufacturers, designers, and brands. Since 2007, the Observatory has also conducted research on Argentina's fashion design identity. To this end, it surveys emerging trends in Argentina and crafts the "Argentine Design Map." This map identifies fashion "signature" designs across the nation, their designers, and, finally, the productive processes used to manufacture garments. INTI Textiles has become remarkably well known as an expert in fashion design among industry players.

The organization of INTI provides a great deal of autonomy to its various research and development centers. INTI Textiles is a mixed organization, with private firms joining by paying a monthly fee. By 2011, the center had 182 associates. Industry representatives, who are part of an executive committee of 12 members, share decisions on the center's planning and follow-up activities. They represent three industry chambers, one business association, and eight large and medium-sized companies. Private sector engagement favors information exchanges that shed light on the sector's needs.

3.3.2 Public-Private Collaboration

Since 2005 INTI Textiles and Pro-Tejer have come together on a number of collaborative initiatives to develop Argentina's textile and apparel industry. This study focuses on those specifically oriented to the promotion of design, particularly the Street Design Circuits (SDC) program, conducted from 2007 to 2011, and the Survey, carried out since 2010. A related initiative is the "Argentine Design Map," (hereafter *the Map*) begun in 2007 and still underway.

Street Design Circuits

The most important collaboration endeavor between INTI Textiles and Pro-Tejer was the Street Design Circuits (SDC) program, intended to advance their common goal of positioning Argentina as a fashion design hub. The organizations' shared vision came in the wake of the Map, which identified signature designs featuring originality, innovation, and a unique identity, and the creators of those designs. The SDC program was created to disseminate this phenomenon and to educate the general public on fashion design, raising awareness about the value it adds to national products. To these ends, the program organized one-day tours around urban design circuits. Circuit layouts were mapped to showcase the fashion design offerings found in stores located in specific areas.¹¹ Since the program's inception in 2007, 22 such events were carried out, with 95 percent of them organized in 2007–2010 and the last one taking place in 2011.

The idea for the program surfaced in a day-long brainstorming session held by members of both institutions to come up with plans for joint efforts to support Argentina's fledgling local identity fashion design, boosting its visibility. The program's scheme and name were crafted at that meeting.

Each institution took up specific roles and brought distinct resources to the PPC. INTI contributed its knowledge of local designers. Pro-Tejer provided funding to support specific activities, such as staffing events and the logistics needed to approach designers to invite them to join the program, as well as contacting local media to advertise the program.

Since its inception, program tours were funded with contributions from several sources. The ongoing programs required a disbursement ranging from US\$10,000 to US\$20,000. Pro-Tejer provided a large share of the funding. The resources required to organize the program in every city came from partnerships with local institutions. The

¹¹ INTI Textiles currently records 20 design circuits in Argentina.

funding scheme initially designed by both INTI Textiles and Pro-Tejer counted on contributions from companies and other organizations that would serve as sponsors, but this scheme failed to prove fruitful. Only TN&Platex, managed by Karagozian, provided financial support for all program editions, and only seven other textile companies occasionally supported the program financially. As a result, they resorted to agreements with local institutions in the cities where the program was carried to help them cover event expenses. Pro-Tejer ceased to fund the program in late 2010. The program's first edition took place in Palermo, a Buenos Aires neighborhood boasting a large designer density, and the city's Ministry of Culture was a strategic partner. This government agency engaged in the program since its first edition, providing financial support for all the events conducted in the city. The only program event conducted in 2011 took place in Salta with the support of that province's local government.

Overall, the goals of the program were accomplished. These goals included disseminating signature designers' work, legitimizing the value of original design work in the eyes of the consumer, and raising awareness about the magnitude of this sector in Argentina. Notably, the program managed to successfully and broadly disseminate Argentine fashion design in the local market, fostering a consumer culture that appreciates Argentina's original design, building networks that bring signature fashion designers together, putting the design phenomenon on the public agenda, and promoting Argentine fashion design internationally.

While it is impossible to quantify the extent to which the program influenced the development of a consumer culture that values design, we believe its impact was substantial. First, several signature designers have come together on a number of joint initiatives. Second, signature designers and brands have started forging alliances to develop specific product lines. These partnerships enable brands to reposition their corporate images, explicitly associating themselves with design and originality in consumers' minds. In turn, these alliances help signature designers disseminate their work to broader audiences, benefiting from press coverage that is usually unavailable to them. Third, some signature designers with long track records have begun to serve as advisors on collection development and brand image for domestic brands. Fourth, signature designers have grown closer to thread mills, which have started to cater to their smaller-scale needs.

Networks of signature designers have been created as a result of this program. As designers from several cities were able to showcase their work, they came together to organize business and productive ventures. While the creation of these networks was not a specific program goal, INTI Textiles and Pro-Tejer supported designers' spontaneous

initiatives and designed projects to enhance them. One of the main such events in terms of duration, organization, and resource requirements is *Las cosas del quehacer*. In 2010, the Observatory started this project to provide a forum for signature design in Argentine, inviting signature designers from Argentina's provinces to join in to discuss fashion design in the country. Starting in 2011, the SDC program lost momentum within INTI Textiles-Pro-Tejer's PPC, while *Las cosas del quehacer* has grown into a new PPC, albeit without Pro-Tejer's financial support.

Inserting Argentina's design phenomenon into the public agenda has led to the creation of programs intended to incorporate design into manufacturing companies' operations at the national, provincial, and city levels. In addition, public agencies have increased their interaction. An initiative that engages a number of public and private organizations is the Argentine Design Map runway during Buenos Aires Fashion Week (BAF Week). In 2012, two such events were held, featuring eight signature designers from Argentine provinces. INTI Textiles served as runway show curator, organizing participating firms' presentation with the support of many other agencies.

The Signature Fashion National Design Survey

As a result of the successful management and execution of both the Map and SDC programs, INTI Textiles and Pro-Tejer chose to move forward on their collaboration, embarking on a nationwide signature fashion design survey. The purpose of this survey is to create a tool to quantify and characterize the emerging fashion design phenomenon. The first survey was conducted in 2010 and was used as the basis for a study entitled "Signature Fashion Design in Argentina." This study includes an assessment of signature fashion production and an economic impact analysis. The survey was revised and conducted again in 2011. While in 2010 the sample included 150 designers, a year later this number had increased to 200.

The idea for this initiative came from the interaction of an INTI Textiles member and a Pro-Tejer official who had worked on the SDC program and had decided to enroll together in a graduate program in international culture and communication management. For the final paper in one of their courses, they chose to work together on Argentina's signature fashion design phenomenon, specifically addressing the lack of quantitative information on it.

Both INTI and Pro-Tejer support this survey with additional contributions. INTI Textiles has provided its signature fashion designers' database and a dedicated team of Observatory members. Pro-Tejer supplies institutional support and dissemination efforts. The goal of this program—to produce metrics that characterize and quantify the activity of

signature fashion designers—has been accomplished. The dissemination of survey findings and its vast recognition among relevant public agencies have been among the most outstanding outcomes achieved by this public-private collaboration. This has favored the visibility and institutionalization of the segment in the public sector.

3.4 Case Analysis

3.4.1 Incentive Scheme

In addition to Aldo Karagozian's potentially idealistic interest in promoting design in Argentina's textile and apparel industry, a key incentive for his proactive involvement—as both Pro-Tejer's founder and first chair—in this PPC was the potential benefits it might bring to Pro-Tejer's positioning in the eyes of the public. Promoting design through specific actions such as the Map, the SDC program, and the Survey strengthened Pro-Tejer's public image. This endeavor differed from the traditional protectionist lobbying efforts that business associations in the textile industry had been known for in the past, as it highlighted the benefits of integrating the textile chain. A driver that fueled Pro-Tejer's initial commitment to promoting design was the recognition awarded by foreign specialists to Argentine design during the foundation's early institutional missions abroad. Eventually, Pro-Tejer's claims for a protectionist legitimized more protective policies turn taken by Argentina's national government towards the manufacturing sector. As a result, Pro-Tejer lost interest in supporting the SDC program. Pro-Tejer stopped funding the program but continued to collaborate with INTI Textiles in promoting design with initiatives like the Map and the Survey, as well as sponsoring BAF Week's runway show.

In addition, Pro-Tejer's officials might have envisioned that the development of a strong and internationally recognized local fashion industry, and the ability to sell its products in foreign markets would imply a higher demand for their companies' products. However, this potential may have ceased to encourage them when, eventually, signature fashion designers' business ventures proved of limited volume.

INTI Textiles' incentives to engage in this PPC revolved around the fact that this collaboration largely fitted in with its long-term strategy to promote fashion design in Argentina. This strategy was set in 1997 by INTI Textiles' leadership, despite the opposition of top officials and other R&D centers at INTI. We think that the fact that INTI Textiles' heads made this strategic decision and stuck to it despite INTI's initial reluctance is partially explained by their job stability and professionalism, the partial autonomy of this public

institution from short-term political swings, and its trust-based relationships with private-sector officials who turn to this institute for technological advice.

The PPC with Pro-Tejer to promote fashion design provided an opportunity for INTI Textiles to rise as a nationwide authority in fashion design. The initiatives carried out with Pro-Tejer awarded INTI Textiles greater visibility and recognition at INTI, as well as among other public agencies and Argentina's designer community. Its greater visibility inside INTI strengthened INTI Textiles' autonomy from its parent organization's leadership. Its newfound recognition among public agencies and fashion designers enabled INTI Textiles to broaden its Observatory services and enhance its self-sustainability.

3.4.2 Relationships

Prior interpersonal relationships between INTI Textiles and Pro-Tejer members proved instrumental for the PPC. The people who started it had already established a personal connection, forged as a result of the technical advice services provided by INTI Textiles to TN&Platex over the years. Their personal relationships were based on mutual trust and respect. INTI Textiles officials had also built similar ties with other Pro-Tejer founders. An example that illustrates these ties is their relationship with Susana Saulquin, an Argentine expert on fashion sociology who participated in the creation and early management of UBA's Textile and Fashion Design program. Back then, Saulquin, also a founding member at Pro-Tejer, provided advice to INTI Textiles. Hence, a first hypothesis to explain the creation of a favorable forum for the surge of ideas may point to the existence of former inter-personal, trust-based relationships among the members of these institutions. These bonds supported a fast decision-making process that facilitated the design and execution of shared initiatives. A mutual knowledge of how the people involved in the PPC worked enabled participants to confidently assign specific roles to execute these initiatives.

By 2002, Saulquin had noticed an emerging Argentine fashion trend-setting phenomenon (Saulquin, 2006). This view was shared by Karagozian and Patricia Marino, the head of INTI Textiles, who, from their respective positions promoted local design with a number of efforts intended to link manufacturers and designers to drive the creation of products with a unique identity. The participation of Karagozian, Marino, and Saulquin in the early commissions set up at Pro-Tejer to work on potential strategies led to the identification of design as the key to enhancing the international competitiveness of Argentina's apparel industry.

The initiatives launched as part of this PPC are characterized by symmetric engagement of both the private and the public sectors in their vision, design, and execution.

INTI Textiles' and Pro-Tejer's leadership shared a common view about the relevance of Argentina's design phenomenon and the need to make it more visible, coming together to design a research study on Argentina's design identity, the SDC program, and the Survey. While both the research study and the Survey had been co-managed since their creation, the SDC was managed jointly in its early years (2007-2010), and INTI Textiles alone oversaw its last edition in 2011.

3.4.3 Monitoring Mechanisms

These PPC initiatives lack any formal monitoring mechanisms to evaluate outcomes and impact. The backbone of trust and respect that supports the relationships between managers at the two institutions made this collaboration possible, despite the absence of formal monitoring mechanisms. Within each institution, however, standard monitoring procedures control the actions of employees. At Pro-Tejer, for example, after each SDC event, the staff involved in its co-management reported to the Board, accounting for all expenses.

3.4.4 Public and Private Sector Features

We believe INTI Textiles' ability to plan and execute this PPC may be largely attributed to its top officials' stability and professionalism. The organization's head and vice-head have made a professional career within INTI as sector specialists and have a strong sense of belonging to the institution. Thus, they enjoy the respect of a professional staff in an organization with a culture that places a high value on technical expertise. In addition, this center's directors might be endowed with uncommon leadership abilities as well as outstanding strategic vision and motivation. In fact, their success in accomplishing their unit's strategic goals has been recently rewarded with appointments to higher managerial positions at INTI, heading the Marketing and Development Departments, respectively.

Pro-Tejer's management also displayed salient personal features that might help explain their willingness to engage in this PPC and their ability to lead their organization in support of this collaboration. In particular, both Pro-Tejer's chairman and its executive director at the time this PPC was built demonstrated conviction and motivation in fostering the professionalization of design in Argentina's textile and apparel industry. The executive director also had a professional stature that is rare in Argentine business associations. He recently served as the Province of Buenos Aires' deputy minister of production and, later, as National Under-Secretary of Foreign Trade. His assistant was recently appointed to manage the Buenos Aires Metropolitan Design Center's Fashion Office. The question remains what

drives the committed dedication of capable and motivated people in specific public areas and private organizations.

3.4.5 Funding

Funding was the primary hurdle for the continuity of some of these PPC initiatives. Early on in this collaboration, both organizations shared an interest in promoting design. However, how important this goal proved for each one of them changed over time. INTI Textiles remained unwaveringly committed to all three ventures—the Map, Street Circuits, and the Survey—while Pro-Tejer lost interest in the SDC program, shifting its financial support to other initiatives of interest to its members. As a result, there were changes in the budget granted to the program that eventually led to its interruption. INTI Textiles and Pro-Tejer did not receive any additional funding from INTI or any other public agency. Neither did they build a stable funding scheme that would have enabled the program to continue.

3.4.6 Learning

As a result of this PPC, Pro-Tejer and INTI Textiles learned how to design, execute, manage and assess programs shared and orchestrated with other public and private organizations to tackle fashion design challenges. The Map and SDC programs enabled INTI Textiles to identify specific areas for potential interventions to promote design and educate consumers, brands, and designers. This experience also helped to professionalize the Observatory's team, training its members to curate, design, and manage projects. Finally, this PPC brought new opportunities and alternatives to gather information on production issues and on local market consumer traits. As a result, the ability of INTI Textiles to diagnose this industry is enriched, as it can complement the information it collects from its traditional sources.

3.4.7 Free-riding and Rent-seeking Behaviors

The Map, Street Circuits, and Survey initiatives do not feature any grants or mechanisms that may affect market prices. As a result, instances of rent seeking are less likely to arise. In fact, no such instances have been found. In turn, a free-riding issue is present in the case of Pro-Tejer, which is common in most business associations. While PPC costs are only footed by participants, its benefits trickle down to all industry players. In the case of the SDC program, an additional free-riding problem emerges: designers and brands—supposedly the primary beneficiaries of this initiative—are not grouped in any organization that represents them, and most of them do not recognize Pro-Tejer as their advocate. Designers and brands drew

benefits from this program without taking part in its organization or contributing any funding. It comes as no surprise, then, that Pro-Tejer eventually decided to discontinue its financial support of the program.

4. Networking and PPC: the Experience of Sugar Cane in Tucumán

Public-private collaboration in the sugar cane industry in Tucumán was focused on tackling a wide range of diseases and other problems that affected sugar cane yields. The poor performance in the primary stage had negative consequences over the whole network devoted to producing sugar, pulp, and paper and bio-fuels. The strategy chosen was to develop new disease-free varieties, reproduce them using modern techniques, and disseminate them through commercial channels in order to enable farmers to replace the old crops and increase yields. To achieve these results, significant technological and economic requirements had to be met, which led to the need to establish a PPC scheme.

4.1. Sugar Cane Production

Currently, sugar cane production is based on tailor-made hybrid plants suitable for specific climate and soil conditions. Other factors, such as bacteria, fungi, and others, affect crop yields. Many live inside the original plant and only disappear if the new seedling is free of such diseases. As a result, local capacity to cope with these conditions is a key competitive factor.

Sugar crop production through conventional processes (using seedlings) allows an average of five harvests; hence, a plant replacement is needed every five or six years. To access the seedlings, farmers have two options: i) develop their own hybrid varieties, produce seed and seedlings; or ii) buy them from a vivarium (specific companies devoted to produce or reproduce new hybrid seedlings). Producing seedlings by crossing varieties of sugar cane is a complex process; its control and development require possessing a wide range of varieties and germplasms, equipment, and large storage areas, such as plant nurseries. In addition, skilled personnel (geneticists, breeders, and experts in field work) are also necessary for success. Modern biotechnology tools, such as molecular markers, are used to shorten the innovation process. Additionally, genetically modified sugar cane varieties resistant to selected herbicides and/or tolerant of some insects are being developed.

The production of new seedlings is thus a high-technology activity subject to economies of scale that requires long development times (around a decade) and have low

chances of success. One new variety demands almost 100,000 initial cross-fertilization events. Different goals—higher sucrose content, more robust roots to support bigger plants, or specific resistance to some diseases—trigger the development of new hybrid varieties, but they are always related to the objective of increasing productivity.

In Argentina, farmers (from small ones to those that integrate primary production with industrial facilities) purchase seedling from vivariums to carry out the production process. Industrial facilities obtain sugar or anhydrous alcohol; the main scrap from the first crushing process (bagasse) is usually used to make paper, and today, anhydrous alcohol is frequently converted into bio-ethanol. Other sugar waste materials are used as raw material for several industries. As a result, a dense network arises which depends on the primary stage (sugar cane crop). This network currently faces strong local and international demand pressures, in view of the emergence of the biofuels industry.

The production of sugar cane in Argentina reaches almost 20 million tons yearly and covers around 330,000 hectares. Domestic sugar production exceeded 1.9 million tons in 2010. More than 75 percent was targeted to the domestic market.

The province of Tucumán is the largest sugar cane producer of Argentina. It covers:

- 75 percent of the national area devoted to this crop and over 2/3 of sugar cane production;
- 15 of the 25 crushing mill facilities; and
- Over 90 percent of sugar cane farmers.

Sugar cane production is crucial for Tucumán's economy, contributing almost 33 percent of the province's GDP. This has historically been both a strength and a weakness for the province. The main problem is that a small economy with a highly concentrated productive structure is highly dependent on the international price fluctuation of its main staple. As a result, booms and busts cycles emerge with high social, political and economic costs.

4.2. The PPC: Design and Case Analysis

4.2.1 The Problem

Serious competitiveness problems have historically affected the sugar industry in Tucumán. Before the PPC was established, productivity levels were 30 percent lower than the international average. The concern for productivity further increased due to the emergence of new significant demand sources for sugar cane, such bioethanol, and the increasing competition for land from other crops, such as berries, lemon, sorghum, maize, and soybean.

Several chronic diseases adversely affected productivity. This problem was further aggravated by the persistence of inefficient producers with outdated technological practices and the failure to eliminate bad agricultural routines, such as the practice to burn the remainder of yearly crops, increasing soil erosion and spreading ash in surrounding urban areas. As a result, the network suffered a typical negative externality, which affected the “sugar cane club” based in Tucumán.

The lack of raw materials to feed new and modern industrial facilities was an obstacle in catching up with modern technologies that could put them to better use. Today, the industrial sector works with a more complex production function, and the imperative to match the quantity and quality of raw material flows with a rational use of installed capacity is stronger than before (production coordination problem).

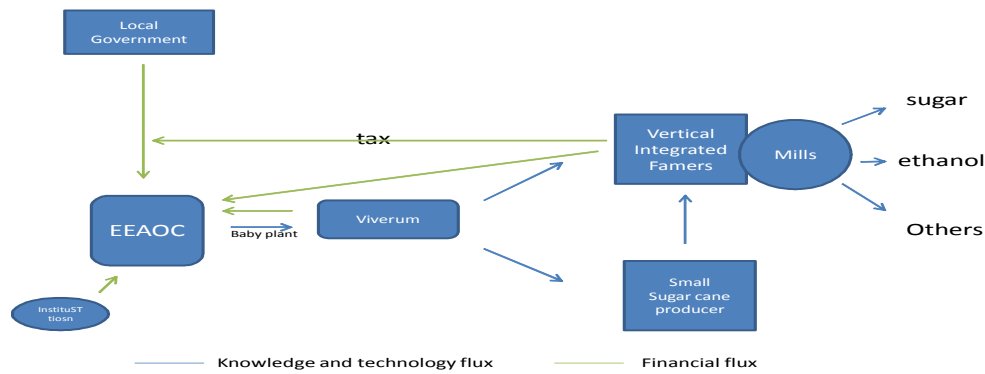
But even when stakeholders know what the problems are and what technical solutions could solve them, individual actions are not the way to deal with them. Farmers and industrial producers have neither the scale needed to develop new, disease-free varieties nor the technical capacity and skilled human resources to tackle complex scientific problems. Additionally, the long time period involved in innovation processes whose probability of success is low and highly uncertain, in a context where intellectual property rights cannot always be guaranteed, (appropriation problem) make it difficult to achieve pure “market solutions.”

4.2.2 Goals of Public-Private Collaboration

The goal of PPC was to increase the productivity of the sugar cane crop in Tucumán by developing and disseminating new technologies and seed varieties and solving other problems affecting the network. The outline of the strategy to reach these goals involved the development of new hybrid varieties adapted to local conditions, and subsequently to multiply them in order to obtain seedlings under well-designed scientific protocols and appropriate agricultural procedures and finally to distribute them to farmers to replace the existing plants.

The private sector undertook the new venture in close collaboration with a small group of well-trained researchers in modern biotechnology who worked in a local R&D institution. The program was implemented with the participation of all institutions and stakeholders in the sugar cane network: the Agriculture Experimental Station Obispo Colombes (EEAOC), the local government, and private companies. There was no master or strategic plan, but rather a series of specific projects with clear objectives. The role of the different actors is illustrated in the next chart.

Figure 2. Sugar Cane Network in Tucumán



4.2.3 The Public Sector

The provincial public sector is concerned with the sugar cane network, as this activity is one of the main engines of the local economy and its fluctuations often have severe social impacts. In addition, the provincial government has fiscal constraints and relatively few skilled personnel. Therefore, the Ministry of Production found the PPC to be a powerful tool of public policy. Simultaneously, a specific tax on sugar cane producers (farmers and industrial companies) to support EEAOC activities has existed since the creation of the institution, and the tax rate was recently increased.

The EEAOC is an old R&D institution, created in 1909 to solve technological problems related to local crops and agribusiness activities. It is a self-governing institution directed by a chairman and supported by a private board composed of local companies involved in sugar and citrus fruit production that use the EEAOC's services and pay the abovementioned tax, and a technical team. CEOs of the main sugar-producing companies are part of the EEAOC's board and they are deeply involved in its day-to-day affairs.

Board members serve on an ad honorem basis, which facilitates a commercial and technical approach to the decision-making process. Administrative practices, which are commonly used in the private sector, are normally employed in the management of EEAOC affairs (i.e., resource allocation by project, results monitoring plus process monitoring, annual reports, etc.). The board establishes the goals of R&D activities, developing long-term plans, and monitors the operational and financial plans in weekly meetings. The governance scheme

includes a technical director who is elected through a public contest and who has four assistants, corresponding to: i) agricultural research and technology; ii) industrial research and technology; iii) special disciplines and, iv) administration and services.

The EEAOC is financed by contributions from the provincial agribusiness sector, through a tax set at 0.03 percent of the first sales of sugar cane in Tucumán. The tax is collected directly by the institution, which reports monthly to the provincial government. The provincial government has also supported the institution at different times with contributions for infrastructure and operational needs. Other funds come from agreements with the productive sector, subsidies for national and international competitive projects, and fees charged for its own productive and technical services. The most recent budget shows that around 90 percent of income is derived from taxation and the remainder from other sources. The total budget in 2010 was \$45 million (approximately US\$12 million).

The EEAOC has some 430 people on its payroll. Its composition reveals that the institution is intensive in highly skilled personnel: 201 are university professionals (including technicians, interns, and support staff). Fourteen have master's degrees, 18 are Ph.D.s, and four are in specialized fields. Thirty-seven people are currently enrolled in post-graduate studies. The EEAOC fosters these and other educational and training activities and encourages all non-professionals to complete their secondary studies.

The organizational structure has a matrix framework, which is the result of several years of operation and reshaping. This structure enabled the new research team (focused on modern biotechnology) to integrate easily into the old research groups.

4.2.4 Private Sector—Vivarium Companies

Vivarium companies, or nurseries, are devoted to the production, distribution, and sale of seeds (or seedlings) of sugar cane and other species. They are small and medium-sized companies that dominate the technology of maintaining and transplanting plants and providing advice on agriculture procedures. In Tucumán, there are 20 such companies, which have commercial relationships with over 5,000 sugar cane producers and are also connected to public R&D institutes, which supply them with seeds and technologies. The EEAOC provides seedlings to vivariums at subsidized prices.

These companies are committed to selling only to producers located in Tucumán, but sometimes their sales areas go beyond the provincial boundaries. Operating under commercial rules—better quality, more sales, more profit—they spread the new technology embodied in new varieties of sugar cane plants.

4.2.5 Crushing Mills, Energy and Pulp-paper Companies

In Argentina, there are about 25 sugar mills that transform sugar cane cuts into various products. Whereas in Salta and Jujuy their manufacturing process is integrated (the mills control the whole production process), the Tucumán model consists of a network in which mills are fed by small farmers. Independent farmers produce about 65 percent of the sugar cane. The contractual relationship between farmers and mills consists of a base price and additional percentages based on quality.

There are 15 mills that manufacture sugar cane in Tucuman, four of which account for over 70 percent of total production. These four companies produce sugar, pulp and paper, energy and anhydrous alcohol. Recently, they started to set up large bio-ethanol facilities to cope with the increasing demand.

4.2.6 The PPC Experience

The PPC process began at the beginning of 2000, when the EEAOC Board suggested the need for a plan aimed at improving sugar cane productivity. At that time, yields in the province of Tucumán were about 45 tons per hectare, significantly lower than world averages, and were even below those recorded in other Argentine provinces.

Until the early 2000s, conventional plant breeding developed sugar plant varieties. Since that time, the EEAOC hired professionals trained in biotechnology who had obtained doctoral and postdoctoral degrees abroad. These scientists came back to Argentina in the mid-1990s as part of a scientist repatriation program, and they had experience in designing biotechnology applications in crops such as strawberry.

While the Board had initially proposed purchasing a gene resistant to certain diseases and introducing it into the varieties that EEAOC already possessed, the technicians suggested a different approach, based on developing new disease-free varieties. This was the approach chosen. The process was supported by the managers of the EEAOC, the biotechnology team, and the private board, or Steering Committee. Weekly EEAOC board and staff meetings were held. Considering EEAOC's budget constraints, additional requests for funding were granted by private contributions or by the provincial Ministry of Production. There was broad consensus among producers, EEAOC technicians, political authorities, and other members of the cane sugar network on the objectives. The strategy, developed through the PPC process, included five steps:

1. Develop new hybrid varieties well adapted to local conditions.
2. Employ crop seedling using modern biotechnology techniques under the strict control of the EEAOC.
3. Transfer subsidized seedlings to the pre-existing commercial network.
4. Enlarge the research program to develop new varieties of transgenic plants of sugar cane in order to establish a platform for future development in sugar and other crops.
5. Replace infected plants with the new ones.

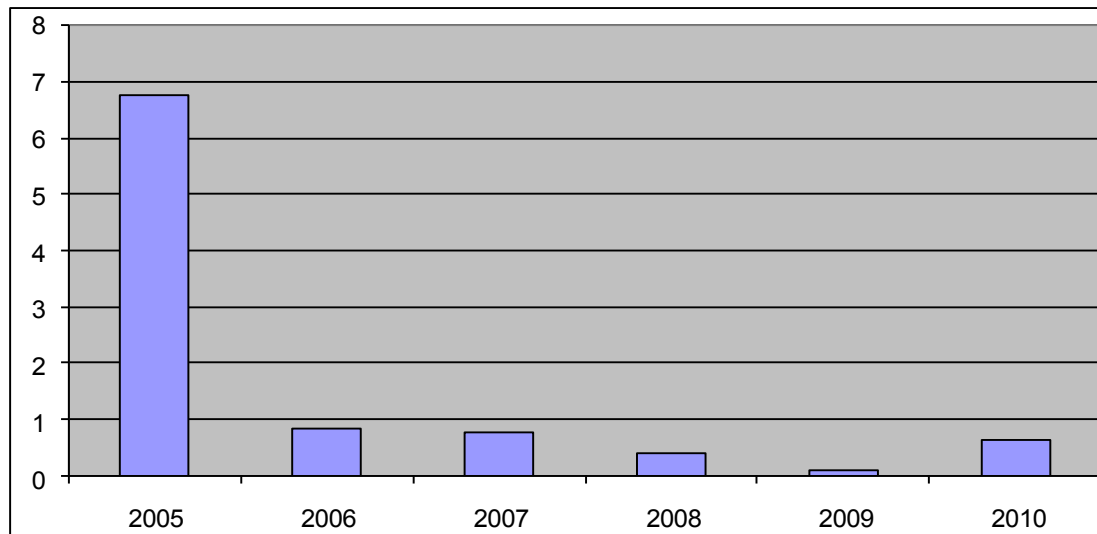
The PPC was based on the following division of labor: producers would contribute to the development of the program through a specific/local tax, collected and allocated by the EEAOC under the supervision of a public-private board. Actions would be taken according to a well-designed technical program with a clear commercial target. The results (subsidized seedlings) would be disseminated using the pre-existing commercial network. Farmers would replace old varieties with the new ones following the five-year cycle and increase their yields. Hence, the PPC is based on technical action (generation and diffusion of new technologies) by the EEAOC and the creation of incentives for the private sector designed to increase productivity and profits.

During the process, the EEAOC had several ways to detect the needs and requirements of current and potential users. These included suggestions and requests from members of the Board; procedures and studies undertaken by the technical committees; customer surveys that revealed their problems and needs; consultations and interaction with the provincial and national governments; requirements of sugar mills; suggestions received from the productive sectors; and meetings and workshops attended by advisers, consultants, and leading producers.

4.2.7 PPC Performance

A decade after the network was established over 60 percent of the old varieties had been replaced for new ones. The first impact was the drop in reported episodes of diseases. Reports by EEAOC show an 80 percent decline in the incidence of RSD disease, which led to strong costs reductions.

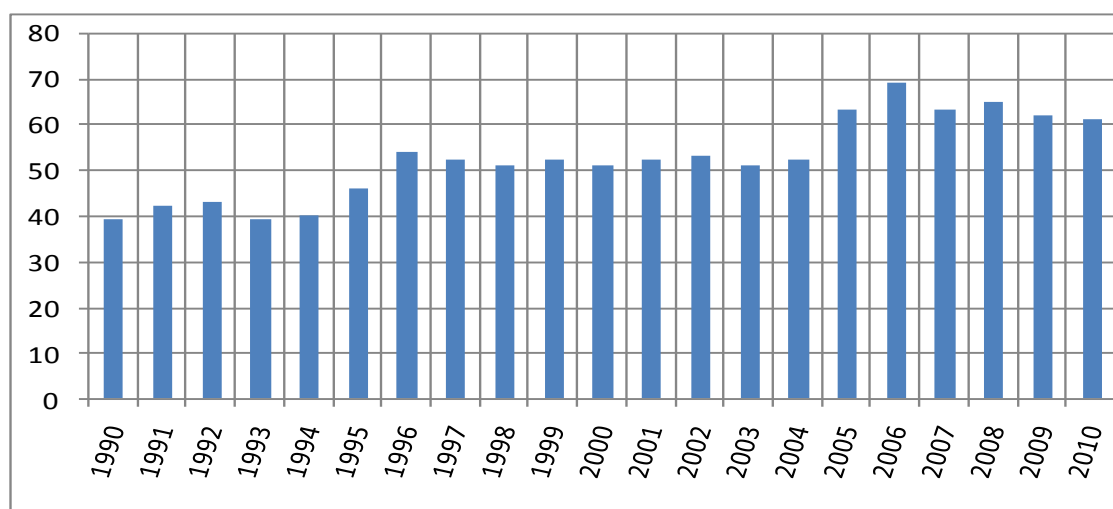
Figure 3. Incidence of RSD Disease in the Total Crop (percent of hectares infected)



Source: Castagnaro (2011).

In addition, sugar cane production in Tucuman is currently over 1.1 million tons per year compared to an annual average of 800,000 tons from 2000 to 2005. Finally, yields increased over 3 percent yearly, representing an increase from 52 tons per hectare between 2000 and 2005 to 65 ton between 2006 and 2010. As a result, local productivity is reported to be 7.8 percent above the global average.

Figure 4. Average Yield of Sugar Cane in Tucumán 1990-2010 (tons by hectares)



Source: Castagnaro (2011).

Other achievements of the PPC include the following (EEAOC, 2012):

- The recent release and registration in the National Seed Registry (INASE) of four new varieties that present outstanding production characteristics
- Agronomic studies aimed at improving sugar cane yields
- Generation of recommendation tables regarding the contribution of nitrogen and phosphorus fertilization and the widespread use of liquid fertilizers and bio fertilizers
- The use of satellite images to estimate the acreage and production of raw material in the preharvest stage
- The development of a technique for harvesting sugar cane without burning, in order to promote a more environmentally friendly production system
- Engineering design of bagasse drying equipment in pneumatic conveying
- Development and registration systems for different purposes: balance calculation mass and energy of an evaporation and heating system, mass balance calculation schemes applied sugar cooking, and optimization of the sequencing of the work of cooking pans
- Creation and enhancement of different labs, equipped with the latest instruments and well-trained teams¹²

Additionally, the PPC alliance is beginning to work on other crops, using a similar model. The projects are designed to handle several genes (resistant to herbicides and/or tolerant to insects) to be introduced into well-performing local varieties of sugar cane. Other projects are dealing with soybean and maize using the same technique, considering that some key genetic patents are due to expire in 2014. Additionally, the sugar cane experience revealed the necessity to set up a technological company under EEAOC control to capture the ongoing benefits and to handle the commercialization of new biotechnological events.

4.3. Conclusions and Lessons

The problem that triggered the PDP was the low average yield of sugar cane. This was related to the presence of diseases that generated negative externalities affecting the entire network. The development of new varieties required significant amounts of funding, had high technical thresholds, and implied long innovation processes under conditions of uncertainty. This situation induced the key actors in the network to cooperate.

¹² One of these labs has been chosen by PepsiCo for sugar analysis for all of Latin America.

Private and public institutions engaged in a PPC process that was not based on a conventional strategic plan. Personnel engagement and mutual trust were basic conditions in such a process. Managers who had a broad view of the business knew what was happening in international markets and were aware of the importance of a scientific approach to tackle production problems. R&D institutions had sound knowledge of genetics and biotechnology and were aware of the need for a commercial approach to the problems within the sugar cane network.

The heart of the strategy was to work together toward a common, overarching goal, to which specific goals were added. The components were private companies (especially larger ones), the provincial Ministry of Production, and the EEAOC. The strategy had three key elements: i) concurrent interests of public and private organizations; ii) solutions had to be found in new technological developments, iii) the PPC incorporated the pre-existing institutional and productive network in order to bridge scientific discoveries and innovation.

The previously accumulated skills available at EEAOC were combined with modern biotechnology, which led to the need to restructure the organizational framework. An open-minded perspective included company managers' willingness to address issues related to non-price competitiveness factors. Finally, the private sector's capabilities and approach enabled an easy communication with the public sector engaged in R&D activities.

Regarding incentives, the private sector presence in the EEAOC's management was crucial in ensuring the appropriate allocation of specific funds. Incentives for private companies producing sugar cane are associated with productivity and profits. Vivariums profit from the benefits associated with selling disease-resistant varieties. For the public sector, the program became a powerful tool of public policy, since the success of the program could reduce the cyclical social and political problems originating in the sugar cane network. Additionally from the EEAOC perspective, the PPC partially solves budget constraints and reinforces its social role, through the sale of new varieties and of other services, nationally and internationally. The PPC is based on strong pressures from private operators involved in the monitoring of expenditures and the progress of the projects and strict independence in the development of technical activities. The private monitoring model is more relevant with respect to results than process. Finally, the PPC experience prompted EEAOC and other stakeholders to develop and launch a biotechnological platform (with capacity to handle its own varieties and genes) applied not only in sugar cane but also in other relevant crops, such as soybean and maize.

5. Buenos Aires Emprrende: a PPC that Fosters Entrepreneurship

5.1. Characteristics of the Sector

There is growing consensus that entrepreneurial activity can strongly contribute to diversifying the economy, creating employment, promoting social mobility, and opening up new opportunities for professional success and the emergence of innovation. In recent years, the number of people willing, interested, and able to create new businesses has risen sharply. In this context, the creation of new firms and the strengthening of young companies are core issues on the policy agenda. Argentina, and particularly the city of Buenos Aires, are emblematic of this trend.

Although nascent entrepreneurship could be a source of productivity improvement and employment, new firms face great difficulties in becoming established and surviving. Informational asymmetries and uncertainty give rise to market failures or inefficiencies that require measures to stimulate information exchange and facilitate the recognition of opportunities (Bartelsman et al., 2003; Boadway and Trenblay, 2003; Hwang and Powell, 2005; Naudé, 2010; Kantis et al., 2011). Moreover, apart from the attitude of the entrepreneur and the perception of opportunities, the emergence of new firms depends on many factors, including macroeconomic stability, the regulatory framework, access to information, financial support, opportunity costs *vis a vis* expected returns from other activities, and others. In addition, the social assessment of the entrepreneur, attitudes toward risk, the presence of role models, the availability of education, the culture, and the existence of an ecosystem able to support entrepreneurs are factors that have an impact on the emergence of the vocation to undertake new businesses (Kantis and Federico, 2007). Conceptually, entrepreneurship involves a wide variety of institutions, from educational system to financial markets, including sociological considerations, family ties, cultural background, macroeconomic institutions, and regulatory frameworks (Baumol, 1990; Boettke and Coyne, 2003).

Public sector intervention can help solve many of the failures of the entrepreneurial system and expand the base of entrepreneurs by eliminating barriers to entry. Notwithstanding, controversy abounds concerning how it should be promoted (Hwang and Powell, 2005).¹³

¹³ The existence of multiple factors affecting entrepreneurship has policy implications. For instance, with respect to the behavioral issues related to entrepreneurship, its promotion might require a national program of social awareness to foster social qualities, such as the need for achievement motivation and propensity to take risks, and probably should be focused on the educational system. With respect to financial matters, the best policies would most likely be those aimed at breaking the vicious circle of lack of capital, savings and investment through the infusion of venture capital to stimulate business startups (Hwang and Powell, 2005).

This section analyzes a PDP launched by the Undersecretary of Economic Development of the City of Buenos Aires aimed at fostering entrepreneurial activity. The program, called *Buenos Aires Emprende* (BAE), constitutes an interesting case of institutional innovation that includes a public-private collaboration (PPC) scheme to enhance the entrepreneurial ecosystem.

According to international standards, Argentina exhibits a relative high entrepreneurial activity rate. The social consideration of entrepreneurs has evolved positively in the last 10 years (Endeavor - Prosperar, 2009) and entrepreneurial activity has risen notably, first in the 1990s with the emergence of ITC companies and then in the last decade due to the emerging opportunities created by the devaluation of the currency and economic growth. As a consequence, the country has experienced unprecedented growth of entrepreneurial activity that has caught the attention of policy makers, academics, and entrepreneurs (Kantis et al., 2005). In this context, there is a wide variety of programs aimed at fostering entrepreneurship, both at the national and at the provincial levels, not surprisingly showing some degree of duplication of effort and beneficiaries and the consequent misallocation of resources.

In the case of the City of Buenos Aires, it exhibits a high potential to promote entrepreneurial activity due to the existence of an educated and skilled labor force, appropriate physical and communication infrastructure, a big and sophisticated market, availability of services, international reputation and a growing network of incumbent institutions (non-governmental organizations, private and public universities, local governments, incubators, etc.) dedicated to entrepreneurship. Moreover, the interest on the part of policy makers to promote entrepreneurship in the city has gone hand in hand with this trend and, contrary to the old policies, which were mainly targeted to vulnerable groups and “entrepreneurs by necessity,” the new ones are focused on rapid growth startups, innovative firms, and knowledge-intensive projects.

Until 2000, there was no clear strategy to foster entrepreneurship in Buenos Aires. The most relevant initiatives were PROMIPYME, oriented to providing technical support and micro credits to necessity entrepreneurs, and PRUEVE, aimed at disseminating entrepreneurship among secondary students. In 2000, the new government triggered the launching of more entrepreneurial policies through the creation of the Metropolitan Center for Design and the first incubator of technology-based firms, BAITEC. It is remarkable that the programs were not discontinued with the change in government in 2007. On the contrary, most entrepreneurial initiatives were deepened and new programs were created. To date, this

unusual situation has strongly favored the learning process among the public agents and institutions involved.

5.2. The Program

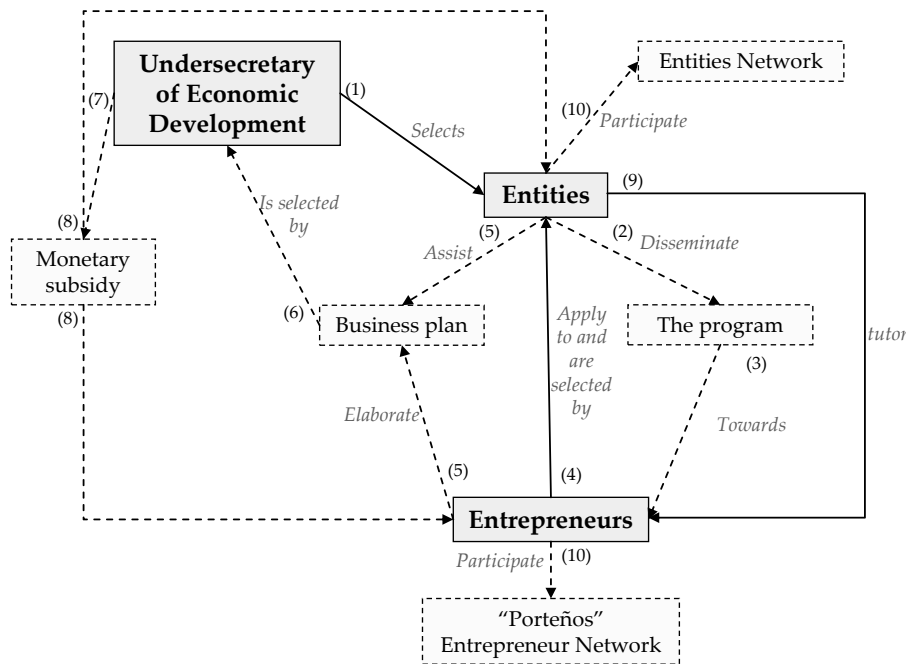
5.2.1. Characteristics of the PPC

Buenos Aires Emprende was launched in 2008. The initiative was part of a set of policies aimed at fostering entrepreneurship. The institutional innovation departed from the fact that, in the past, pro-entrepreneurial PDPs suffered from information failures that led to a limited scope of interventions and the underutilization of budgetary funds. In other words, public agencies had serious difficulties capturing potential beneficiaries, entrepreneurs lacked information about the existence of support programs, and non-governmental organizations had scant capacity to recruit and assist entrepreneurs due to the shortage of funds, human resources, and capacity. As expected, interactions and networks were also limited.

The underlying idea of the new institutional arrangement is that the PPC can improve the efficiency and efficacy of policies, promote the development of networks and linkages, foster the emergence of new institutions, and strengthen existing ones. The program is based on three main objectives: i) to multiply the scope and impact of public policies related to improve capacity and processes within the public sector and promote better utilization of financial and human resources. To achieve these goals, the initiative is based on the idea of intermediation or outsourcing of public policies to private-sector sponsoring institutions, which are expected to mediate between the government and the entrepreneurs. But, the interest in the program lies in the innovations in terms of its execution, insofar as it aims to generate a denser network of information, cooperation, and linkages between agents in the city's entrepreneurial eco-system.

The group of sponsoring institutions comprises a variety of non-governmental organizations—public and private universities, professional chambers, and non-profit organizations dedicated to business and entrepreneurial affairs—with varying degrees of experience and capabilities. They are expected to disseminate the program among potential beneficiaries, assist entrepreneurs in the elaboration of their business plans by providing technical support, and present, together with the entrepreneurs, the projects to be evaluated by the public authority.

Figure 5. The BAE Program



Source: Authors' elaboration.

The public agency is responsible for the evaluation and selection of the projects to be sponsored. Once the projects have been selected, both entities and entrepreneurs receive a monetary subsidy to tutor the entrepreneur for one year and to support a portion of the startup activities, respectively. Both project execution and entity performance are closely monitored by the public agency, and periodic detailed reports are required. Finally, the entities are supposed to participate in two institutions: the Network of Entrepreneurs of Buenos Aires and the Network of Supporting Entrepreneurship Entities.¹⁴

5.2.2. Main Results of the PPC

To a large extent, the BAE has been successful in meeting its initial goals. First, since its creation, it has experienced continuous growth, both in the number of sponsoring entities involved and in the projects presented and subsidized. Secondly, sponsoring entities seem to have made progress in their performance. Most of them said that they experienced a process of "learning by doing," which resulted in faster and more effective technical assistance to entrepreneurs. Nevertheless, sponsoring institutions pointed out some negative aspects of the program, specifically regarding administrative and bureaucratic issues. In this sense, the

¹⁴ "Red de Emprendedores Porteños" and "Red de Entidades de Apoyo a Emprendedores". See <http://redemprendedoresba.wordpress.com/> and <http://www.redemprendedoresba.com.ar/>.

public agency was willing to review these questions and has made some changes to take the views of the entities into account.

The existence of a formal opportunity for interaction between public agencies and sponsoring institutions has facilitated the exchange of information, the evaluation of entities and, where necessary, the review of some issues involved in the PDP. Moreover, the public sector has been able to extract information from the organizations supporting entrepreneurs as well as from other stakeholders about the nature, objectives, needs, and potential of the startups. Hence, the program has helped strengthen not only the capacity of the sponsoring entities but also those of the public sector.

According to an econometric study based on a survey of beneficiaries of BAE, the program had a positive impact on the survival of the projects as well as sales growth. Moreover, those projects that participated in BAE appear to have a better administrative structure and greater access to markets than those that were not sponsored. Finally, public agents that were interviewed for this study considered that the innovative institutional arrangement of BAE functioned appropriately and that the program fulfilled its main objectives to a great extent. However, the implementation of the program presupposed a dramatic change in the way the public sector conceives and delivers policies. As expected, this required a process of adaptation and institutional learning.

One notable issue is that there has been a permanent effort on the part of the public agency to create opportunities for supervision and evaluation of the policy and the sponsoring entities. Over the years, this evaluation has evolved from a simple quantitative approach to a more complex process.

Probably, the poorest results of the program are related to the scant development of linkages between the entities and the lack of formalization of entrepreneurial activities within their institutional structures. The consequence is a suboptimal development of formal institutions able to enrich the entrepreneurial ecosystem and, especially, to support entrepreneurial activity once the public program ended. In this sense, only a few sponsoring institutions followed up the projects after the BAE intervention as a usual practice and, in general, this occurred only with the most promising or successful ones.

Regarding networks, in some cases what remained was competition more than cooperation, especially in the recruitment of projects. The problem arose because there was some free-riding in the call for projects.

5.3 Case Analysis

This section will evaluate whether the PPC developed under the *Buenos Aires Emprrende* program contributes to the solution of the problems inherent in entrepreneurial activity, and will draw some lessons from the findings, which could be translated into policy recommendations. Of particular interest are the institutional strengthening objective and the relationships that emerged between the government, the beneficiaries, and the intermediary organizations as a result of this initiative.

With respect to its design, BAE was seen as an innovative way to address some important failures, such as the lack of information about the public policies aimed at fostering entrepreneurship, the weak dissemination and limited scope of those policies, the limited development of the institutional environment, insufficient knowledge on the part of the public sector about the characteristics and requirements of entrepreneurs, the lack of spillovers, and lack of linkages and networks. All of these problems were extensively discussed by public agencies and the entrepreneurial ecosystem, and some consensus was achieved. In this context, the PDP incorporated a sort of PPC with the aim of strengthening not only entrepreneurial activity but also the incumbent institutions themselves. Private and public interests appeared to be aligned, although only a fraction of the entities currently participating in the program were involved in the meetings held prior to the design of the PDP.

Buenos Aires Emprrende is an interesting PDP initiative based on an innovative institutional arrangement that constitutes a landmark in pro-entrepreneurial policies in Argentina. Contrary to the other cases analyzed in this study, it is a horizontal policy. Despite the horizontal nature of the policy, which tends to dilute the negotiating power of the private sector, the PPC was successfully implemented thanks to broad consensus about the failures to be solved and the needs of the entrepreneurial ecosystem. As far as we know, this last point was the cohesive element that replaced the usual sectoral agreements found in vertical PDPs.

5.3.1 Structure and Management

The establishment of an institutional framework of this kind required a detailed design process to take into account some critical issues, such as the type of entity chosen by the government to participate in the program (the selection process), their degree of involvement, and the types of activities that entities were expected to carry out. Other relevant issues were the design of specific norms that would govern the interaction between the actors, the incentives and regulations that should be developed to encourage participation in the program and to avoid undesirable behavior (rent seeking), and the roles and responsibilities of each

participant. This process was, to a great extent, facilitated by the fact that the PDP was a formal program with a legal framework that allowed the public agency to make the necessary changes without delay. Hence, one lesson that emerges from this case is that it seems to be important to develop policies within an appropriate legal and administrative framework. Informal arrangements tend to generate obstacles and unnecessary delays in the implementation of policies.

In addition, the program demanded changes both in the established practices of the public sector and in human resource organization. These changes were not automatic and, in order to launch them, the program underwent a drastic overhaul of old organizational routines. New administrative procedures were designed that involved the creation of new circuits of information, the training of personnel, and the assignment of new responsibilities.

Under the new arrangement, the private sector is involved in implementing the policy, providing advice and assistance to entrepreneurs, and expanding the potential base of beneficiaries by disseminating the program to diverse audiences. However, this involvement does not mean that the government has ceded its authority to make relevant decisions. On the contrary, the Undersecretary of Economic Development delegated the recruitment and selection of potential beneficiaries and the implementation of some actions, such as training, but retains final decision-making authority.

5.3.2 Incentives

Incentives are at the core of this PDP. In our opinion, the right alignment of interests between the public and the private sectors is largely responsible for the success of this policy. In this sense, the program was attractive to all parties involved: the public sector, the sponsoring institutions, and entrepreneurs. Consequently, they were committed to the initiative from the outset.

The incentives for each party were clear:

- The PDP allowed sponsoring institutions to gain experience, acquire capabilities, and improve the skills of their personnel. Moreover, the economic support was, in some cases, the entity's main source of income.
- The entrepreneurs received funding to support the initial stages of the startup and, more importantly, technical and managerial advice to develop their projects. Once chosen, entrepreneurs received technical support (mentoring) for one year.

- The public sector broadened the scope of its policies and expanded its base of potential beneficiaries. At the same time, it met the objective (in our view, the most relevant one) of strengthening institutional capabilities and the entrepreneurial ecosystem.

With respect to the need to alleviate or minimize possible failures and opportunistic behavior, the incentive scheme was carefully designed. During this process, detailed regulations and specific safeguards were introduced, in order to prevent the policy arrangement from becoming a mechanism for rent seeking. Among others, the program includes some sanctions for non-fulfillment of obligations and a specific scheme of payments to stimulate virtuous behavior and give both entities and beneficiaries the right signals—e.g., to stimulate the search for feasible and economically viable projects, training of entrepreneurs, and the exit of those with good ideas but inadequate business plans.

5.3.3 Funding

The financing scheme of the program is rather simple. The budget and the funding are entirely in the hands of the public sector. Intermediary institutions are expected to contribute in kind, with human resources, infrastructure, and intangible assets such as contacts, access to markets, networking, access to financing, and others. As a counterpart, entities receive a non-refundable subsidy depending on the projects approved and mentored. Finally, entrepreneurs contribute more than half of the total amount of the project, monetarily and in kind. In our interviews, entities recognized that monetary incentives are aligned with their interests though some of them mentioned that the amount of the subsidy is too low to pay for all the services that the institutions are expected to provide.

Financial constraints could be a problem for small sponsoring institutions or for those that depend heavily on BAE to finance their activities. There are notable differences in the financial structure of the institutions. These differences, combined with a loss of funding in real terms due to inflation could lead to the exit of those institutions that are more likely to find alternative sources of funding—presumably the more productive ones.

5.3.4 Main Features of the Public Sector

To a great extent, the success of this PPC can be attributed to the characteristics of the public agency in charge. The management of the Undersecretary of Economic Development has some particular features that constitute, in our view, more the exception than the rule within public administration. First, the public sector appeared to be committed to the PDP, and the agency seemed to be very receptive to making the necessary changes in policy when

necessary. This was not tantamount to capture of the public sector by private agents. On the contrary, the PPC showed a high degree of interaction and consensus-building, but all relevant decisions remained under the control of the public authority.

Secondly, the bureaucracy associated with this PDP was minimal compared to other government programs and agencies. This was due in part to the fact that the program had a legal framework since the beginning, which granted the decision-making authority to the public sector agency. Finally, the PDP evolved in a context of political stability and low uncertainty. This situation reinforced commitments and fostered closer relationships between the public and the private sectors.

5.3.5 Learning

As mentioned, sponsoring institutions exhibit a great heterogeneity in their specialization, sectoral expertise and capabilities, as well as in the relevance of the PDP as a source of income. To some extent, these differences seem to be reflected in the uneven quality of projects submitted and in the quality of the assistance and training provided but further research is needed about this topic.

Perhaps the weakest side of the PPC analyzed is the difficulty in strengthening the networks and linkages within the ecosystem. Although some measures were taken to solve this problem, the institutions interviewed indicated that cooperation is still more of a desire than a reality.

To conclude, we believe that the methodology adopted by this PPC could be applied at other levels. Presently, the Undersecretary of Economic Development is using the same institutional arrangement in other PDPs, such as the Entrepreneurship Development program and BAITEC, and in other policies aimed at strengthening SMEs.

5.3.6 Institutional Success Factors

Six institutional success factors have been identified:

- a) The right alignment of interests and appropriate incentives: The PPC seems to be a win-win arrangement. This reinforces the commitment of all parties involved.
- b) Rules and flexibility: the rules of the PDP were clearly established from the beginning of the program, and they are transparent and explicit. The public agency had the necessary instruments to implement the PDP, and the bureaucratic procedures were reduced to a minimum.

- c) Previous relationships: the existence of prior linkages between the public sector and the sponsoring institutions constitutes another success factor. It provided opportunities for interaction, exchanges of information and brainstorming, which facilitated the process to a great extent.
- d) Monitoring and evaluation: The PDP (and the PPC) is under permanent monitoring and objective evaluation. This procedure is certainly unusual in the public sector and constitutes an added value of the PDP. Moreover, these evaluations tend to increase competence and virtuous behavior among entities.
- e) Funding scheme: simple and transparent.
- f) Characteristics of the public sector: it demonstrated great commitment to the PDP. The existence of a skilled labor force within the public sector was also an important factor. The existence of a cluster of skilled public sector agents and policymakers that interacted effectively with private sector was a crucial success factor of the PPC.

6. Public-Private Collaboration in Argentina: the Main Lessons

6.1. Main Features of the Analyzed Cases

This study has discussed four cases of public-private collaboration in the design and implementation of productive development policies, in software, the fashion industry, entrepreneurship, and sugar cane. The following table summarizes the main features of the cases analyzed.

Table 1. Main Features of Cases Analyzed

		Software	Fashion	Entrepreneurship	Sugar cane
Market Failures	Spillovers			X	x
	Information failures	X	x	X	
Type of PDPs	Vertical	x	x		x
	Horizontal			X	
Use of...	Subsidies			X	
	Cooperation	x	x		x
Based on...	Natural resources				x
	Design and innovative capabilities	x	x		
Cooperation with...	National technological institutes		x		
	Provincial technological institutes				x
	National government	x			

PDPs	Local government "in the large"			X	x
	"in the small"	x	x	X	x
PPCs aimed at ...	Design, implementation and execution of specific activities or programs	x	x	X	
	Designing and monitoring of sectoral policies Establishment of permanent PP networks				x

The existence of a PPC scheme in the PDP cases analyzed here is somewhat of an oddity in Argentina. Furthermore, these PPCs have worked fairly well, which is even more exceptional in an environment which overall is not very favorable to such partnerships. Most of these cases have been rather immune to political influence and have even survived changes in governments (e.g., the entrepreneurship case), yet another curiosity in the PDP realm in Argentina.

6.2. The Impact of PDPs and the Contribution of PPCs

To some extent, all of the cases analyzed here have met their objectives, and the PPC mechanism seems to have helped them do so, although no adequate counterfactual exists in order to rigorously prove this statement. Nonetheless, only three of them—sugar cane, software, and entrepreneurship—remain active, while the fashion PPC appears to have lost its momentum.

The sugar cane PDP’s impacts include technological advances, increases in productivity and yields, quality assurance and a lower incidence of diseases, among others. The entrepreneurship PPC also had good results, especially the strengthening of the entrepreneurial ecosystem, development of new capabilities within sponsoring institutions, and improved survival rates of startups. Empleartec trained workers in the IT fields in highest demand, and the impact of this policy in terms of capacity building and expansion of the skilled labor force has been important for firms and for the IT industry as a whole. Finally, the impact of the fashion industry PPC can be assessed in terms of the promotion of a culture of consumption that values original design in order to foster the design industry in the local market, the positioning of the design phenomenon on the public agenda, the promotion of Argentine apparel design globally, and the creation of networks that bring signature fashion designers together. It appears to be the case that smaller PDPs are better at matching specific market failures with the proper policy responses.

How have public-private collaboration schemes helped advance the goals of productive development policies? First, they have helped the public sector gain access to information available in the private sector which otherwise would have been costly or impossible to gather (all cases). Second, they have improved the diffusion of PDPs among potential beneficiaries, improving their outreach (entrepreneurship, fashion, software) and a better use of public funds. Third, they have generated networking mechanisms to coordinate actions and plans and exchange information among the different parties involved and take advantage of the division of labor and specialization (all cases). Fourth, transparency was gained through open private-public discussions, reducing the scope for free-riding and rent-seeking behaviors (e.g. entrepreneurship, software). Finally, **resilience** in PDPs was strengthened and, in cases where problems emerged, the existence of the PPC helped create alternative collaboration mechanisms (fashion). All of this leads us to believe that the participation of the private sector in the PDPs was crucial to make them work. Moreover, the existence of the PPC schemes strengthened institutional and technical capacity in both the private and the public sectors.

6.3 Emergence and Effectiveness of PPCs

How did the PPCs emerge, and why did they work? First, there was an alignment of interests and objectives of all parties concerned. In most cases, from the outset, both the private and the public sectors considered cooperation an effective way to design and/or implement the respective policies. This consensus is further reinforced during the launching and implementation of the PDP.

Second, there was consensus around the main problems affecting each sector (talent and human resource shortages in the case of the software industry, the weakness of the entrepreneurial ecosystem, the existence of diseases and biologic constraints in the sugar cane case, and the need to foster the incorporation of design in the apparel industry) and the way to manage them. It is important to highlight, in this regard, that consensus emerged on these issues in spite of the heterogeneity of size, interests, objectives, capabilities, and market orientation of firms operating in the sectors analyzed. This consensus helped generate, in the more stable cases, cohesion in the private sector in favor of the PDP and public-private cooperation. This also helped avoid wasting time and resources and leveraged the commitment of public sector authorities.

With regard to the leadership of the program, although the four cases show strong interaction between public and private sectors, some of them exhibited a higher presence of

the public sector in the conception and implementation of the PDP (entrepreneurship), while in other cases the private sector was the champion of the policy (software). Sugar cane and fashion could be considered as mixed cases in this sense. In all cases, the role of leadership is key for the success of the policy. This role may be assumed by a public organization with a qualified and committed bureaucracy, by dynamic business associations, and/or by individual pioneers.

Fourth, the existence of previous relationships and mutual trust between the public sector and private agents was also relevant, together with the existence of skilled people (or groups) acting as conveners. Fifth, all relevant private-sector actors were involved in the PPC schemes through acknowledged representatives of private sector interests, such as large sugar cane producers and business associations. This gave legitimacy to the PDPs and also helped them be successful since the private agents involved not only had the appropriate skills but also had access to information not available to the public sector.

Sixth, in most of our cases, some kind of networking scheme is in place. In the sugar cane case, it involved the EEOC, the provincial government, the sugar cane producers, and the vivariums. In entrepreneurship, there was the local government, the potential entrepreneurs, and the sponsoring institutions, with their own respective networks of mentors and consultants. In Empleartec, the national government, the sector's business association, sponsoring firms, universities, and clusters were involved in the program. In the fashion industry, cooperation took place not only between INTI and Pro-Tejer. It also involved provincial and local institutions, which gave financial and operation support to the program. The PPC also helped foster networking among signature designers. This networking generated a division of labor in which each part of the network performed tasks for which it was specifically endowed, creating win-win situations for all the agents involved.

Seventh, in most (but not all) cases the participation of private actors is a quite open and transparent process, favoring accountability, and reducing room for speculative or collusive behaviors.

Eighth, in most of the cases studied, the public sector has a particular profile, fairly far from the traditional bureaucracy stereotype. In effect, the public sector exhibits a high degree of commitment to the PDP, has a professional staff and technical skills (especially in the case of sugar cane), and has established routines, metrics, and practices to monitor the performance and evolution of the policy.¹⁵ The private sector representatives are often also different from

¹⁵ Notwithstanding, this does not mean that the public agencies involved in the PDP are necessarily the most appropriate from the point of view of the scope of their responsibilities and attributions, but they are perhaps the most active or receptive to the collaboration with the private sector.

the traditional actors. In this regard, the business associations that participate in the software and fashion PPCs are relatively young and well-staffed from a technical point of view.

Finally, and more tentatively, some factors that in some cases may have favored the emergence and development of the PPC are the relatively loose institutional structure of the collaboration and the often spontaneous ways in which the PPCs emerged. In other words, the absence or large “master plans” and large formal committees (and the fact that the PDPs analyzed were, in general, managed by mid-level personnel within the public sector), may have eased the cooperation process in several of the cases.

6.4. What Factors Account for the Differences in the Stability of the PPCs?

While most PPCs continue to exist, the PPC in the fashion industry lost intensity. It is important to examine the factors that could explain the lower sustainability of this case.

First, the textile and apparel value chain comprise very **heterogeneous** firms in terms of size, market orientation, and others. There are the large fabric producers that originally backed the PDP, but whose main interest was in obtaining trade protection against foreign competitors given their low degree of competitiveness. There are also a number of small firms focusing on design that are potential clients for the fabric producers and that are, at the same time, a source of high value-added exports. This second group has almost no relevance within the industry in terms of revenue generation.

This heterogeneity did not prevent the achievement of consensus within the PDP. However, it became relevant when the context in which the PDP was applied changed. Indeed, the establishment of the protectionist measures that the private sector has been pursuing and the poorer than expected performance of design and fashion exports eroded, in part, the interest of the private sector in the PPC. To some extent, this proves that the PPC was a secondary objective for the private sector and not a central goal of the promoting institution (Pro-Tejer). This may have occurred because of the limited scope and relevance of the signature design sector within the apparel industry.

Second, in the three more stable cases, the bulk of the financing of the PDP is in the hands of the public sector. In sugar cane, the funding of the EEAOC is entirely public (it comes from a provincial tax on sugar cane activity and some other marginal fiscal sources). The cost of the technology transfer from EEOC to the producers is borne by the public agency, in the form of subsidies to farmers. In entrepreneurship, the public sector supports the PDP through subsidies, and the private sector contributes mainly with human resources and some infrastructure. Finally, in Empleartec, the scholarships are entirely financed by the Ministry of

Labor, though the companies contribute with academic and technological advice and, in some cases, teaching hours. The case where the private sector financed the PDP (fashion) was partially dismantled when the sponsoring institution lost interest in the outcomes of the policy. However, although the fact that the public sector is the main funder of the PDP may so far have contributed to its stability, it also makes the policy dependent on fiscal constraints and/or changes in administration.

6.5. Involvement of the Public and Private Sectors, Co-governance, and Monitoring

Although complete co-governance is absent in all of the cases studied, three of them have some degree of co-governance (or a strong private public interaction) that deserves particular attention: entrepreneurship, Empleartec (software) and sugar cane. In the former case, the public sector delegates the execution of part of the policy to the private sector (sponsoring institutions), without forfeiting its rights and duties. It is outsourcing, with the interesting particularity that private, independent organizations benefit by enhancing their capabilities and networks. In the case of Empleartec, there is a clear and explicit collaborative effort between the public and the private sectors to achieve the objectives of the PDP and carry out co-governance in the decision-making process, on issues such as the types of courses to be offered, the target audience, and others. Finally, in sugar cane, the EEAOC has a board made up of representatives of the public and the private sectors, which defines its main goals and policies and monitors the execution of the PDP. In all of these cases, there are formal **agreements and contracts** defining the duties and responsibilities of the organizations involved.

The fashion case, on the contrary, has no formal co-governance mechanism in place, although the private sector had the same share of control over the *por la calle* (on the street) program as the public sector. There are no formal agreements like those in the other cases.

The level of **involvement** of the private sector in the PDP is also another relevant issue. In the Empleartec case, in addition to deciding jointly with the public sector the general orientation of the program and the areas where the courses will be offered, the private sector defines the curricula and course contents, as well as teaching materials and venues. In the sugar cane case, the private sector has an active role in day-to-day activities as well as in the strategic management of the EEAOC. In the fashion industry PDP, the private sector not only financed but also jointly designed and implemented the *por la calle* program with INTI. In the entrepreneurship case, the role of the private sector is less prominent, since the sponsoring institutions only disseminate the program, propose candidates for the subsidies, and grant technical assistance to the projects selected.

The fact that private sector appears to be more heavily involved in the more stable cases of PDPs or to participate in a kind of formal co-governance mechanism does not mean that the public sector has ceded its authority. Moreover, although in some cases the private sector initiated the PDP, in all cases the policies adopted were in line with previously and autonomously defined objectives and interests of the public sector.

Finally, in theory, to be successful, PPC schemes require some degree of monitoring and evaluation of their main variables: performance, attainment of established objectives and agreements, use of resources, emergence of free riding and rent seeking behaviors, and others. However, only in the entrepreneurship case are there explicit metrics to measure the performance of the policy and mechanisms established to evaluate the results of the public-private interaction.¹⁶ This is not surprising, given that public policies are not evaluated very frequently in Argentina. However, this does not mean that the other, more stable programs have no monitoring mechanisms at all. Their continuity is the result of more formal or informal evaluations that suggested that the respective policies were successful in terms of the attainment of their original objectives. There are examples of (low-cost) learning and policy changes thanks to those mechanisms. In the software program, for example, the government pushed for the inclusion of courses related not only to the technology areas in which the large sponsoring firms operate but also to the needs of SMEs, and in order to reduce the digital gap through courses on basic IT principles. This means that a “learning by monitoring” process took place in some of the cases.

6.6. Some Shared Shortcomings and Spillovers

Apart from their differing degrees of success and stability, the cases studied have some common shortcomings:

- a) Difficulties coordinating with other public agencies: in most of the cases, the problems of PDPs involve a number of different issues, and the public sector officials involved do not always have the authority to solve them. This may occur because the agencies are local and not only lack the authority to decide on national issues but also are unable to coordinate actions with the national agencies (e.g., entrepreneurship, sugar cane). In other cases, this occurs because although the public agency has a national scope, the sectoral policy is decided at a higher level, reducing the influence of the PDP and its attractiveness for the private sector (e.g., apparel). In the case of software, the new phase

¹⁶ We could say that, at least in some cases, the public sector “imported” management techniques originally devised by the private sector.

of the program aims at establishing contacts with other agencies that are in charge of the sectoral policy, but the success of this aim has yet to be seen.

- b) Although our study suggests that PPCs may be helpful in implementing PDPs, most of our cases are exposed to instability and uncertainty about their future development. Such uncertainty has characterized public policies in Argentina in recent decades. No mechanisms aimed at making the PPCs permanent have been put in place beyond the fact that in all of them, private constituencies have emerged that may lobby for their continuity. However, in some cases, the programs may end because their objectives have been met. In the entrepreneurship case, for example, it is expected that the entrepreneurial ecosystem may reach at some point in time a sufficient degree of maturity to generate access to credits for new ventures.¹⁷

Some positive spillovers have also emerged that transcend the original aims of the PDPs. These include the following:

- a) Some PPCs have given rise to the creation of formal or informal opportunities for the exchange of information and discussion of other issues relevant to their respective sectors. This, in turn, may lead to new policy initiatives. Fashion (with the national survey to designers), software and sugar cane (where new technological developments and ongoing technical platform were launched as a consequence of the PPC) are cases in point.
- b) The programs have created externalities for the organizations involved. For instance, the universities and software clusters that teach the Empleartec courses gain in terms of reputation, legitimacy, and institutional strengthening. The same occurred in the sugar cane case, with the EEAOC and in the INTI's Textile Center. This occurred with the entrepreneurship PDP as well, but in that case it was a policy objective. In the case of entrepreneurship, there were spillovers for all institutions dedicated to the promotion of new entrepreneurs, as well as for the very few organizations granting credits to startups, since the program led to an increase in the volume of new projects. In the case of EEAOC, an important externality was the adoption of a new technological platform able to be used to develop innovations in other crops.

¹⁷ This might be, to some extent, the case of the *por la calle* program, since the idea that design capabilities exist in the city of Buenos Aires is already installed. A new program was launched, without private funding, aimed at disseminating the same concept in other regions of Argentina.

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