

Seminario
“EL DESARROLLO DE NUEVOS SECTORES DE EXPORTACIÓN EN AMÉRICA LATINA”

BUENOS AIRES, ARGENTINA
AUDITORIO BID-INTAL
16 DE SEPTIEMBRE DE 2008

AGENDA PRELIMINAR

Los trabajos que se presentarán en el Panel 1 y 2 se originan a partir de una convocatoria de proyectos del Departamento de Investigación (RES), del Banco Interamericano de Desarrollo, “ *The Emergence of new Successful Export Activities in Latin America*”, durante 2007. Ambos analizan cuatro estudios de caso de sectores exportadores innovadores en Argentina a partir de una serie de encuestas desarrolladas y del análisis cualitativo correspondiente. El documento del Panel 3 fue auspiciado por la Fundación Carolina de España y analiza el proceso a través del cual surgen y se desarrollan nuevos sectores de exportación en Argentina, Chile, Brasil, México y Uruguay, identificando y evaluando las condiciones iniciales e hitos a lo largo de su desarrollo, y el rol de sector público y privado en ese proceso de surgimiento y expansión de nuevas oportunidades.

09:30 - 10:00 REGISTRACIÓN

10:00 - 10:15 APERTURA

Beatriz Nofal, Presidente, Agencia Nacional de Desarrollo de Inversiones, ProsperAr
Lucio Castro, Director del Programa Inserción Internacional, CIPPEC
Ricardo Carciofi, Director, BID-INTAL

10:15-11:30 PANEL 1: DESAFÍOS PARA EXPORTADORES INNOVADORES PYME DE PRODUCTOS DIFERENCIADOS

Expositor: **Juan Carlos Hallak**, Profesor del Departamento de Economía,
Universidad de San Andrés - UDESA

Comentaristas: **Ricardo Rozemberg**, Gerente de Estrategia y Ambiente de
Inversión, Agencia Nacional de Desarrollo de Inversiones, ProsperAr
Luis López Blanco, CEO, Compañía Constructora de Embarcaciones

Moderador: **Daniel Saslavsky**, Coordinador del Programa
de Inserción Internacional, CIPPEC

11:30 - 11:45 Receso para café

- 11:45 - 13:00 **PANEL 2: EL SURGIMIENTO DE NUEVAS ACTIVIDADES EXITOSAS DE EXPORTACIÓN EN ARGENTINA**
- Expositor: **Gabriel Sánchez**, Presidente, Instituto de Estudios sobre la Realidad Argentina y Latinoamericana - IERAL
- Comentaristas: **Enrique Avogadro**, Director, Dirección General de Comercio Exterior de la Ciudad de Buenos Aires
Mariano Tamborini, Gerente de Marketing, División Golosinas, ARCOR
- Moderador: **José Jorge Seligmann**, Economista Senior de País, Departamento de Países del Cono Sur, CSC-BID (*A confirmar*)
- 13:00 - 14:30 Almuerzo libre
- 14:30-15:45 **PANEL 3: EL DESARROLLO DE NUEVOS SECTORES DE EXPORTACIÓN EN AMÉRICA LATINA: LECCIONES DE 10 CASOS EXITOSOS**
- Expositor: **Lucio Castro**, Director del Programa Inserción Internacional, CIPPEC
- Comentaristas: **Alicia Frohmann**, Directora, Pro Chile, Ministerio de Relaciones Exteriores de Chile
Roberto Bennett, Gerente General, Uruguay XXI, Instituto de Promoción de Inversiones y Exportaciones de Bienes y Servicios, Uruguay
Jorge Lucángeli, Consultor, Centro de Economía Internacional, Cancillería Argentina
- Moderador: **Uziel Nogueira**, Economista Senior, BID-INTAL
- 15:45 - 16:00 Receso para café
- 16:00 - 17:15 **MESA REDONDA**
- Panelistas: **Emiliano Cisneros**, Gerente de Estrategias de Posicionamiento e Inserción Comercial, Fundación Exportar
Alicia Frohmann, Directora, Pro Chile, Ministerio de Relaciones Exteriores de Chile
Roberto Bennett, Gerente General, Uruguay XXI, Instituto de Promoción de Inversiones y Exportaciones de Bienes y Servicios, Uruguay
- Moderador: **Ricardo Carciofi**, Director, BID-INTAL
- 17:15 **CIERRE**
- Lucio Castro**, Director del Programa Inserción Internacional, CIPPEC
Ricardo Carciofi, Director, BID-INTAL



INTER-AMERICAN DEVELOPMENT BANK
BANCO INTERAMERICANO DE DESARROLLO

**CHALLENGES OF EXPORTING DIFFERENTIATED
PRODUCTS TO DEVELOPED COUNTRIES: THE
CASE OF SME-DOMINATED SECTORS IN A
SEMI-INDUSTRIALIZED COUNTRY**

BY

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Challenges of Exporting Differentiated Products to Developed Countries: The Case of SME-dominated Sectors in a Semi-Industrialized Country

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January 2007 (Preliminary)

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1. Introduction

In recent decades, several developing countries have started impressive processes of export-led growth. Economies that previously exported almost exclusively primary products rapidly shifted their export structure toward manufactures. Argentina, in contrast, has not experienced analogous export success in manufacturing. Despite initiating its industrialization process decades earlier than most other developing countries, manufacturing exports have not shown a salient dynamism and are not a dominant component of its export structure. Argentina has apparently been unable to leverage its pre-existing industrial experience in the global economy.

The opaque performance of Argentina's manufacturing, however, hides the stories of a number of entrepreneurs (and their firms) who are achieving considerable success in exporting manufactured and differentiated products to developed countries on a consistent basis, the type of export success most notably absent in the economy as a whole. These entrepreneurial stories are the focus of this research work. We develop case studies of their export activity and the subsequent export dynamism of their sectors, which their activity helped to generate. In particular, we identify the factors that made these export pioneers successful. Identifying these factors is critical for understanding why most other firms that could potentially export fail to do so. Even though the case studies involve economic sectors with very different characteristics, the factors explaining the appearance of export pioneers are strikingly similar.

We develop a theoretical framework that takes elements from the pioneer-diffusion model of Hausmann and Rodrik (2003) and Hausmann, Rodríguez-Clare and Rodrik (2004). As in that model, our framework emphasizes the existence of an uncertainty environment surrounding domestic firms before a new activity – in our case exporting – has taken place. We provide further definition for the concepts of “discovery”, “pioneer”, and “diffusion”, which allow for better characterizations of the regularities found in the case studies. We focus on pioneering activity involving exports that are substantial, sustainable and primarily targeted toward developed countries.

Our case studies involve four industries, Wines, Wooden Furniture, Light Ships, and TV Programs, that have experienced substantial export growth in recent years. These industries all produce differentiated products, yet span a broad range of economic activities. The case studies first describe the structure of the industries. Then, they characterize the emergence of the export pioneers and the subsequent process of diffusion. Finally, they analyze the role played by public institutions.

We find a number of regularities that are common across these sectors. Among them, the most remarkable regularity is that, in all of our case studies, the appearance of a pioneer is largely explained by a knowledge advantage relative to other industry participants about the tastes, operation and business practices of foreign markets, which the pioneer acquired *previously* and *independently* of his decision to export. This regularity has several implications that reject *a priori* reasonable presumptions about potential determinants of pioneering export activity. First, export pioneers do not differ from other entrepreneurs solely in terms of entrepreneurial ability or a lucky realization of an uncertain investment. Second, their advantage does not relate to production knowledge but to marketing knowledge. Third, before the pioneer has initiated foreign sales, the knowledge necessary to export does not seem to be acquirable as a result of a conscious effort to develop an export strategy. Export pioneers only seem to emerge among those who already possess this knowledge.

The pessimism that this result might convey is not warranted. Our results characterize an environment that is only present at a particular period of a country's export development process in which exports of differentiated products to developed countries are only incipient. The pioneers' actions diffuse to other firms in their sectors that later follow their steps. Furthermore, diffusion also occurs across sectors as the advantage of pioneers is based on knowledge that is relevant for other industries as well. Public policy then has a potentially important role in fostering such diffusion within and across sectors. The potential importance of public policy is strengthened by our finding that, as opposed to the implications of Hausmann and Rodrik (2003), diffusion does not necessarily hurt the pioneer. In contrast, diffusion always benefits the pioneer during its early stages, in most cases due to increased foreign awareness of the country as a potential exporter.¹

This study is organized as follows. Section 2 delimits its scope. Section 3 describes the theoretical framework. Section 4 presents the findings that are common across case studies. Section 5 discusses policy lessons that can be derived from these findings. Finally, section 6 presents the four case studies of this research work: Light Ships, TV Programs, Wine, and Wooden Furniture.

¹ See Vettas (2000) for a model of endogenous demand in which diffusion can benefit the pioneer.

2. Scope of the study: Exports of differentiated products to developed countries

The objective of this study is to understand and characterize the emergence of export activity in economic sectors previously oriented toward the domestic market. We study firms and sectors in a semi-industrialized country, Argentina, mainly focusing on exports to developed economies as the destination market. The economic sectors that we study share as common features that they produce differentiated goods and are mostly populated by small and medium sized enterprises. This section explains the reasons for constraining the scope of the study to such kind of exports and describes the criteria that we use to select our case-study sectors.

a. Scope of the study

Argentina is a country with a considerably diversified industrial base, largely developed during the period of import-substituting industrialization. In most industrial sectors there are well-established firms that have been operating (even occasionally exporting) for decades. Despite the long presence of local firms supplying the domestic market, export activity in most sectors has traditionally been scarce. The lack of export activity is particularly salient in the case of differentiated goods; a substantial fraction of exports of industrial products consists of commodities such as paper pulp, aluminum, and petro-chemicals.

In the last two decades, many developing countries have initiated processes of impressive export growth largely directed toward developed countries. The strong export performance of those countries is usually attributed to a combination of policy changes, such as opening their economies to foreign trade and investment, and worldwide technological advances, such as drastic reductions in transportation, information, and communication costs. Argentina, as many other Latin-American countries, has also liberalized its foreign trade and investment regimes and benefited from similar technological advances. However, export growth in this country has been considerably less spectacular, mostly so in the case of differentiated-product exports to developed countries. While Argentina's total exports multiplied by a factor of 3.3 during the period 1991 to 2005, exports of differentiated products to OECD countries grew by a factor of 2.6. These exports accounted for only 4.5% of total exports in 2005.²

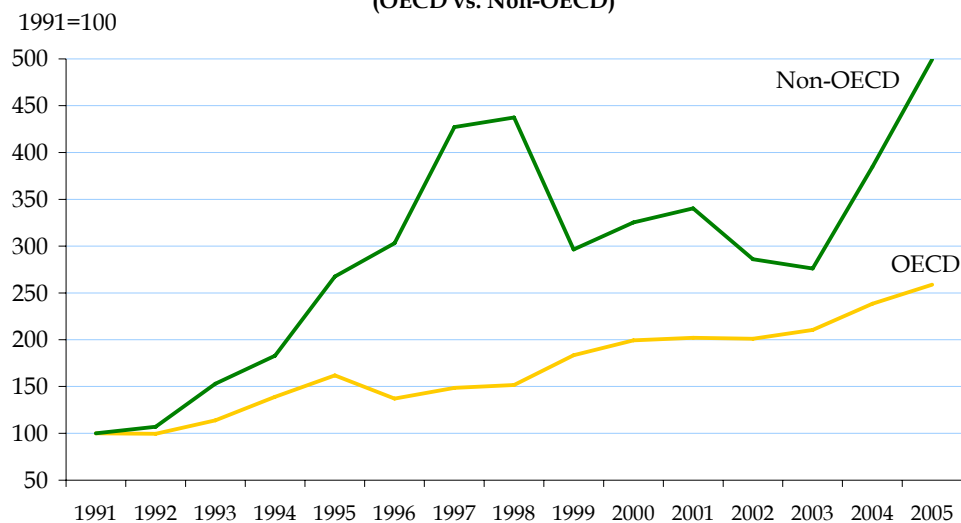
We emphasize the distinction between exports to developed and to developing economies because of the very different hurdles that exporting to those countries imply. In particular, successfully entering markets

² The classification of goods into differentiated and non-differentiated follows Rauch (1999). OECD countries are members of this organization in 1991.

in developed economies with differentiated products requires potential exporters to make substantial efforts to upgrade the physical characteristics of their products and to sophisticate their marketing practices. Most Argentine producers of those products lack the knowledge and information to make those efforts efficiently and thus choose not to attempt a committed export strategy.

A detailed description of the hurdles domestic firms need to overcome to export is provided in the next section and later on in the case studies. Here, we want to highlight that one of the main pay-offs of making those production and marketing efforts is a reduction in the products' degree of substitutability relative to those offered by competitors (i.e. products become more differentiated).³ As a consequence of the higher differentiation, foreign sales to developed countries tend to be more stable. Figure 2.1 displays the evolution of Argentina's exports of differentiated products to OECD versus Non-OECD countries during the period 1991-2005. The graph shows that while exports of differentiated goods to Non-OECD countries are sensitive to changes in costs relative to other countries, such as those induced by the Brazilian devaluation in 1999 and by the Argentine devaluation at the end of 2001, exports of those goods to OECD countries follow a path that is notably less volatile.

Figure 2.1
Argentine exports of differentiated products
(OECD vs. Non-OECD)



This slower but more persistent export growth is driven by an increasing number of firms that have been able to overcome the challenges of exporting differentiated goods to developed markets. The analysis of

³ The equilibrium relationship between product quality and the extent of differentiation is analyzed in Coibion et al. (2006). Marketing efforts can also affect the extent of differentiation even for physically identical products.

why those firms have achieved this type of export success and how this success induces export success of other firms is the focus of this paper. Even though their number is a very small fraction of the population of firms, understanding what determines their success is critical because it allows us to understand why other firms fail to export. Only based on such understanding can public policies of export promotion be effective.

In addition to focusing on emerging export activity in sectors that produce differentiated goods and export to developed countries, our case studies involve sectors mostly populated by small and medium sized enterprises.⁴ Large firms – often multinationals – face similar requirements to access developed-country markets but different (and usually smaller) constraints to overcome them. While their case is also important to understand, we prefer to keep our focus on sectors that share a common set of basic characteristics even at the cost of narrowing the scope of the study. The breadth of industries to which the analysis applies is still sufficiently wide to represent a large fraction of the economy. Therefore, the conclusions of this study could potentially be the basis for the design and assessment of a variety of public policies aimed at fostering industrial development.

b. Choice of sectors for case study

We choose to study in detail four economic sectors: Light Ships, TV Programs, Wine, and Wooden Furniture. These sectors are similar along several dimensions. First, they export differentiated products. Second, they all ship a substantial fraction of their exports to developed economies. Third, none of these sectors shows high levels of economic concentration. Fourth, they have experienced strong export growth in the last fifteen years. There are sectors other than the four we select for case study that share these characteristics. Appendix 1 presents a brief statistical analysis of export performance in Argentina at the sectoral level in which a set of quantitative and qualitative criteria are applied to identify such sectors.

Among the sectors with such common characteristics, we choose these four because they span a diverse set of broadly-defined economic categories: Agriculture-based Manufacturing (Wine), Traditional Industrial Manufacturing (Wooden Furniture), Non-Traditional Industrial Manufacturing (Light Ships), and Services (TV Programs). As a result, they can generate broader lessons as a group than possible alternative choices.

⁴ A few large firms in the Wine and TV Program industries are exceptions. However, smaller firms in both industries still capture a large fraction of production and exports.

3. Theoretical framework

Hausmann and Rodrik (2003) and Hausmann, Rodriguez-Clare, and Rodrik (2004) – henceforth HR – argue that the emergence of new economic activities in developing countries is characterized by a substantial degree of uncertainty about production costs. This uncertainty is only resolved – in a particular country – once the new activity is carried out in that location, even if it has been performed in other countries for years. Then, for a new activity to emerge, a pioneer needs to embark on a costly venture of uncertain outcome. This venture might be successful, but it might also turn out not to be profitable. HR argue that, in addition to the venture risk, another factor hampers pioneering activity. Even if the uncertainty turns out to be favorably resolved, knowledge of the successful outcome could be easily transmitted to other firms who might imitate the pioneer, dissipating the rents he has generated. From a social perspective, there is a problem analogous to the standard dilemma found in the patents literature: finding the extent of patent protection that optimally balances the trade-off between incentives for invention and early diffusion. As opposed to this standard dilemma, however, when the “invention” in question is the “discovery” of a new activity’s production costs in a particular country, it is not possible to resolve this trade-off through the patent system because such knowledge simply cannot be patented. As a result, HR assert that developing countries suffer below-optimal “discovery activity”, as the potential monopoly rents of pioneers – which would induce them to invest in those activities – is rapidly dissipated by the early entry of imitators.

The HR framework is in principle suitable for analyzing emerging export activity in differentiated products from a developing country, like Argentina, to developed countries. Since Argentina’s exports have historically been concentrated on agricultural and industrial commodities, this activity is likely to be subject to uncertainty about production costs.⁵ To the extent that the nature and outcome of the risky investments that a pioneer makes to find out all the implications of an export venture is observable to other firms, who can then imitate, his private returns will be lower than the social returns he generates. As in the HR framework, such a market failure will induce below-optimal investment by pioneers.

In this section we present a framework that adapts elements from the HR model. Based on the findings of our case studies, we provide more specific content to the conceptual apparatus of that framework. We first argue that generating sustainable export growth requires a firm to adopt a set of business practices

⁵ We argue later that exporting, as a new activity, is subject to additional layers of uncertainty that go largely beyond uncertainty about production costs.

that is substantially different from the set of practices that are necessary to compete successfully in the domestic market. We distinguish the two by calling them, respectively, the “export business model” and the “domestic business model”. Then, we re-define “discovery”, “pioneer”, and “diffusion”, the central concepts in HR, to be consistent with the theoretical framework we propose.

a. Export business model versus domestic business model

A firm in a developing country that attempts to succeed in selling differentiated products to foreign markets – in particular those of high-income countries – needs to change several of its business practices. We categorize those changes into two broad groups which we call “product upgrade” and “marketing upgrade”. The central elements that characterize product and marketing upgrade are not necessarily identical for every sector. However, many of those elements – described next – are shared by some or all of the industries included in our study.

Product upgrade

Consumer demand has idiosyncratic and specific components in different countries. In particular, consumers in developed countries tend to demand products of higher quality, which in general have more sophisticated designs, are made of better materials, or are less likely to malfunction. Because of the different characteristics of consumer demand in foreign countries, domestic producers in developing countries who attempt to enter foreign markets need to upgrade their products and manufacturing practices to satisfy the higher quality standards and/or specific needs and preferences of the markets they target.

Product upgrade imposes several requirements on domestic firms. First, they need to upgrade and customize the design of their products, which implies the capability of mapping the specificity of foreign consumers’ needs and the higher quality standards into their design and product development processes. This adjustment might involve subcontracting these activities to third parties or developing the capability inside the firm (e.g. hiring specialized designers). Second, firms need to upgrade the production process to meet the higher quality standards of developed countries. Meeting this requirement usually imposes the need to develop new practices for quality attainment. Third, firms also might require that suppliers and service providers upgrade their products/services to accompany their own upgrade, which often involves deepening customer-supplier relationships.

Marketing upgrade

Substantial changes in marketing practices are also an essential requirement for successfully exporting to foreign (developed country) markets. First, firms need to develop the capability of understanding the preferences and needs of foreign consumers. While in the domestic market they are naturally embedded in an environment that continuously provides them with spontaneous signals about consumer needs and their reaction to the firms' products, analogous feedback from consumers in the foreign market is not as easily available or interpretable. Therefore, firms need to learn how to obtain this information in a more systematic manner. Firms also need to understand the nature of competition in foreign markets in order to choose which markets to target and define a positioning strategy in those markets. While their accumulated experience in the domestic market allows them to easily predict competitors' and consumers' reactions to their own strategies, this experience is usually of little use to predict those reactions in the foreign market. In the case of branded products, firms also need to elaborate a branding strategy. In the domestic market – often small relative to the size of foreign markets – brand recognition is likely the consequence of the firm's long presence in the market. Entering foreign markets, in contrast, requires a well thought-out brand positioning strategy since competition in those markets is usually more intense.

In addition to focusing on the end-customer, firms need to understand the structure of distribution networks in the export market in order to choose and develop the distribution channels most appropriate for reaching consumers in their target segment. They also need to understand the needs, requirements, incentives, and constraints of their distributors, who are their next-tier customers. Addressing their needs and requirements (e.g. timely delivery, quality consistency, packaging requirements) is a key factor for gaining access to foreign distribution channels. Failure to conform to the channel's requirements can be interpreted as a signal of non-reliability and risk the continuity of the business relationship with the channel. Efforts to satisfy the requirements of distributors is distinctively important for exports to developed countries since the negotiating power of distributors in those countries is often larger than the negotiating power of domestic distributors (potentially due to their larger scale and larger set of potential suppliers). A good match between the domestic firm and the foreign distributor is also important. For example, large distributors might have more access to retail outlets but fewer incentives to make specific investments to foster sales of a small supplier. In some sectors, firms might need to implement post-transaction elements of customer service specific to the foreign market. Repair and maintenance, for example, requires mobilizing resources in each of the targeted foreign markets to establish the necessary network of service providers.

Two contrasting business models

Product and marketing upgrade distinguish two contrasting business models. In the “domestic business model”, product and marketing upgrade have not taken place. This business model characterizes most domestic firms, which are unable to export on a consistent basis. In the “export business model”, product and marketing upgrade have been implemented, so this model characterizes firms that are successful in exporting differentiated goods to developed countries.

We divide the required changes in business practices into product and marketing upgrade for analytical and expositional convenience. However, we emphasize that the two upgrades are fundamentally intertwined. In particular, both need to be implemented to transition between the domestic and the export business models.

b. Discovery and pioneer

It could be hypothesized that, among the many components of product and marketing upgrade, there is a single one that is crucial for a particular industry’s export success. In this hypothetical case, “discovery” could be defined in a narrow sense. For example, a discovery could be finding that a specific modification to the product design dramatically increases its acceptance in the targeted market or realizing that on-time delivery is a baseline requirement. However, our case-study findings indicate that there is seldom such a silver bullet. In contrast, we find that there are always several changes that need to be implemented together to develop a sustainable business in a foreign market. Consequently, we adopt a broader definition of the term: we define *discovery* to be the implementation of a successful export business model for the first time in a given country.

Firms that fail to implement the required upgrades might still be able to carry out sporadic exports or export regularly to developing countries. However, they will not be able to achieve substantial and sustainable exports to developed countries. The latter type of exports requires a number of improvements and adaptations in the firm’s way of conducting business that need to be satisfied jointly.

We define the *pioneer* to be the individual (or firm) who makes the discovery, i.e. who first implements a successful export business model. The discovery might come about as a combination of the pioneer’s actions and elements of luck. On the one hand, part of the implementation of a successful export business model might result from the pioneer imitating foreign firms. For example, he can imitate a product

design or the way foreign firms relate to distributors. On the other hand, a discovery might be due in part to the successful outcome of an investment made under uncertainty or even to mere coincidence. Discoveries in Hausmann and Rodrik (2003) have precisely these two components; pioneers imitate the products of foreign firms and also are lucky to uncover low production costs for those products in their countries. However, those two elements do not fully characterize how discoveries come about. First, a successful export business model can be developed in part through a lengthy process of experimentation and learning, along which the outcome of specific decisions and investments provides the pioneer with valuable information that helps him make subsequent choices. Second, the ability to implement a successful export business model can also stem from an information and knowledge advantage held by the pioneer as a result of his experience in related or unrelated activities. As is later discussed, this advantage turns out to be crucial.⁶

c. Diffusion

The successful implementation of an export business model by a pioneer generates knowledge that eventually diffuses to other firms. Diffusion can take a specific or a general form. Specific diffusion is the transmission of knowledge about particular elements of the product and marketing upgrade implemented by the pioneer. For instance, specific diffusion could involve the characteristics of a new package or the details of the pioneer's marketing efforts. General diffusion is broader in scope; it is the transmission of the knowledge that a successful export business model does exist, even if some or all of its elements are not known.

4. General Findings

a. The uncertainty environment

When domestic producers assess the potential profitability of an export venture before discovery and diffusion have taken place in their industry, they face various sources of uncertainty. In general, a potential source of uncertainty stems from each of the dimensions – described in the previous section – along which firms need to upgrade product and marketing. For example, firms face uncertainty related to the cost of acquiring the necessary equipment and implementing quality control practices or to their

⁶ The introduction of experimentation and learning and information advantage as factors facilitating discovery implies a potential tension between the standard connotation of the word “discovery” and the scope that we give to it in this study. Subject to this

ability to find the right suppliers for the sourcing of parts required for the upgrade. They also face uncertainty about which markets to target and about their ability to design or adapt products that appeal to foreign consumers in those markets.

The uncertainty associated with the profitability of a potential export venture – before discovery and diffusion have taken place – is in general so large that domestic firms elude the risk involved in a serious effort to upgrade their product and marketing practices. In addition to the uncertainty associated with each dimension along which firms are required to upgrade, a more profound layer of uncertainty is associated with the firms' ignorance over what dimensions are most relevant to their particular case. Furthermore, they are often even unaware of some of the dimensions along which they need to upgrade. Under such uncertain environment, their export efforts are limited to attending a trade fair, contacting a foreign distributor, or advertising their products in a foreign outlet. But such a limited export investment does not lead to a sustained and substantial presence in foreign markets. In fact, this type of export experience often terminates not long after it has started.

The deepest source of uncertainty relates to the need to marketing upgrade. Marketing upgrade requires information and knowledge about the intricacies of foreign markets that domestic firms typically lack. They need to understand the preferences of foreign consumers, make positioning and branding decisions, find appropriate distribution channels, understand the needs and business practices of distributors, and (in some cases) mobilize resources for post-sale services. However, they neither have the information about how to satisfy these requirements nor do they know how and where to acquire it. In the domestic market, firms rely upon intuition, experience, frequent contact with consumers and distributors facilitated by geographical proximity, and embeddedness in the local culture. These are powerful tools for marketing domestically, but are ineffective for marketing abroad. In order to export, domestic firms need to develop new and largely unfamiliar marketing practices.

In the case of product upgrade, in contrast, the tools that firms rely upon to produce domestically seem to be more similar to those they need when producing for the export market. A potential explanation is that the information and knowledge required for product upgrade tends to be of a more codifiable nature, available in manuals, trade magazines, or transmitted in educational institutions to technicians, specialists, and professionals whom domestic firms can easily hire if required. Marketing requirements – such as

caveat, we keep this terminology to maintain consistency with the original HR framework.

understanding the needs and preferences of foreign consumers or understanding the “way of doing business” in the foreign country – are considerably more difficult to codify.⁷

b. The knowledge advantage of pioneers

We find that the pioneer, in all four sectors, has as a substantially superior understanding of foreign countries’ culture, idiosyncrasies and/or way of conducting business. Such an understanding resolves a large number of uncertainties that remain in place for other entrepreneurs in the industry, and therefore facilitates the conception and execution of the export business model. Facing fewer hurdles than his peers, the pioneer faces more certain investment prospects for product and marketing upgrade.

The fact that pioneers have such a distinctive knowledge advantage would not be surprising if the advantage were endogenous to a previous decision to become an exporter. However, this is not the case. The knowledge advantage of pioneers is always based on prior experience with foreigners and foreign markets that is unrelated to their subsequent decision to export. In all the cases, we find that pioneers had previous experience socializing in foreign countries. Socialization allows for the creation and sharing of explicit and tacit knowledge – in this case, in areas such as human relations, business practices and tastes in a foreign country.⁸ Pioneers later found this knowledge critical in their export ventures. In two of the industries (Light Ships and TV Programs) the pioneers were first importers. The import activity, which involved regular trips abroad and frequent contact with foreign agents, promoted socialization abroad in their respective business communities. In the case of the Wine industry, the pioneer lived for many years in the United States. First, he studied for four years in New York and years later spent three more years as a visiting professor at UC Berkeley. The latter experience allowed him to witness the transformation of the wine industry in Napa Valley and socialize with its wine community. Even though at the time of his visit he was already one of the most successful domestic producers, the strategic location of Berkeley was not a factor in his decision to accept the visiting position, which he was offered by a friend. In fact, the pioneer was barely aware of the transformation that was occurring in Napa Valley at the time. Finally, the pioneer in the Wooden Furniture industry spent three months in the United States as a teenager in an exchange visitor program. Later, he worked selling seeds and fertilizers to farmers for years. In that job, he frequently socialized with Americans who were sent to Argentina to provide sales and marketing training.

⁷ Our claim here contrasts with a large literature emphasizing the non-codifiable nature of production knowledge. In the industries we study, however, access to production knowledge does not appear to be a relevant bottleneck for export success.

In all of the cases, the pioneers' access to explicit and tacit knowledge about how to market abroad and how to deal with foreign businessmen allowed them to focus on the dimensions of upgrade that were the most relevant. Most other domestic producers, lacking this knowledge, were not able to conceive a thoroughly planned export strategy.

c. Newcomers versus incumbents

In none of our cases is the advantage of pioneers based on superior production knowledge. In fact, the pioneer in the Wooden Furniture industry is not even a producer (he is a commercial agent) while in the Light Ship and TV Program industries the pioneers are both newcomers to production after being importers for years. Even for individuals who had no previous production experience, the challenges of producing goods that satisfy export requirements appear to have been relatively easy to overcome. Their marketing knowledge drastically reduced the uncertainty associated with implementing an export business model and therefore provided them with the incentives to invest in product upgrade. In stark contrast, the production-knowledge advantage of pre-existing producers was not sufficient to encourage them to undertake such upgrade. This is evidence of the intertwined nature of product and marketing upgrade; firms invest in product (and marketing) upgrade only when marketing uncertainty is sufficiently small.

The Wine industry is the only one among our case studies in which one of the largest domestic producers also becomes a pioneer. We consider two possible explanations to account for this fact but cannot determine which of the two, if any, is valid. A first explanation is that factors specific to the wine industry played a role in narrowing down the scope of uncertainty that the pioneer faced relative to large producers in other industries who did not pioneer export activity in their sectors. On the one hand, Argentina is endowed with favorable climatic and soil conditions for wine grape production – Argentina has been one of the largest wine producers in the world for decades. On the other hand, Chile underwent a dramatic transformation that spurred remarkable export growth in this industry prior to Argentina. The Chilean experience provided a visible benchmark for assessing the potential profitability of the export business in a similar country. Both the presence of favorable natural conditions and the successful experience of a proximate neighbor could have substantially reduced the degree of uncertainty that domestic producers faced about whether the implementation of a successful export business model was feasible in Argentina. In that case, it would not be surprising that one of the large domestic producers also becomes an exporting pioneer. While partially appealing, this explanation is unable to account for the

⁸ The creation and sharing of tacit knowledge through socialization is studied by Nonaka (1994) in the context of organizations.

fact that the pioneer in this industry implemented an export business model that was quite different from the export model of Chilean wine exporters, as he targeted a substantially higher segment of the market. A second explanation is luck: the independently motivated exposure of one of the industry's largest incumbents to the transformation of the US wine industry later proved critical to develop an export business model.

d. Diffusion: the role of the pioneer

In the theoretical framework we distinguished between general and specific diffusion. The pioneer's implementation of a successful export business model often generates both types of diffusion. First, his export success is usually accompanied with a significant growth in size (e.g. sales, number of employees) which is easily observable by other firms and taken as a signal that a profitable export business model exists. Even though they might not know the details of the export business model, knowing that one exists provides them with incentives to learn the unknown details, for instance by paying careful attention to the pioneer's actions or by hiring a pioneer's employee. Second, pioneers often generate specific diffusion as well; some of their specific actions are observed by followers, who can then imitate.

Even though diffusion can potentially hurt the pioneer, in our cases we have not encountered evidence that the prospects of diffusion deterred pioneer's investment relative to a benchmark in which diffusion did not occur. Furthermore, the pioneers' recollection of their decision environment at the time of investing in discovery activity (i.e. in developing the export business model) did not include the concern that diffusion might deplete their profits.

Somehow surprisingly, the contrary is in most cases true: pioneers were themselves explicit promoters of diffusion. A potential explanation for this counter-intuitive behavior is that pioneers might benefit from diffusion to other competitors, in particular at early stages of their new export activity. First, consumers often identify country of origin as one of the main characteristics of foreign products. Therefore, a pioneer might benefit from the existence of other exporters who can help develop "brand" recognition for the country as a whole. Second, pioneers might benefit from the appearance of other exporters as they increase the demand for specialized infrastructure and specialized (high-quality) intermediate inputs and services. Third, economies of scale in the costs of international transactions appear to be relevant in some industries; pioneers might benefit from the diffusion to producers of similar products that help them diversify the portfolio of products they offer in foreign markets.

e. Other mechanisms of diffusion

In addition to the pioneer's actions, there are several other channels of diffusion. Among those channels, in our case studies there are instances of diffusion occurring through pioneer's employees opening up their own shop, other firms hiring pioneer's employees, and communication between competing firms and between buyers and suppliers. Business associations, government agencies and public-private institutions also play a prominent role in diffusion, which we discuss in more detail in the next section. However, this role is apparent at later stages of the diffusion process; in our case studies, none of these entities plays a critical role at the stage of discovery or early diffusion.

f. Pattern of specialization

Discovery is presumably not equally likely to occur in every sector. Pre-existing conditions might also play an important role in determining the set of economic activities among which discovery is more likely to take place. In this regard, we find an intriguing regularity to be the fact that in all our sectors export growth is based on products with an important component of design.⁹

In two of the sectors (Light Ships and Wooden Furniture), export products employ design features from the Italian design tradition, which is highly regarded worldwide. The massive flow of Italian immigration to Argentina contributed to a local design capability that persists in the form of a younger generation of designers that maintain close links with Italy. In these two industries – and potentially in several others – this capability might provide Argentina with a distinctive advantage for participating in world markets with products that are design-intensive.

However, the fact that export success is primarily observed in design-intensive market segments within the sectors we study might alternatively be explained by the relatively high wages of the country – due to a large agricultural income – that do not allow Argentina to successfully participate in market segments of more standardized products, which are typically more dependent on cost competitiveness.

⁹ The term “design” is understood here in a broad sense. In Wines, the design function is performed by the enologist. In TV programs, this function is performed by the creator(s) of the format.

5. Lessons for public policy

By identifying the key advantage of pioneers, this study sheds light on the factors that prevent other domestic firms from exporting. Domestic firms typically fail to understand foreign countries' culture, idiosyncrasies and/or way of conducting business, limiting their ability to design and implement a successful export strategy. The magnitude of the uncertainty they face is so large as to discourage them from making a committed export effort. Their problem is not lack of technological capability. It is instead that they do not know how to market their products internationally. Firms that are able to design a focused marketing strategy solve the production requirements without great difficulty.

A striking regularity in our findings is that the root of the pioneers' knowledge advantage precedes their decision to become exporters. This finding has strong implications as it suggests that desirable attributes of the firm such as high productivity or a strong willingness to sell abroad are not sufficient to export differentiated products to developed countries: firms are required to possess knowledge that they cannot easily acquire. Hence, a relevant policy question is whether public policy can leverage this knowledge to favor other potential exporters.

Suggesting or designing specific policy instruments to attain this objective is beyond the scope of this study. Such a task requires considerable creativity and specific knowledge of institutional detail. In this regard, the contribution of this study is primarily to describe the nature of the existing constraints for export growth and provide a framework that allows for a more focused approach to policy design and evaluation. Nevertheless, the results of this work suggest that since the distinctive knowledge of pioneers transcends the specifics of their own industries, public policy should attempt to foster the diffusion of this knowledge not only within their industries but also across industries. In particular, the pioneers' experience generates lessons that are useful for most producers of differentiated products who attempt to establish a stable presence in developed country markets. To the extent that this knowledge could be spread throughout the economy, export success should become less dependent on the singular features that characterize the pioneers in our study. Public policy could support environments – such as business conferences, business association meetings, and business-oriented educational institutions – that promote interaction between pioneers and other actual or potential business participants. These environments facilitate the transmission of explicit knowledge and allow for elements of the pioneers' tacit knowledge to take an explicit form and hence become easier to communicate.

Our finding that early diffusion generally benefits pioneers implies that, in contrast to Hausmann and Rodrik (2003), concerns over the depletion of pioneers' rents are not warranted to an extent that justifies public policies curtailing diffusion. In particular, a policy solution like the patent system, which attempts to induce discovery by restricting diffusion, might be a harmful policy as it might deter rather than induce discovery activity.

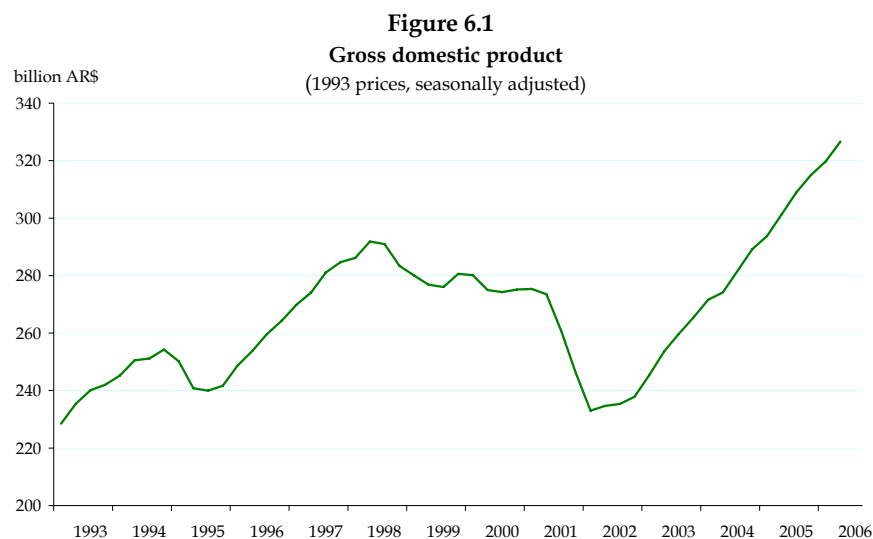
While we find that public policy has had almost no role at early stages in the process of export emergence, it has had a significant role at later stages of this process. In particular, in two of our four sectors (Wine and Wooden Furniture) public institutions, business associations and public-private agencies have played an important role in diffusing production knowledge. Fewer entities, however, attempt to diffuse marketing knowledge, which is the type of knowledge most clearly lacking. Even among the latter entities, it is very hard to assess the effectiveness of their intervention without substantial additional research focused on evaluating their specific programs.

Finally, the findings of this study also inform the debate about which sectors should be targeted for export promotion. Such policies are usually regarded as more effective when applied to sectors with a comparative advantage (under some definition of this concept). Despite common wisdom that Argentina's comparative advantage lies in sectors intensively based on natural resources, our findings suggest that this country has the potential to become a successful exporter of differentiated products even if those products are not based on natural resources, as long as the information and knowledge constraints associated with initiating an export venture are substantially mitigated. Furthermore, upgrading exports of resource-based products (i.e. climbing up the value chain) also requires mitigating similar constraints – to the extent that upgrading involves product differentiation – as we observe in the wine industry. Therefore, the set of desirable policies for export promotion of differentiated products might be similar regardless of whether products are based on natural resources or are manufactures with no significant natural resource component.

6. Case studies of emerging export activity in four Argentine sectors

Before presenting the four case studies, we provide a summary description of the evolution of the Argentine economy in recent years. Government policies and the external conditions faced by exporters in Argentina have varied widely over the past 15 years. After decades of protectionism, Argentina initiated a consistent process of unilateral trade liberalization in the late 1980s, which was mostly

completed by the early 1990s.¹⁰ The nominal average tariff decreased from 37% in 1985 to 12% in 1991 while most non-tariff barriers were removed. Argentina was also a founding a member of Mercosur, which started in 1991 and included a transition period that finalized in 1995 with the formation of a customs union. In addition to substantial unilateral and regional trade liberalization, other structural transformations took place simultaneously, including the removal of restrictions to FDI, the liberalization of the capital account, and a drastic privatization and de-regulation program. These reforms were accompanied by substantial economic growth until the onset of recession in the third quarter of 1998, which turned into a prolonged depression and led to the financial, currency and debt crisis of 2001. GDP growth since reaching the trough of the crisis has been consistently strong. Figure 6.1 shows the path of Argentina’s GDP since 1993, at constant prices.



Over the past decades, Argentina’s export sector has undergone large real exchange rate fluctuations. Figure 6.2 displays the path of a real exchange rate index¹¹. The chart displays a sudden appreciation following the launch of the convertibility regime, as moderate rates of inflation persisted for several months following the peso’s peg to the US dollar. The exchange rate remained relatively unchanged, appreciating slightly from 1995 to 1998. It appreciated suddenly in 1999 due to Brazil’s devaluation of the real, and remained at this level up to the crisis in 2001-2002. The crisis led to a sudden and large devaluation, and an overshooting period that lasted through 2002. The real exchange rate has since depreciated gradually, and is now roughly at about twice its value during the previous decade.

¹⁰ A drastic program of trade liberalization was implemented in the late 70s but lasted only a few years.

¹¹ Calculated by the Central Bank of Argentina and based on exchange rates and prices in the US, the euro area and Brazil.

Figure 6.2

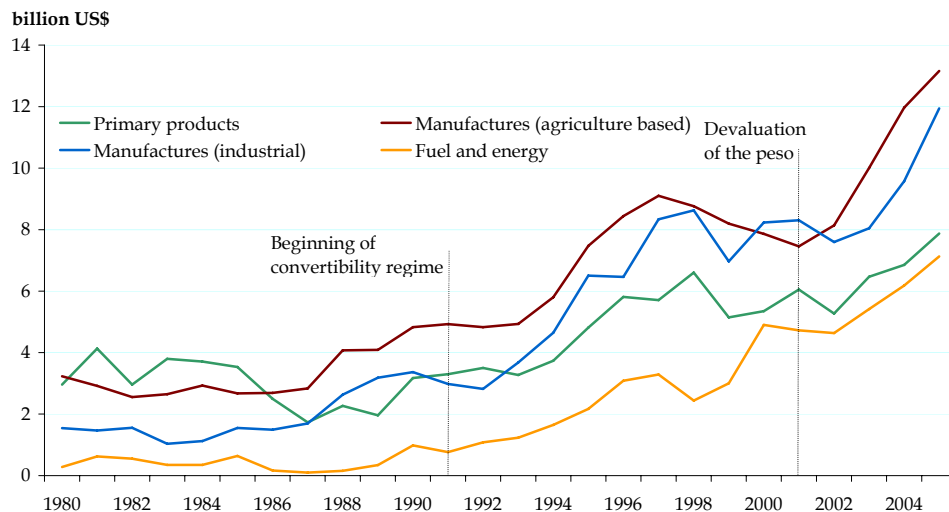
Real exchange rate index
(Central Bank of Argentina)



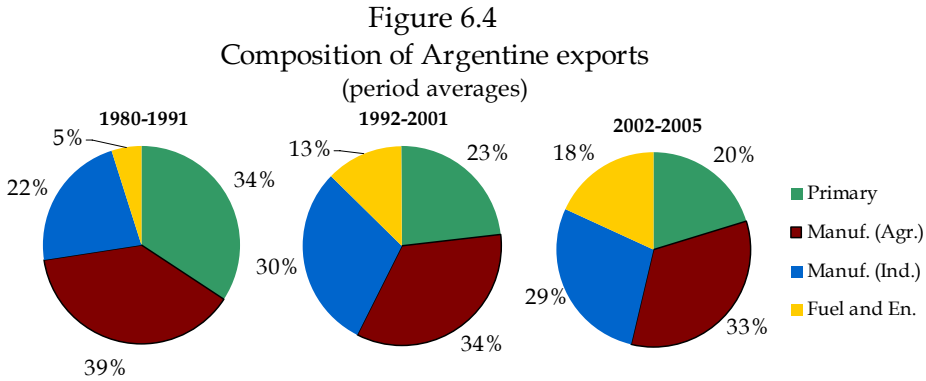
The combined effect of reforms and the macroeconomic environment have had a significant impact on the evolution of Argentina’s exports. Export growth, which averaged 2.97% annually in the period 1970-1988 (in constant U.S. dollars), averaged 5.89% in the period 1988-2005. Figure 6.3 displays Argentina’s total exports since 1980, broken down into four major components. Exports in all components were relatively unchanged during the 1980s, although there was some growth in exports of manufactures (both industrial and agriculture-based) towards the end of the decade. Export growth in all components picked up during the early 1990s, but stalled again during the late 1990s in all sectors except fuel and energy. Growth continued after the devaluation of the peso in January 2002, although there was a temporary decline in 2002.

Figure 6.3

Argentine exports (1980-2005)

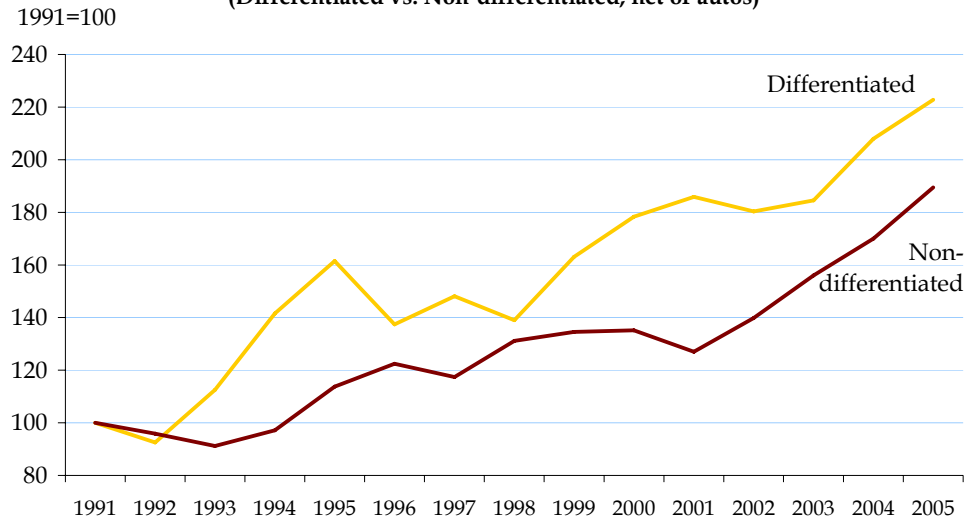


Even though all major export categories have grown substantially in the past 25 years, different rates of growth have led to a substantial change in Argentina’s export mix (see Figure 6.4). Primary products and agriculture-based manufactures, which jointly dominated exports from 1980 to 1991 (72.5% of the total), declined to a 53.5% share of exports in 2002-2005. Most of this decline was due to primary products, whose share declined from 34.2% to 20.3% between periods. Exports of fuel and energy picked up most of the increase (from 5.0% to 17.9% of exports), followed by industrial manufactures, whose share of the total increased from 22.4% in 1980-1991 to 30.0% in 1992-2001 and 28.5% in 2002-2005. In addition to the rise in fuel and energy exports, the most striking change in Argentina’s export mix has been industrial manufactures’ displacement of primary products as the second largest component (behind agriculture-based manufactures).



The largest sector behind growth in industrial manufactures has been the auto sector. Exports of autos and parts grew substantially over the 1990s (almost nine-fold over the decade) following Mercosur integration, which entailed an agreement for compensated auto trade between Argentina and Brazil. Auto exports have again picked up since the devaluation of the peso, as auto terminals have started to ship outside Mercosur. Industrial product aggregates and the large volume of auto exports mask, however, a more broad-based growth in exports of relatively sophisticated products to OECD countries. Figure 6.5 displays Argentine exports to OECD countries, net of autos and classified into differentiated and non-differentiated products. This graph is similar to Figure 2.1, except that automobile exports are not included. In addition, differentiated exports to OECD countries are compared here with non-differentiated good exports to those countries.

Figure 6.5
Argentine exports to OECD nations
(Differentiated vs. Non-differentiated, net of autos)



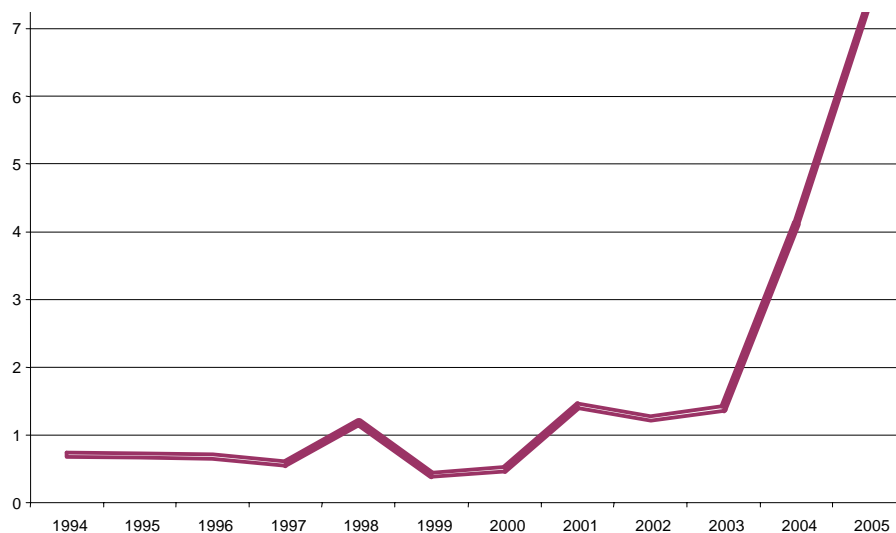
Growth in exports of differentiated products to OECD countries has outstripped that in non-differentiated products over the past decade and a half. Whereas exports of the latter products (as well as all non-fuel export components, see Figure 6.3) stalled during the real appreciation of the peso in late 1990s, exports of differentiated products to OECD markets grew substantially from 1999 through 2001. While exports of non-differentiated goods to OECD countries picked up immediately following the devaluation of Argentina's peso, exports of differentiated products were slower to react.

Case I: Light-Ships

The development of Argentina's light-ship building industry started at the beginning of the twentieth century, with the arrival of British immigrants with an interest in nautical sports. The inflow of these immigrants – and the clubs and sports activities they established – created a consistent domestic demand for light-ships, leading to the appearance of local producers. A domestic light-ship building industry has therefore existed for decades in Argentina, and there have been early attempts to export. These export efforts were isolated and lacked continuity, however, compared to the trend observed over the last decade.

The sector case study specifically focuses on motorboats, since these account for most growth in exports of light-ships. Nevertheless, export outcomes for the sailboat industry (the other main component of the light-ship building industry) are briefly reviewed at the end of this section.

Figure I.1. Light Ship Exports (in US\$)



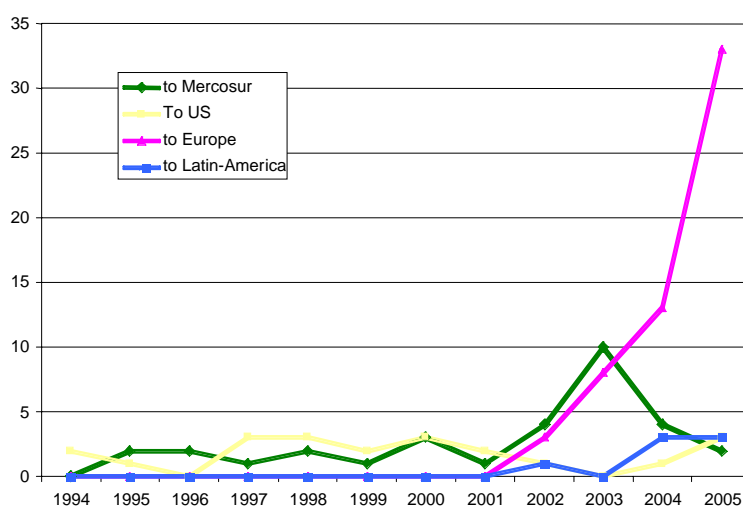
The extent of export growth over the past 10 years can be quantified both in terms of volumes and export destinations¹². In terms of volume, exports declined from US\$ 2.6 million in 1991 to a low of US\$ 252 thousand in 2000, and since then have grown almost 40-fold to US\$8.0 million in 2005. The path of total

¹² Light-ships are defined for statistical purposes as those weighing up to 15 tons within 4- digit category HS 8903 (yachts & other vessels for pleasure, etc.; row boats, etc.). The value for the weight threshold is largely arbitrary, and the decision to establish it in terms of weight is motivated by data availability since the basic measure of ship size in the industry is length rather than weight. The overall pattern of export growth (as described below) is robust to small changes in the threshold, but not if the weight restriction is entirely lifted. This is because the position also includes large luxury yachts, and there is one firm in Argentina that has been conducting sales of these vessels (which have very high unit-values) intermittently throughout the 1990s.

exports is shown in Figure I.1¹³. The most outstanding characteristic observed here are the sustained high growth rates since 2003: almost 200% in 2004 and 80% in 2005.

Figure I.2 shows exports broken-down by destination. Prior to 2002, approximately 55% of motorboat exports went to the US and the remaining 45% to Mercosur, while exports to Europe have surpassed all other destinations since 2002. Exports to Europe reached 60% of all exports in 2005, and drove most of the growth over the period. On the other hand, exports to the US declined to an average 6% of units sold. As described below, Argentine firms directed their initial export attempts at the US market and later reoriented their efforts to specific markets within Europe.

Figure I.2. Motorboats exports by destination (in units)



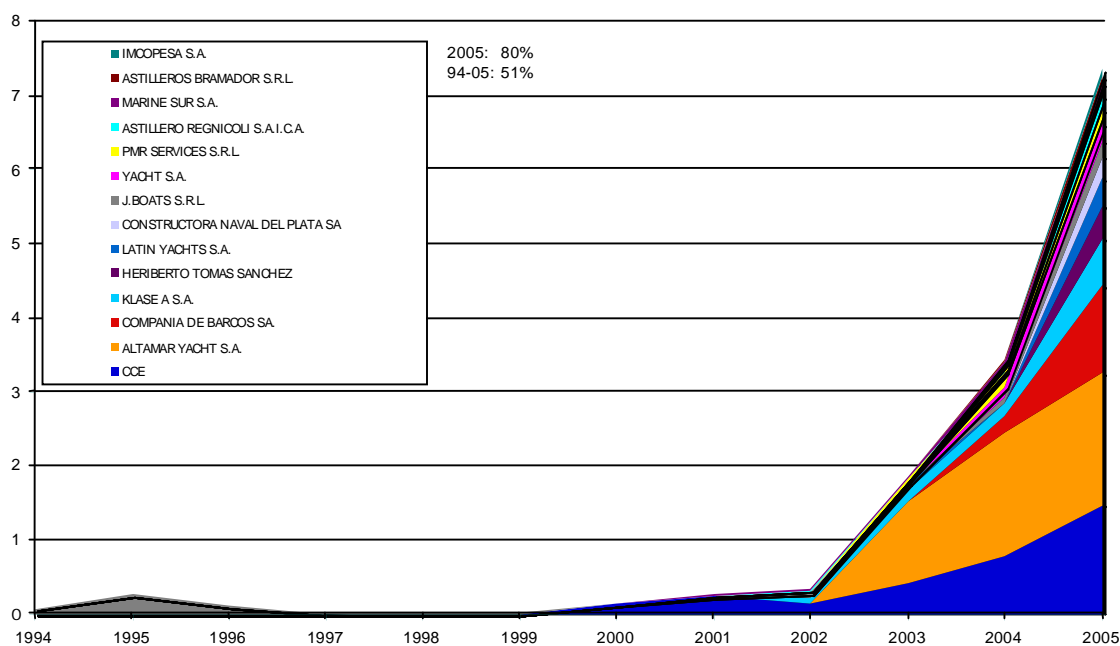
Main exporters in Argentina

Figure I.3 breaks down export figures by firm. Compañía Constructora de Embarcaciones (CCE) was the first firm to achieve substantial motorboat exports after 2000. Other producers have since followed CCE, and official statistics put current exports at close to US\$ 10 million.

Ships in this weight class have a high degree of imported components, including both ship parts and a customized interior design. The weight restriction is intended to exclude this type of ship.

¹³ Although the figure clearly shows explosive export growth, the official customs statistics presented here are not as informative as they are for other sectors because industry sources claim that under-invoicing is widespread. This claim can be confirmed by checking U.S. websites that post advertisements for used Argentine boats: the prices quoted on some used boats are higher than the export price recorded by customs when the boat was new. Consequently, official statistics do not accurately capture the size of the sector's overall exports.

Figure I.3. Light Ship Exports by Firm (in US\$)



López Blanco’s CCE was the first company to achieve non-negligible and consistent motorboat exports. Other firms have followed CCE, so export shares have become increasingly diversified.

Table I.1: Exports by firm, from 2001 to 2005

Year	Number of exporters	Value of exports by top eight firms (%)
2001	25	95.3
2002	52	83.6
2003	47	86.0
2004	46	80.3
2005	52	73.2

Source: CEP (2005).

CCE remained the main exporter in terms of units sold (19%) in 2005, but there are other relevant players in the industry, namely: Altamar Yacht (13%) and Klase A (11%). These two firms have sustained export growth consistently since their entry in 2003, as shown in Figure I.3. Other (so far) small-scale exporters have appeared over the past two years. Table I.1 shows that the number of exporting firms increased after

2001, while the share of exports by top exporters has decreased consistently over the period. The eight largest exporters accounted for 95% of total exports in 2001, while their share decreased to 73% in 2005.

Europe is currently the largest export destination for Argentine producers and – as explained below – the market on which they focus most export efforts. In 2005, the largest importers of light boats from Argentina were Spain (33.1%), Italy (21.3%) and the United States (10.6%), with the remaining exports going to 23 other destinations.

The light-ship building industry includes sailboats as well as motorboats, and these have also undergone sustained export growth. Light ship exports in 2005 consisted of 66.0% for motorboats (HS 890392), 23.3% for sailboats (HS 890391) and 10.8% for other small boats (HS 890310 and 890399). Both segments cannot be considered as the same for the purpose of this study because there are important differences in production processes, commercialization abroad and the characteristics of the final product. Both industries do share some common ground, however, in terms of raw materials, suppliers and commercialization for the domestic market, and there are manufacturers that produce both products.

Sailboat exports have followed a similar path to the one described for motor boats. Export volumes grow abruptly after 2002, with Europe as the main export destination. As with motorboats, the share of exports to the US also declined after 2002, despite being the main destination in the earlier period. The main markets for Argentine sailboats in 2005 were also Europe (65% of units sold) followed by Latin America (28%) excluding Mercosur, while the remainder is explained by 6% of sales going to Mercosur and 1% to the US). The firm Río Tecna S.R.L. was the first to achieve sustained sailboat exports, followed and eventually surpassed by Compañía de Barcos S.A.

International trade

According to CEP (2005), the largest exporters of light ships in 2004 were Italy (19%), the United States (13%), France (13%), Germany (11%), Spain (8%) and the United Kingdom (8%).

At a global scale, industrial techniques and serial production are currently replacing handcrafted production centered on individual artisan workers with broad sets of shipbuilding skills. The objective is to achieve a reduction in costs, of which the most relevant are labor costs. Additionally, the trend in the light-ship building industry is towards the consolidation of large business groups, by association of about seven to eight individual shipyards. This is intended to reduce costs by sharing design and engineering

expenditures. The most important of these groups are Ferreti, Azymuth and Rodríguez. The three largest European companies account for more than 10% of the total sales, and more than one quarter of the total production in Europe comes from its 10 largest firms.

The international market for light boats is divided mainly between Europe (21%) and the United States (72%). European customers buy equivalent proportions of motorboats (53%) and sailboats (47%), while the US demands more motorboats (69%) than sailboats (31%). The European market for motorboats is currently growing at a higher rate than that for sailboats.

Across the world, the final consumers that demand these products employ them for recreational and sports purposes. The greater demand for motorboats is linked to a preference for more comfortable and better-equipped boats. Additionally, motorboats are perceived as being easier to drive and therefore have a broader appeal. Some consumers base their preferences for these boats on associations with concepts such as freedom and status.

Value chain of the light ship industry

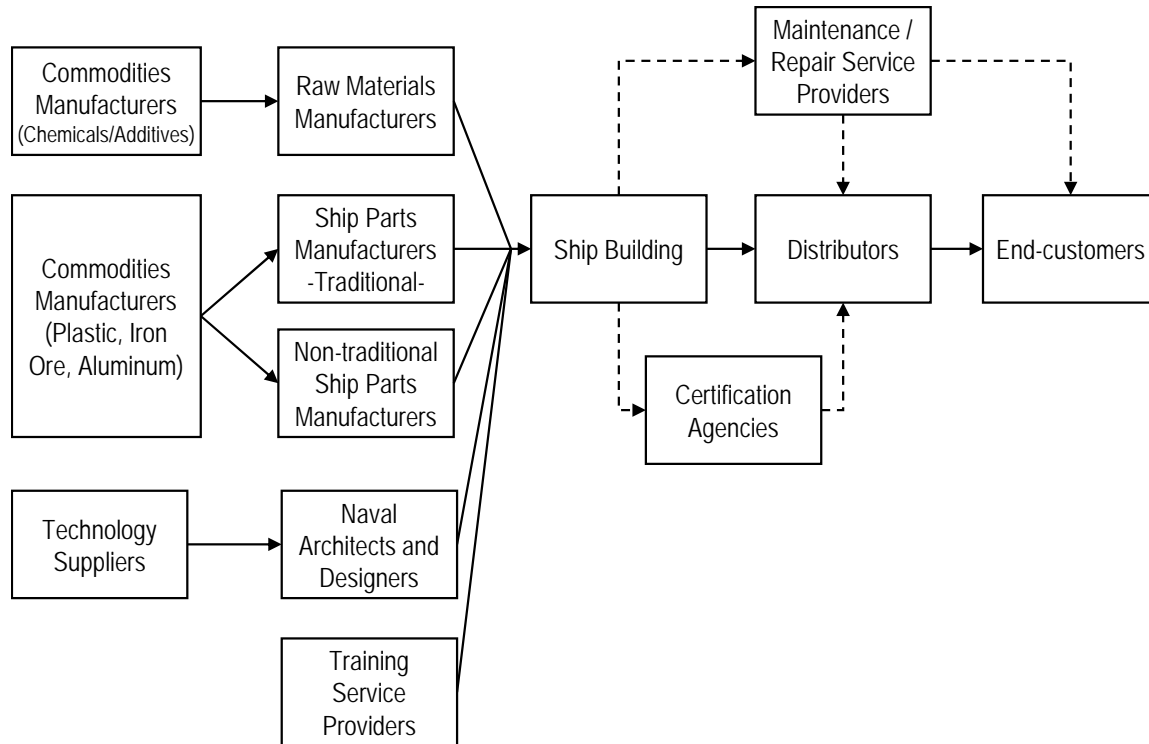
The light-ship building industry is part of the metal-mechanic sector and is classified as heavy manufacturing industry. The main activities carried out by firms in the sector are the construction, repair and refitting of ships.

The production process involves the following stages: design; reception and processing of materials, parts, equipment and facilities; construction of the structure of the boat through the assembling of parts; and the assembly of final components. This task is carried out in shipyards and workshops. Shipyards focus on construction but also repair and refit boats, whereas workshops are dedicated almost exclusively to the last two tasks. According to the Federación de la Industria Naval Argentina (FINA), there are approximately 100 firms currently in operation in Argentina (shipyards and workshops) and 60 of these belong to the light-ship building sector.

Suppliers of boat parts and components are called *navalpartistas*. These firms may belong to very different industrial sectors, as their products can range from engines and electrical equipment to televisions and refrigerators. The light-ship building activity also requires trained workers in a number of handicraft skills. The level of craftsmanship involved usually increases with the scale of the boat, since larger boats usually undergo further customization for individual clients.

In this section, we will describe the value chain of the lightship building industry. We have included the main roles that can be identified from the end-customers of a ship to the suppliers that manufacture parts or raw materials specific to shipbuilding. Figure I.4 shows the structure of the value chain from the end-customers to the suppliers of parts and raw materials.

Figure I.4: Value chain of the light ship industry



Commodities Manufacturers

Not all items grouped as commodities here are such in a strict sense. The grouping refers to all inputs such that their use has no discernible impact on the end-customer's purchasing decision. These products may be important to the quality of the end product, but the consumer is rarely capable of verifying the products used or the consequences of their use. The consumer must trust the builder to employ all components and raw materials in a satisfactory way.

Raw Materials Manufacturers

Raw material manufacturers include suppliers of, for example, fibers, resins, paints and aluminum. Most of these products are purchased in bulk and, similarly to the commodities, end-customers' purchasing decisions are not influenced by the choice of the raw material manufacturer. Manufacturers of

commodities and raw materials are large relative to the size of the light ship builder. Due to their relative size, these manufacturers are usually unwilling to tailor their products to the specific needs of the shipbuilder. For instance, the aluminum supplier is one of the largest companies in Argentina and shipbuilders represent a minuscule share of its sales. Shipbuilders have been unable to negotiate for this supplier to provide a type of aluminum that is specific to shipbuilding.

Ship Parts Manufacturers

Ship parts manufacturers can be classified in two distinct groups: traditional and non-traditional suppliers. Traditional suppliers produce parts that are specific to shipbuilding, such as propellers, axles and rigging. These suppliers have capabilities that are specific to shipbuilding, such as manufacturing technology, design expertise, or knowledge of working with materials that are specific to the industry. Non-traditional suppliers provide inputs that are usually supplied to other industries, for instance the windshields, aluminum parts, and CAD-CAM (computer-aided design) services.

Technology Suppliers

Some parts of a ship require very specific design and testing. For example, the design of the boat's propulsion system requires an evaluation of hydrodynamic properties. Due to the high degree of knowledge and specific machinery that is required for the task, this type of design is limited to few suppliers worldwide. The business of these suppliers is to patent a design and sell the right to use the design to shipbuilders. Designs developed by technology suppliers are adapted to a specific boat model by naval architects and designers.

Naval Architects and Designers

Ship design has become increasingly challenging as end-customers have become more sophisticated. Design concepts have been imported from other fields or products; for instance, car manufacturers design speed gauges to be big and expressive to enhance the perception of speed. This type of design trend rapidly carries over to shipbuilding because end-customers expect new design features to be present in ships as well. Design is influenced by customer tastes, which are affected by trends and cultural factors. Ship design was traditionally carried out by a naval *engineer*. However, design has become central to shipbuilding in recent years and the ship's industrial design, while still important, is now second to the *architectural design* of the boat. Increasing emphasis is currently placed on the boat's living space, i.e. the deck and interiors. The name of professional ship designers has changed from "naval engineers" to "naval architects" or "naval designers."

Training Service Providers

Training service providers include universities, consultants, non-for-profit organization and international agencies that jointly sponsor and deliver training courses to shipbuilders and their key suppliers.

Shipbuilder

The role of the shipbuilder is similar to that of a car manufacturer. The shipbuilder integrates all suppliers to execute the production of a designed product. The shipbuilder buys raw materials to manufacture some parts of the ships, such as the hull. The builder also buys undifferentiated parts and subcomponents; the nature of which will not be apparent to the end-customer. The end-customer does not need to be informed about these products because it is the builder's role to select the appropriate suppliers. The builder also integrates branded products such as the engine, mechanical components and ship instruments. Other branded products include comfort appliances such as a refrigerator or a microwave oven. Lastly, the builder integrates branded or unbranded comfort items such as sofa-beds, tables, toilets and seats.

Distributors

Distributors play a central role in the successful access to each market, and require precise knowledge of the products that they seek to sell. Distributors may have access to a sample boat to show to prospective customers, but this is not the case in all markets due to the small scale of Argentine exporting firms. In addition to detailed knowledge of the boats themselves, the distributor must be able to work with clients to specify the customization of the boat.

Certification agencies

Certification agencies set standards used by ship building manufacturers. Certification agencies assess and certify that the materials, technology, products, facilities and manufacturing processes are in accordance to national and international laws. Some countries or regions require certification to allow boat sales. In others, certifications act as a differentiating element to assure distributors and end-customer about the quality of the product. The certification agency most frequently used worldwide is Italy's RINA.

Maintenance/repair service providers

Maintenance and repair service providers play a critical role in the success in the ship building industry. Ships need to be serviced both regularly, such as for tune up, and as needed, for example to repair breakdowns or damage. Assuring access to maintenance and repair service providers is a key factor for competing in foreign markets. In a domestic market, most of the suppliers to the ship builder are local;

thus, there is a well-established network of parts and service providers ensuring that end-customers have access to required services. In the case of foreign markets, shipbuilders need to plan and provide for the delivery of these services. To successfully leverage on the existing network of service providers in each target market, ship builders have to provide detailed manuals and support material.

Brief history of the light ship industry

The light-ship building industry in Argentina has a long history and traditions beginning in the early twentieth century, when Argentine and European immigrant artisans joined in establishing the first shipyards to build wooden boats near the River Plate. According CEP (2005), 90% of light-ship building capacity is currently located in a single location – an area comprised by the Tigre and San Fernando counties, in the northeastern part of the province of Buenos Aires and on the delta of the Paraná River – which was an area previously populated by British immigrants with an interest in nautical sports and is still a hub for a number of marine sports, including yachting.

Approximately 200 companies are located in the Tigre-San Fernando area, where light-ships are required for transport and communication between the islands of the delta. Growth of nautical sports (yachting, water ski and windsurf), mostly in the Luján River, the delta channels and the River Plate, encouraged the creation of new shipyards and associated industries.

New materials were introduced to light-ship manufacturing in the 1950s, including fiberglass and the use of polyester in sails. These materials allow for lighter boats, implying higher speeds and longer product life. The industry established a chamber in 1969, the *Cámara de Constructores de Embarcaciones Livianas (CACEL)*, with the aim of promoting the shipbuilding activity. A further construction material development was the introduction of fiberglass reinforced plastic (FRP) in the 1970s, which potentially allows for the implementation of serial production techniques. The industry was characterized by small and medium-sized firms, most of which were family businesses, and were mostly focused on production for domestic water sports. Average annual production reached 7,800 units in the early 1980s.

Argentina's convertibility regime in the 1990s was beneficial to imports of both final products and technology. Until 1993 there had been slight increases in volumes produced, but not to a substantial difference from the levels produced in the late 1980s. Production increased significantly from 1994 through 1999, and later declined through the later stages of economic recession through the end of the convertibility regime in 2001.

The devaluation and subsequent depreciation of the local currency following the end of convertibility caused a sudden improvement in relative prices for the light-ship building industry, making Argentine boats more competitive on international markets. Although the international price for several cost components was reduced (such as labor costs, indirect costs and some local materials), imported and tradable materials are still an important proportion of total production costs. In particular, motor engines account for the largest share of imported input costs.

One of the main obstacles to light-ship exporters is the lack of financial resources with which to promote export growth. According to CEP (2005), firms obtain financing from their own resources (78.6% of firms) and from anticipated payment from customers (43% of firms).

Most companies in this industry are SMEs, with an average of 20 employees per company. Shipyards tend to specialize in the production of a specific type of boat: motor boats, sail boats or cruisers. Depending on the size of the boats, these firms can work by order (in the case of larger ships) or produce short series¹⁴.

Domestic business model versus export business model

Producers under the domestic business model conceive the light-ship building industry as an artisan activity, and are part of a community with a lifestyle centered on the river. Both traditional builders and their customers are yacht and boating enthusiasts, and builders view their business as providing non-standardized products that are customized to specific needs of the members of their community. Firms are almost entirely dependent on domestic customer demand and local financing conditions, and export ventures are rare and limited to utilizing surplus production capacity when domestic demand is low. Most of these exports are also limited to the neighboring markets of Uruguay and Brazil. Skills in business management, finance, commercialization and marketing are underdeveloped.

The production and marketing decisions of firms under the export business model disregard the features of the domestic market, so the production capacity of these shipyards surpasses in both quantity and quality the requirements of this market. New products are designed to satisfy specific niche demands in foreign markets. Unlike firms under the domestic business model, firms using this model separate activities into business units and employ distinct managers for the areas of production and marketing.

¹⁴ In the light-ship building industry, serial production refers to the fact that production is carried out on the base of standardized models or matrices, resulting in very similar finished products, with slight differences in finishing details.

Some managers and technical staff have been employed abroad, with leading international firms in the industry.

Product upgrade

The business model for the domestic market does not tap into the greater-precision production techniques allowed by the use of fiberglass reinforced plastic (FRP). Shipyards are managed by artisans and craft specialists such as carpenters and mechanics with a long tradition of wooden shipbuilding. Introduction of product and process innovation is not adopted to a full extent. The new material technologies incorporated by the light-ship manufacturing – such as fiberglass for the hull and polyester for sails – allow for product innovation and the implementation of serial production techniques. Firms under this model produce low quantities (due to the small scale of the domestic market but also because most firms seek to supply a broad portfolio of products) and hence fail to achieve scale economies that justify the process innovation allowed by these materials.

Companies under the export business model introduce improvements in production processes, quality, and design, which in turn require changes to the organizational structure of the firm. Production is standardized and documented (ships are accompanied by detailed technical information) to enable technical support abroad. This allows minor servicing to be carried out by brokers and representatives in foreign markets. Standardization also enables the exporter to send technicians overseas to the destination market, since it potentially limits the range of problems that customers may find with the product and facilitates dealing with these problems without returning the ship to a shipyard.

Domestic market producers build ships to fulfill local customer needs. A singular trait of yachting around Buenos Aires is that the sport can be practiced over the expanse of the River Plate, the widest fresh water estuary in the world. Ships are therefore designed for fresh water and are not required to be resistant to sea corrosion. Domestic business model producers offer the same product abroad as they produce for the domestic market. In the European and other world markets, light ships are typically used in salt water and are required to be resistant to sea corrosion.

Shipbuilders with foreign market-orientation have developed a derogatory term – “*cholo engineering*” – for production methods used by handicraft shipbuilders: they state that they employ second-rate engineering practices to build ships in a fake-modern style, using new materials but without updating old

techniques to realize the materials' potential. As an example, they claim that designs for these products are based on the building techniques used for wooden boats, despite using modern materials such as FRP.

Export business model firms employ professional managers specialized in production or marketing, and these are delegated major functions within the firm. The owner is usually the only chief executive in firms under the domestic business model, although family members may focus on managing specific tasks. This distinction does not just follow from scale, as several firms under the domestic business model are larger than export business model firms.

The flow of information between the production and marketing divisions is crucial for exporting firms, as products are developed for specific market niches and are customized – within the constraints allowed by each model – for individual clients. Product development in exporting firms uses market survey information on the demand for specific product attributes in developed markets, so upgrades are dependent on the product marketed.

The upgrade of production processes benefits from changes in global patterns of technology adoption. Shipyard managers access publicly available technical information and attempt to implement innovations for both process improvement and product quality upgrade. The adoption of already available technology enables upgrades to the quality and standardization of products. As a commercial manager said: *“This is an industry that has no secrets at all. Everything (you need to know to build a boat) is published. There are no technical or intellectual rights either”*.

Although access to these technologies may be public, it is not necessarily available to all producers in Argentina's light-ship building industry: the right information needs to be pursued, and requires the ability to read technical material in English. As the export business model is deployed, the use of production documentation and blueprints becomes extended, and explicit and codified knowledge replaces tacit knowledge.

The steps in designing and creating the product under the export business model are substantially different to those under the domestic business model. This is the case, for instance, with moldings techniques used in production. Firms under the domestic business model make moldings by hand and employ substantial labor to file fitted parts, since matrices for boat parts follow wood-boat practices and lack precision.

The structure of motorboats under the practices of the export business model is designed precisely. Whole arrays of new matrices are constructed from scratch, and are engineered to produce high quality parts with extremely detailed corners and junctions. Although in no case do local firms reach a scale to fully implement serial production (as with the Italian light ship building industry), export business model firms do have the scale to integrate computer aided design (CAD) technology into the production process.

A key aspect of product quality is style. When new exporters decide to target their products to foreign markets, they depend on their design capabilities. For example, producers in Argentina realized that they had an advantage as followers of the Italian design tradition, which is highly valued across the European market but not everywhere in the US market. Exporters employ these design capabilities and adopt product design practices to emulate European industry leaders such as Azymuth and Ferreti. They employ in-house world-class designers and involve them into the production process, mostly Argentine professional designers with extensive training in Italy. More importantly, export business model firms identify the nuances in style requirements of different foreign markets and are aware of the need to make the appropriate design style choices for each market.

The organization of export business model firms has also involved adaptation upstream in the value chain, to resolve issues in the supply of special parts. Firms in the industry were exposed to products from world-class suppliers during the 1990s. Export business model firms have since applied a strategy of developing a network of distributors outside ship part manufacturers for the traditional ship-building community. Shipbuilders share tacit knowledge with their suppliers and work collaboratively in the design stage of their parts.

Marketing upgrade

Commercialization and marketing activities are underdeveloped in the shipyards under the domestic business model. These managers lack specific skills in business administration or marketing. According to a leading designer: *“Although (domestic-market producers) know how to build ships, they do not have a clue about how to manage the shipyard as a company”*. The upgrade to the export business model involves a substantial change in terms of capabilities for business administration and marketing.

The standard commercial practice for domestic producers is to rely on customers to finance the manufacturing of their products. The sales function is usually delegated to third parties such as dealers or brokers, under annual representation contracts. The marketing of these products domestically is based on

brand recognition – often the last name of the shipyard owner –, which is obtained from a long presence in the market and word-of-mouth transmission. The fact that producers are members of the local nautical sports community plays a role in this type of transmission. Exports are sporadic and targeted at neighboring markets, mostly when domestic demand is low. Firms employing the domestic business model do not participate extensively in international trade fairs, and their involvement is limited to attempting to sell their existing product lines.

Managers under the export business model require substantial marketing knowledge and experience, and in practice shipyards internalize the marketing function instead of delegating entirely to brokers. Exporters market their products to final consumers by producing high quality marketing materials and websites, advertising in the world's main boating magazines and establishing permanent commercial representations in key foreign markets.

Each exporting firm develops a specific marketing strategy regarding the appropriate choices for target market size and product categories. Firms under the export business model make marketing decisions regarding product development matching company capacities and skills with the competitive environment they face on international markets. Exporters have to find opportunities in foreign markets in terms of pricing and positioning that match company capabilities in terms of scale and style; they have to discover niches in underserved market segments that can be supplied by firms that are relatively small by international standards. To this end, firms under the export business model employ detailed knowledge of products already supplied in foreign markets.

As a result of this targeted marketing, exporters focus on a particular segment: for instance, certain motor boat categories in relatively small markets. Limiting the number of products helps these firms standardize production and assure quality, and facilitates the expected scaling up of demand. Since products in this segment are to some extent adapted to customer requirements, limiting the range of the product line allows producers to keep projects manageable under their design and production constraints¹⁵. Shipyards that started exporting to the US found that the market was too large and required greater variation in customer adaptation than they were in a condition to adequately serve at the time.

¹⁵ The sailboat export business has employed a similar strategy, focusing sales on boats for competition and highly customized boats. Exporters in this industry consider that such a focus helps them avoid competition from larger firms on the international market.

In contrast to this strategy of presenting a limited portfolio of export products, firms oriented at the domestic market offer a broad range of products, as they seek to cover all of the domestic market's requirements.

The selection of a specific target market entails the positioning and pricing of the product in terms of competing alternatives. Argentine exporters avoid the premium segment and specifically seek to compete by offering the same quality as second tier brands, while selling at prices comparable to brands in the third or fourth tiers. This constitutes the main competitive advantage of boats offered by Argentine shipyards.

Downstream, the export business model requires building an international commercial network. Reaching foreign markets calls on exporters to understand the requirements of foreign dealers. Consequently, exporters consistently participate in international boat-shows (e.g. those in Genoa, Venice, Barcelona and Valencia) and devote substantial efforts to developing qualified networks of distributors for their products. Involvement in foreign trade fairs also allows exporters to make direct sales to customers.

A key promotional activity undertaken by exporters is brand development. Light-ship exporters make substantial marketing efforts towards controlling and making use of country-of-origin bias. Country of origin has been identified in the literature as an important cue that might be used by global marketers to influence consumers' valuation of a given brand. Based on consumer surveys and laboratory experiments, researchers have identified country-of-origin (COO) as a factor that affects cognitive, affective, and normative dimensions of customer behavior. COO is a cue for product quality, and has symbolic and emotional value to customers as these hold social and personal norms related to product origin (see Verlegh and Steenkamp (1999) and Agrawal and Kamakura (1999)).

In the early stages Argentina had no recognition as a producer of light ships. Domestic model shipyards did not concern themselves with the country-of-origin issue, as almost all their business is local. Consumers' country-of-origin bias and perceived quality are specifically important in the light-ship industry because potential resale value is a key attribute considered by buyers. One of the challenges that the industry faced was that the resale value of Argentine boats was significantly lower than for boats with brand-name recognition. Although potential clients appreciate that Argentine boats cost roughly 20% less than equivalent products from major international competitors, many are reluctant to buy Argentine boats due to their lower resale value. To solve this problem, the marketing strategy under the export business model seeks to improve the image of Argentine boats. Marketing campaigns are targeted accordingly, and

are succeeding in obtaining the specialized press in target markets to recognize Argentine origin as an added value. Argentine boats are also attaining a level of international recognition from their increasing presence in foreign markets, prestige acquired by specific designers and the performance of Argentine nautical sportsmen and women at international competitions.

The export business model also seeks to build brand recognition in foreign markets through cobranding strategies, using quality certification: certifications from the European Economic Community (CE) and the Registro Italiano Navale (RINA) are currently standard for Argentina's export boats. Upgrading marketing practices also entails providing quality assurance services that were new to industry in Argentina. Under the domestic model, technical support services are an extension of workshop activity and do not meet delivery, quality or satisfaction-assurance standards, and products do not obtain international quality certification.

Pioneer

One of the most important shipbuilders is Luis López Blanco, whose company has led the industry in exporting light ships. Follower company Altamar has become the largest exporter in term of value since 2003, but Mr. López Blanco's company remains the leader in terms of units sold and has served as an example of a well-executed export strategy for Altamar and subsequent followers.

Mr. López Blanco started his career working as an accountant and business administrator for shipyards and other firms in the nautical industry during the late seventies. He worked as an employee for a shipyard until the mid-1990s, when he finished this relationship and started his own company: Compañía Constructora de Embarcaciones (CCE). CCE represented Ferretti, a premium Italian brand of motorboats, and Cummings, a US motor engine license, as well as domestic brands. His main business was the commercialization of new and used boats.

López Blanco considered that the domestic production model of shipbuilding was flawed, and he sought to become involved in production. By his account, domestic producers are proud of using handicraft techniques in shipbuilding. He regarded pride in the craft as a hindrance to developing a high quality, exportable product. As an importer and distributor of leading foreign brands, he was acquainted with the product features and some of the marketing practices of the firms for which he acted as a representative. He decided to start a production venture in 2000, after identifying a relatively unattended segment in the domestic market. A particular segment of boats (with length 10 to 11 meters and double command) was

only being produced by one other shipbuilder in Argentina, so he created a product to compete in that segment of the domestic market.

Although López Blanco was experienced as a businessman in the industry, he was clearly a newcomer to the production side of light-ship business. Instead of applying the standard building practices from the domestic business model, he employed state-of-the-art molding techniques that required higher engineering and design inputs, and increased the standardization of production processes. For this purpose, he employed workers with specific skills that were not widely used in the industry, such as industrial designers and naval engineers.

The boat was developed in 2001 with the aim of emulating industry leaders such as Azymuth and Ferreti. López Blanco considered that the resulting product, named Aqualum 35, was a substantial quality upgrade from competing products in the domestic industry. In addition to employing a wider range of skilled workers, production required the use of new materials and suppliers.

While making his first sales locally, Mr. López Blanco started to attend the Genoa and Venice international boat shows in search of foreign buyers for his Aqualum 35 motorboat. By his own account, colleagues in the industry considered that he was wasting too much time and money on boat shows. He followed this up by producing high quality marketing materials and taking out advertisements in some of the world's main boating magazines, as well as establishing permanent commercial representations in several foreign markets. CCE achieved its first successful export by sending a boat to Italy.

To open up new markets he decided to sell his boats abroad below cost, and added quality assurance services that were new to Argentina's industry. For instance, on one occasion he decided to send a technician to the United Arab Emirates to rework an instrument panel for a client that he heard was unsatisfied with that part of his new boat. However, growth was interrupted by the Argentine crisis in 2001. Mr. López Blanco sold personal goods to cover the firm's financial needs during the subsequent period.

Most of the firm's business opportunities since 2002 followed from López Blanco's participation in international boat-shows, first as import broker and later as producer. Mr. López Blanco had socialized with the community of Italian dealers since his period as a local representative for international brands. This allowed him to learn about market demand for specific types of products and their features, as well as commercial practices in the industry.

Interaction with the Italian dealers underscored the importance of producing high quality marketing materials, which must be well written in the language of each customer market. Socialization with Italian dealers also taught López Blanco about specific product features valued by clients: for instance, he changed the design of control panels to follow the style of instrument panels on premium automobile brands such as Audi and Ferrari. López Blanco also decided to equip the Aqualum 35 with Italian comfort appliances, which improves the quality perceived by customers. The rationale behind the use of imported rather than domestic appliances is not only to employ premium brands, but also to set foreign customers at ease by providing appliances that they already recognize and trust.

From participation in boat-shows, Mr. López Blanco set up a qualified distribution network for his products, obtaining representation deals all over the world with companies that represent other first line brands. CCE's products have been exported to Germany, France, Italy, Spain, Norway, Greece and Venezuela.

Starting in 2003 and 2004, Mr. López Blanco perceived that Argentine origin was gradually becoming a value added for his boats: According to López Blanco, coverage by specialized yacht journalists started to identify Argentine origin as positive rather than damaging. Mr. López Blanco perceived that country-of-origin was particularly important for motorboats due to the issue of resale value – as explained above – and therefore set out to improve the image of Argentine boats abroad by targeting his marketing campaign accordingly.

In addition, CCE focused as well on building international brand recognition for Aqualum, and employed quality certification for this objective: CCE obtained certification from the European Economic Community (CE) and the Registro Italiano Navale (RINA).

Efforts in terms of improving quality, design, and technical support led to changes in the firm's organizational structure. Investment in these capabilities has allowed CCE to develop a larger boat (between 40 and 43 feet) entirely designed by computer and CAD systems for the European market, for which CCE charges a higher cost mark-up.

Diffusion

As Figure I.3 shows, diffusion in the motorboat sector took place from the year 2002 onwards. The diffusion process is still in an early stage, as the first followers are starting to appear. CCE's experience

was key in encouraging other firms to undertake export ventures. Builders in the light ship building community viewed López Blanco as eccentric for pursuing foreign markets prior to the devaluation of the peso. His approach set an example, however, as he started to export his Aqualum 35 model to Europe successfully during the crisis in 2001.

It is possible to distinguish two main followers that have emulated the export business model: Altamar Yachts and Klase A. Altamar has followed the export business model more closely, adopting the management and marketing practices developed by Mr. López Blanco, while possibly benefiting from greater financial resources.

Altamar Yachts was started with the explicit purpose of focusing on the export market, and by 2005 had achieved US\$ 1.5 million in official export revenues. The company initially attempted to export its product line to the United States and focused on the market in Miami, Florida. This venture failed, however, and Altamar learned that it needed to change product development to focus on the requirements of specific foreign markets. Altamar executives learned from CCE that they could only expect to become competitive in specific niches, so they focused on smaller markets. The larger share of its sales in 2003 was made to Mercosur countries, but the company subsequently reoriented its marketing efforts towards Europe where it has sold mostly to Spain and the Netherlands. The company has also sold boats to Chile, Brazil, Venezuela, the United Arab Emirates and Trinidad and Tobago. The firm has also developed a network of distributors in its target markets, which currently consists of five firms.

Exports by Klase A amounted to US\$ 0.5 million in 2005. Klase A is still attempting to reconvert its production process towards the export market. It started by selling boats to Mercosur and later turned to the European market, following CCE and Altamar Yachts. Most of its sales are still in Argentina, however, and the firm is transitioning from the domestic to the export business model.

Altamar Yachts and others shipyards have benefited from the diffusion of the pioneer's export business model, and CCE is widely regarded as the industry leader in terms of production and marketing practices. The diffusion process started mainly with word of mouth around the small community of light-ship builders. In addition to this, specific actors promoted the diffusion of CCE's business model: designers and commercialization agents.

Designers helped expand knowledge of customer preferences (linked to Italian design in the targeted market segments) among firms. Firms have become aware of the relevance of commercialization agents

in developing sustained exports, as previous export ventures had attempted to bypass agents and broker deals directly through presence at boat-shows. Finally, business chambers such as CACEL provide a channel for diffusion by enabling contact between shipyards.

Notably, both CCE and its followers regard diffusion to be a positive mechanism in so far as it expands the presence of Argentine firms, and thereby brand recognition, in international markets. Particularly, diffusion promotes an improvement in the image of Argentine boats if more firms are able to successfully export products of adequate quality to foreign markets.

This perception is complemented by the fact that the size of the international market largely exceeds the current export capabilities of local firms, reducing the potential rivalry between Argentine shipyards. Additionally, more firms in the light-ship building industry imply a larger sector, which could benefit all the shipyards to the extent that it leads to the development of industry-associated services.

Public policy

Governmental institutions played a secondary role in promoting the development of the light-ship building industry's exports. The impact of the intervention of these agents is currently considered to be very low. It appears that the role of public policies has not been crucial in supporting firms in the sector.

Shipyards received help from Fundación ExportAR (a governmental organization dedicated to promoting exports of Argentine products) to attend trade fairs, which in some cases occurred before CCE's own marketing campaign but did not yield sustained exports. The support from ExportAR received by firms in this was not critical in enabling them to establish their brand names.

Interactions between members of this industry and the government of the Province of Buenos Aires occurred through CACEL, so the impact of this government's support may be indirect and harder to detect. CACEL represents both exporting and non-exporting firms, so in practice it acts as a venue for the diffusion of the business practices of exporting firms.

Some specific public policies could be suggested with the purpose of promoting further growth in exports of the light ship building industry. Two actors that would be required to play central roles are universities and the local government of San Fernando.

There is a need to develop education and research on naval related knowledge. This would significantly benefit local shipyards, since knowledge is an important input to the business and skilled technicians are scarce. Universities with PhD programs in naval engineering played a determinant role in technology development in Italian shipyards. This requires closer links between universities and firms in this industry. For instance, the University of Buenos Aires (UBA) has a hydrodynamics laboratory with a testing channel, but it is in a state of disrepair and the naval engineering program came close to being closed down during the 1990s. Although both UBA and the National University of Technology (UTN) have expressed interest in setting up new programs linked to the naval industry, neither conducts research and development related to the light ship industry, possibly because leisure boats are disregarded by the traditional engineering community.

Specific promotion and efforts to liaison the private sector with universities should be considered in this area, since no university devotes a department or area to carry out research related to light ship design and technology. There is at least one major naval engineering program (UBA) and a sailboat architecture program (UNQ), but there is no specific program for light ships. Neither program is near the San Fernando area. The liaison between the private sector and universities is considered key in Italy and is heavily promoted.

The establishing of an industrial district for the sector would lead to greater visibility for the activity both locally and internationally, lower supply costs (by aggregating demand for inputs), and better infrastructure. This should take advantage of the existing industrial concentration in the San Fernando area.

The local government of San Fernando, potentially with the financial support of the Province of Buenos Aires, played a role in promoting the recognition the industry within Argentina and the Argentine brand name abroad. However, the undertaking of further export promotion ventures by the local government may require a material and human resource upgrade.

Case II: TV Programs

Argentina has a long tradition in the production of film, and its industry exported successfully during the first half of the twentieth century, mostly to Spain and Latin America. Exports disappeared almost completely after the 1940s, however, and the experience with film did not spill over to the TV industry. The return of democracy and the end of censorship ushered in a new creative environment after the mid-1980s, and the creation of original films and TV commercials thrived. A small production company won an Oscar Award for *La Historia Oficial* during this period, and this event marked the emergence of the independent production company as a new type of player in the film industry.

For many decades the most common way to export TV content has been in the form of a finished program, which in Spanish is known as “la lata” (the can). This often involves dubbing the product into the language of the importing country. The leading exporter of this type of product is the United States. Latin America’s share of TV programming exports involved mostly the sale of “telenovelas” (Latin American “soap operas”) and while Latin America’s exports were a negligible fraction of international trade, Argentina only had a small share of these. Argentina’s exports were carried out by the broadcast networks and were oriented to non-traditional markets such as Russia, as the conventional wisdom in the industry was that Latin American viewers did not find the Argentine Spanish accent appealing.

During the early 1990s most TV channels were privatized. This led to a reorganization of the broadcasting industry and the practice of outsourcing production became common, setting the ground for the development of independent production in the TV industry. Although they started by producing content for privatized broadcast channels, these firms gained exposure to international markets and later sought to develop products for these markets.

Argentine production companies succeeded in becoming involved in international markets by means of the TV format, and programs based on formats currently represent most of Argentina’s growing exports in this industry. In brief, a format is a complete guidebook for the production of a specific TV program, usually developed jointly with the program itself. Under a format, TV programs are purged of local content and licensed to other firms that retain the main structure and features of the program but adapt specific components to local tastes. Developing a format involves the codification of production and marketing knowledge, and therefore produces, in addition to TV content itself, an asset that the production company can resell or readapt for foreign markets.

TV formats fall into distinct genres under headings such as non-fiction (e.g. news programs, talk shows, reality shows and game shows) and fiction (e.g. dramas, special features, sitcoms, among others). To date, formats have been most successful in non-fiction genres but trade in fiction programs is currently growing in the form of “formatted telenovelas”. Formatting strips traditional soap operas of their specific domestic context and replaces it for that of the purchasing country. Adaptation of fiction genres is usually more complex than for non-fiction.

Exporting a format can lead to exporting a large number of services. At the very least, a buyer will purchase the format and related consulting services. This involves the production company assisting the buyer in adapting the format to a local market. Although the information needed to adapt a format to a specific domestic market may be to some extent codifiable, exporters seek to maintain this information tacit and deliver it by means of consulting services. In addition to the format, a buyer can also hire a wide range of production services that include scriptwriters, directors, production managers and assistants, casting specialists, costume designers and tailors, theatrical designers, hairdressers and post-production editors, among others.

International trade

The transformation of the international TV industry towards the widespread use of formats started in the United Kingdom. Traditionally, production projects in the UK were carried out within large, vertically integrated organizations with their own technical, creative, and production staff. Up until the early 1980s, the UK television environment was dominated by a few large, bureaucratic organizations that produced programs in-house for their own captive, terrestrial broadcast channels. Since then, the UK has witnessed the development of a large number of independent producers, which play an increasingly important role in the domestic and global industry. According to Starkey et al. (2000), the change was spurred by the 1990 Broadcasting Act, which imposed quotas on the BBC and ITV companies to source at least 25% of their programming from independent producers by 1993.

Planet 24, a United Kingdom TV production company owned by Bob Geldof, created the *Survivor* format in 1994. It initially failed to attract the attention of any major broadcasters in Britain or the United States, but was eventually sold to Swedish TV company Strix Television as *Expedition Robinson* (alluding to Robinson Crusoe). The show proved to be a major hit in Sweden in 1997, and remained successful through 1998 and 1999 in European countries such as Denmark, Norway and Switzerland. This format-based show gave rise to the reality TV phenomenon and was the first highly-rated and profitable reality

show on broadcast television (Moran and Malbon, 2006). Its first season in the US aired in 2000 under the name *Survivor*, and enjoyed a huge ratings success. Jointly with ABC's prime-time game show *Who Wants to Be a Millionaire?*, it sparked a reality-television revolution. Networks deferred sitcoms and conventional drama series, and rushed reality shows into development. Unlike other programming trends in the past, however, this was based on formatted programs and program genres that could be adapted with relative ease to the structure of TV formats.

The largest player in the worldwide format business is currently Endemol, a TV think-tank formed by the merger of two Dutch production companies in 1994. Specializing in non-fiction programs, Endemol grew rapidly to become the world's leading format creation and production company, with offices in 23 countries. The company achieved rapid growth through acquisitions as well as internally developed TV production companies.

Format-based programming is displacing other types of production content from the airwaves: the number of formatted shows broadcast worldwide has risen by over a third from 2002 to 2005, while the number of format hours broadcast increased by 22 percent from 2002 to 2004. International format sales (net of production costs) amounted to €2.4bn in 2004. The United States is the single most important format market in terms of production value, followed by Germany and France. The UK is the biggest exporter of formats: 32 percent of all format hours broadcast worldwide originate in the UK.

Sales of fiction formats are small compared to formats in genres such as reality shows, talk shows and game shows. Game shows account for 50 percent of global format airtime, and the reality show genre accounts for the highest production value (Fey et al., 2005).

Exports of formatted *telenovelas* have also grown substantially in recent years, and these attract large audiences in both developed and developing countries. Eastern Europe is the fastest growing market for exports of formatted *telenovelas*, and a dedicated regional channel, *Romantica*, was launched in 1998. The channel has seen substantial growth in the number of subscribers and demands a large volume of *telenovela* hours. The US Hispanic market is also a large and growing market for *telenovelas*: 17 of the top 20 Spanish language TV programs among Hispanic viewers were *telenovelas* in early 2004. Although this market is served by a large number of Spanish-language channels showing *telenovelas*, there is no dedicated *telenovela* channel.

Overview of Argentine exports

Argentina was one of the first developing countries to follow the trend in the UK, as the privatization of broadcast networks led to the emergence of an independent production industry concurrently with that in the UK. From the mid-1990s, the separation of functions between broadcasters and production companies drove the latter to use formats in attempting to sell products to broadcasters. Production companies have since developed their own formats for both domestic and international markets, and formats now constitute the bulk of the industry's exports.

Argentine TV exports span the whole range of related services, from selling format rights to consulting and production services. Depending on the services involved, the current price of purchasing one hour of TV content from an Argentine producer can range from US\$ 500 to US\$ 100,000. The extent of this variability follows from the different types of TV programs and production services sold. Official statistics for TV exports are difficult to find due to this variability and because the product is not processed through customs, so figures can only be estimated.

Regular exports from Argentina started in 1997 and have grown consistently since, with higher sales values and an increasing number of participants. A conservative estimate of the average export price for TV programs and formats is around US\$ 6,000, and an estimated 45,000 hours were sold in 2005. This suggests that at least US\$ 270 million were exported in 2005.

Approximately three hundred Argentine firms are active in this industry, employing 24,506 workers directly. Although some of them are large, e.g. TV broadcast channels, most are small and medium-sized enterprises (SICA, 2006). The format production industry can be broadly broken up into independent domestic companies, foreign-owned companies and broadcast networks.

Most firms are independent domestic producers, and may range in scope from supplying a few specialized services to supplying all production inputs (renting equipment and studios, castings performers, filming on location, providing specific human resources and selling film materials and catering, among others) and creative inputs (script writing, directing, production, scenery and wardrobe design, editing and acting). Few independent producers are capable of exporting entirely on their own, and most depend on larger companies such as the international offices of broadcast corporations or international companies. Independent production leaders such as Promofilm and Cuatro Cabezas, however, do conduct all aspects of exporting TV content.

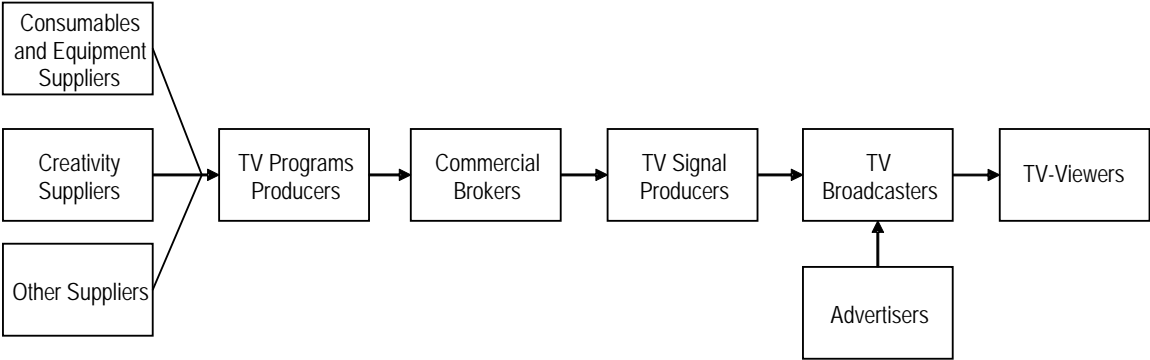
National broadcast and cable channels have taken on a large role in the industry. This trend became more important after *Telefé Contenidos* started to operate in 1999, and has since become the largest exporter in Argentina. Firms of this type usually supply both production and creativity inputs, as well as acting as international brokers for their own products and those of smaller production companies.

Foreign-owned companies are also large exporters, and tend to specialize on specific types of programs that usually correspond to the genre in which they started their business. Relevant examples of these are *Dori Media* and *Endemol*.

Value chain of the TV program industry

This section provides a schematic description of the value chain for the production of a TV program in Argentina, from end-customers (TV viewers) to the suppliers of inputs to production.

Figure II.1: Value chain of the TV program industry



Although depicted in Figure II.1 as a series of lined boxes, the value chain of TV production is particularly complex. Each TV program is a unique project requiring a distinct assemblage of skills and capabilities, and production is dependent on a range of (often freelance) individuals. As a result, the “value chain” has the form of a network, particularly upstream of the TV program producers. Roles in the value chain can be played by distinct firms, or these can be aggregated under a single firm. Next, we describe each tier in the production of TV programs.

Creativity Suppliers

Suppliers of creative content include scriptwriters, directors, production staff (not to be confused with the producers of the finished TV program, below), casting specialists, costume designers and tailors, post-

production editors, theatrical designers, hairdressers and actors. These are usually freelance workers whose services are purchased by the program's producer, who acts as the integrator and business maker. Suppliers of this content are critical to the success of the TV program because they tailor the product to the preferences of the target market and provide the distinctive qualities that can make a program appealing to viewers. The size of the population of creativity suppliers is an indication of maturity of the TV industry. In Argentina there is a large population of TV scriptwriters, organized under the Argentine Scriptwriters Society (Sociedad General de Autores de la Argentina), as well as specialized web sites and interest groups that organize and lobby for the community and train new authors and writers.

Consumables and Equipment Suppliers

Consumables and equipment suppliers include the owners of film sets and studios, firms that rent equipment, and suppliers of film consumables such as media (tapes and optical discs). These suppliers are less critical than creativity suppliers in terms of the characteristics of the final product, but in some cases establish long-term working relations with producers.

Other Suppliers

Production requires supporting services such as catering, staff for secretarial and janitorial work (often temporary) and suppliers of office and hardware products needed on a filming set.

TV Program Producers

The output of TV program producers is a ready-to-watch TV show. In a sense, TV program producers are like ready-to-eat food producers in that they integrate a broad array of "ingredients" suppliers to produce a high-value product. However, relations between program producers and their suppliers are not like those in the food industry. Since each TV program is unique, they are tailored and produced as a project rather than as a process line. TV producers are not engaged in business transactions with each supplier all the time. However, they are engaged in persistent business relationships, particularly with suppliers of creative content. This type of relationship is termed a latent organization in the organizational sociology literature, because business relationships are long-term and are based on the reliability of the resources and capabilities of each individual agent in the latent organization. Capabilities and the track records within the latent organization provide quality assurances that allow the network to function (Starkey et al, 2000).

TV-signal distributors and TV broadcasters

Before the appearance of cable TV, content production and the broadcasting function were integrated into the same firm. Since the creation of cable TV, the roles have split between the producers of channel content and the distributors of the cable TV signal. Content producers create specific “TV channels”: a series of TV contents, such as programs and infomercials, that are usually presented as an individual channel on a TV set. Channel content is sold to cable signal distributors, who package content as channels from different sources and market paid TV services to final consumers. It is still common, however, for TV-signal distributors to be involved in broadcasting. This is the case with “traditional” TV networks such as ABC in the United States, or Grupo Clarin’s ARTEAR and Multicanal in Argentina.

Trends toward integration of the value chain

The value chain for TV program production has swung from integration to disintegration and, in recent years, back to integration under a different form. Traditional integration involved TV channels doing broadcasting, signal production and TV program production. TV channels owned the studios and all human resources were channel employees. These integrated organizations evolved into a set of more specialized firms, with all roles described in this section fulfilled by independent firms. Since 2000, a number of companies have started to integrate under different frameworks. Some TV channels regained a role in TV program production: *Telefé* created *Telefé Contenidos* and *Canal 13* acquired stakes in two independent production companies: *Ideas del Sur* and *Pol-ka*. Another form of re-integration was also carried out when the domestic branch of *Endemol* (a production company) purchased traditional studio set *Estudio Mayor*.

Domestic business model versus export business model

Argentina’s current export boom in TV programs is driven by a new business model for creating, producing and trading TV content. Production companies follow a specific set of practices to conceive and implement program ideas, and adapt them to local markets abroad under the framework of the TV format. The model is based on the division of TV production into distinct stages, with conception or idea development clearly separate from production, as well as an explicit aim to isolate the components that can be sold abroad. The development of this model allowed for the specific services that are embodied in a format to be exported on their own for the first time. This is in contrast with exports of a finished program, where it is almost impossible for the product from the exporting country to divest itself of local

traits. Producing a program under the format model does not serve a purpose unless the format is to be exported, so format creation is necessarily linked to an export business model.

Under the domestic model, the conception and production of TV content is carried out in a unified manner. A production company will attempt to export the finished program if it was successful in the domestic market, but under this model exporting is necessarily a secondary activity and cannot motivate production independently. Watching an (often dubbed) imported TV program requires an exercise in cultural openness from the viewer, so international trade of TV programs under this model was dominated by production companies that could lower cultural barriers between viewers and their product.

Product upgrade

The adoption of the export business model implies a change not only in the characteristics of end products experienced by viewers but also in the nature of the process that leads to the final product. To develop formats, producers must create TV content with a strong plot structure or framework yet allow for variation in production procedures, requiring a more flexible, professional and organized staff. The minimal requirement to export a format is for a TV program to be purged of local content and licensed to other firms that keep the main structure and characteristics of the program but adapt specific components to local tastes. At the other extreme, exporting a format can entail a substantial part of the adaptation work as well as production, either in the country of destination or origin, or in a third country. Production in this case requires all associated services to be capable of deploying for export.

Companies that follow the export business model also develop specific relationships with other agents in the value chain. In order to be flexible and potentially scalable as required by specific projects, independent production companies form working relations with a large network of independent suppliers. Associates of production companies must upgrade their practices to supply independent producers leading the export of production services. In addition to the performing and production services mentioned above, freelance networks are often developed with studio sets, animation companies and stunt services.

The domestic production model in the TV industry is centered on finished programs aimed at reaching domestic audiences. Since producers under this model have relatively close knowledge of the relevant market, most uncertainty involves aspects of production and whether the product will adequately match these relatively well-known tastes. Production companies under the export business model add a further layer of uncertainty to their business, as they need to learn the taste patterns of viewers in foreign markets.

This requires an additional set of skills from creative and production crews, such as knowledge of these tastes or the ability to respond to directives on these tastes, carrying out their roles differently than when producing for their country of origin.

Producing the adaptation of a format requires learning the characteristics of target markets. This requires acquiring information on specific cultural components of the target market (e.g. a specific demographic group within a country or region) by contracting local consultants and upgrading production crews to develop skills in social and market research.

Game shows are the most common type of format, and many of these are remade in multiple markets with local contestants. Key examples include *Survivor*, *Who Wants to Be a Millionaire?*, *Pop Idol* and *Big Brother*, all of which have been successful worldwide. Game and reality shows are highly adaptable as formats. Under the domestic business model, these entertainment programs are often based on charismatic hosts and impromptu comedy, and lack plot structure. To drive ratings, they are designed to exploit idiosyncratic tastes and local customs, making the finished program itself very difficult to export. However, these types of programs are among the easiest to strip of local features. Under the export business model, product design and production are separated with a view to developing an exportable format. Among the largest companies developing these formats for export from Argentina are Endemol, a Dutch TV think tank, and Cuatro Cabezas, an independent production company.

Fiction formats must overcome substantial cultural barriers in order to be exported, since elements such as plot and character development may be harder to isolate from local characteristics. Under the export business model, the product is designed to avoid relying on the idiosyncratic tastes and local customs of the country of origin, and match more universal tastes. When producers started to design fiction programs for formatting, they broke down plot structure into a core story of universal applicability with added modular components, and developed adaptable characters and “exchangeable” specific content. For instance, *Rebelde Way* – a *telenovela* produced by Cris Morena Group (CMG) that became Dori Media's biggest hit and has been hugely successful in 50 countries – is based on the problems of high school teenagers. The extent of differentiation through format adaptation has allowed this program to be successful in several European countries in the form of both the domestically adapted format and the Argentine finished program. In Spain, the Argentine version of *Rebelde Way* competed with the Spanish one on the same time slot.

Marketing upgrade

The emergence of new categories of TV programming products – new types of finished programs, formats, and regional content for cable channels – has changed the marketing of TV products.

Entrepreneurs under the export business model pay close attention to global programming trends and may in turn be part of larger networks, allowing them to increase their exposure to and connections with destination markets. Distribution in the domestic market is relatively simple. To a large extent, it depends on long-term relationships between producers and programming managers or their staff. Access to the international marketplace is more competitive and can occur through several routes. As with the domestic model, one route is based on personal contacts and established business relationships with international distributors, but these are relatively harder to establish. An alternative route for expanding exports is seeking new sales at industry trade fairs.

Argentine industry leaders travel regularly to world industry fairs, particularly in Cannes, France and the US. Producers cultivate commercial relationships with network managers and potential future associates in production or commercialization. They also screen the market for programming trends and in search of new opportunities to design and create their own formats for specific market niches.

Learning about new format types at trade fairs also allows Argentine producers to supply production services for popular and internationally well-known formats. Argentine firms can then market production services, adapting and producing formats that they do not own. The ability to market this additional export activity follows directly from the production upgrades provided by the export business model.

Exporters must have a marketing strategy to present their products at international fairs. For Argentine producers, this implies an effort to overcome country-of-origin bias, i.e. client concerns about quality due to the product's country of origin. Argentine producers use different approaches to solving this issue, such as entering joint ventures with companies from third countries, adopting the form of local branches of international corporations and building a reputation through the gradual accumulation of experience providing formats and services in markets of relatively easier access. Access to these markets, in turn, is facilitated by ownership of a successful TV program that may act as a flagship or showcase product for the independent production company.

A recent marketing strategy by Argentine producers has been to present and sell *telenovelas* as a format. This approach has proven to be successful and has helped build brand recognition for Argentine products on international TV markets, since these types of products had not been formatted successfully in the past.

Pioneer

One of the first production companies to produce content independently for the newly privatized broadcast channels in the 1990s was a newcomer to the industry: Horacio Levin's Promofilm. Promofilm was originally an advertising company targeting the domestic market, but some of the firm's projects in the late 1980s started to change its business focus. The company's first production efforts had been standard TV advertising spots, but in order to sell commercials for toy companies Mr. Levin started to trade in cartoons and animated films with state-owned channels. He purchased foreign entertainment films for children that programming managers were unaware of, and introduced them successfully in the domestic market, which at this stage was the only market he was seeking to become involved with. His first innovation was therefore on the commercial side of the TV business, and under the domestic business model.

By his own account, he was able to broker these deals because he understood some of the flaws in the TV industry from the inside: for instance, that newly privatized broadcasters had to a large extent disregarded global programming trends. According to Mr. Levin, "*we were far away from the world (...) in those days nobody (in the TV industry) took notice of what was going on in the world*".¹⁶ He considered the TV production business at the time to be open to newcomers, but regarded himself as young and inexperienced.

Levin compared TV produced for international markets with domestic products, and came to the conclusion that most domestic programs were produced without well planned content frameworks and relied on celebrities and impromptu comedy. He sought to identify programs with more solid program structures, which could be successful independently of features such as the charisma of TV celebrities. In particular, Levin decided to become a TV producer by adopting generic features from US TV shows.

Promofilm's first experience in production was under the form of "advertainment" – an entertainment program with a single major sponsor that was moderately successful. He later employed a genre that was

¹⁶ Interview with Mr. Levin, our translation from "estábamos mucho más lejos del mundo aquí (...) en aquella época nadie le importaba lo que pasaba afuera".

new to the domestic market: talk shows. Promofilm merged the talk show formula to components with an Argentine appeal (specifically, the show was focused on social issues), creating a program named *Causa Común*. The program was launched very successfully in 1993, and Levin became well known in the Argentine TV industry as the creator of an unusual hit.

According to Levin, program managers working for the TV broadcast channels took notice of his approach. He states that he made an effort to keep up-to-date with best practices in the industry: *“I was always interested in the outside world, I found it very tempting (...) I greatly enjoyed looking for things abroad to bring them back (to the domestic market)”*¹⁷

Mr. Levin made it a practice to travel to world industry fairs and meetings four times a year, twice to Cannes, France and twice to the US. He also developed a close relationship with the owners of Globomedia, a Spanish independent production company. Levin met the owners of Globomedia when they visited Buenos Aires to attempt to sell a format for a game show. The relationship led to joint production ventures, and the companies merged in 2000. Visiting trade fairs and his relations with Spanish colleagues allowed Mr. Levin to experience the latest trends in the global industry first-hand. He met and established relationships with colleagues from other countries, and learned about new production models and genres that at the time were unheard of in the domestic market.

Mr. Levin was observing trends in global TV markets as formats started to come into use. For Mr. Levin, the initial appeal of this practice was that he could employ successful programs and introduce them to the domestic market – as he had done earlier with cartoons – but would also start playing a role in production. Levin’s next step was to employ this new production model, in the role of adapting it to the domestic market.

Mr. Levin presented an idea for a new game show to Channel 13 of Argentina. Despite the proven success of the format, Levin states that network executives saw the product as a substantial risk because they were cautious about mainstream ideas from the international TV industry still new to the domestic market. In negotiating a deal to produce the show, Levin acquired most of the upside and downside risk. Channel 13 paid for a fraction of fixed costs, and the remaining cost were left to Promofilm.

¹⁷ Interview with Mr. Levin, our translation from “a mi siempre el mundo exterior me resultó muy interesante, muy tentador (...) me gustó mucho ver que había afuera para traerlo acá”.

The idea for the program – known as *Sorpresa y media* – adapted a section from a Spanish program. Mr. Levin purchased the format from Spanish producers and worked out a new show, developing further additions. The product performed very well in terms of audience and commercially.

An unusual aspect of *Sorpresa y media*'s success was that it achieved high ratings despite airing on Sunday nights. This time slot had been relatively neglected by networks, but after the program's success they started to pursue audiences more aggressively by scheduling programs with higher production value. Producing *Sorpresa y Media* allowed Promofilm to gain further production experience and upgrade its capabilities for domestic production. The program involved a large staff and substantial logistics, and Promofilm developed the operating practices of producing a live prime time show. Levin seized on this success to upgrade Promofilm's human and equipment resources.

Producing *Sorpresa y Media* also generated a successful showcase product for Promofilm to display to regional broadcasters. *Sorpresa y Media*'s arrival as a flagship for Promofilm products was timely: while the product was enjoying success in the domestic market, countries such as Venezuela and Colombia were privatizing and opening their TV markets as Argentina had done five years earlier.

Mr. Levin considered that the increased openness in regional markets would allow him to attempt the same production model and methods abroad. In 1995, he decided to create his first joint venture with Spain's Globomedia. Their agreement was to share production strategies and logistics as well as formats, expanding to Latin American markets with the aim of "*putting Promofilm and Glomedia's experience into play in other countries*"¹⁸. Mr. Levin's decision to joint venture with Spanish colleagues had several advantages: it reduced the uncertainty due to the financial risk of new ventures and provided him with a worldwide perspective of the TV market, allowing him to scan the world for new formats.

Promofilm-Globomedia developed their first formats from their own successful Argentine TV programs, adapting them for the Latin American market. The pilot case was *Sorpresa y media* in Venezuela. Neither firm had a clear plan to adapt the format to foreign tastes, since this was a new venture for both companies. In the first months the show was aired in Venezuela, it became clear to the team that they would not replicate the show's success by rigidly repeating the practices used in Argentina. According to Mr. Levin, they discovered that they needed to make changes in style and content to make the show less melodramatic, a component that appealed to Argentines, and more upbeat – more "*chébere!*", a keyword from Venezuelan culture. The program was subsequently adapted for Brazil, Ecuador, and Colombia.

¹⁸ Interview with Mr. Levin, our translation from "llevemos la experiencia de Promofilm y Globomedia a otros países".

Adapting *Sorpresa y Media* to different foreign audiences allowed both companies to gain substantial experience with this process. Learning from this experience, they took steps to adapt other formats.

Another significant stage of experimentation took place with the earliest type of globally traded TV format: game/reality shows. Being aware of the European TV market proved to be a key commercial ability for Promofilm, as scanning for new formats and opportunities led the company to one of its most successful formats: *Expedition Robinson*.

The Promofilm-Globomedia joint venture was an early adopter of the Expedition Robinson format, and purchased the rights to produce the show in Latin America and Spain. Six months later, CBS bought the rights to produce the show in the US. The show aired in 2000, on the Telecinco network in Spain and Channel 13 in Argentina, and was a huge success.

Expedición Robinson was the first reality-show ever seen on Argentine and Spanish TV. It was a local production adapting the Swedish version of *Expedition Robinson*, and was contemporaneous with the show's first seasons in Germany-Austria, the Netherlands-Belgium and the United States.

The program's production involved a crew of more than 100 people, including producers, scriptwriters, camera and sound technicians, and art directors. Production was made on-location in Panama, involving considerable logistics. However, the uncertainty surrounding such a complex production was overshadowed by the risk of putting the program on the air.

Although the production of *Expedición Robinson* seems like a major commercial risk for a small company like the joint venture of Promofilm-Globomedia, Levin perceived the uncertainty to be low. Mr. Levin explained that *"I do not remember ever taking a significant risk, I was pretty sure that the business would cover my costs. However, I was impressed by the huge success it had. The country (Argentina) froze during the final episode of Expedición Robinson, everybody in Channel 13, artists or network executives were asking me who was going to turn out to be the winner."*¹⁹

Promofilm-Globomedia's ability to successfully adapt *Survivor* to the Argentine and Spanish markets garnered international credibility for the firm. This was made clear when they heard from staff of Planet 24 – the owners of the original rights to the format – that they were so pleased with their performance that they were recommending the production services of Promofilm-Globomedia during meetings for the sales

¹⁹ Interview with Mr Levin, our translation.

rights of *Survivor*. This translated into contracts to produce 17 different versions of the program from 2000 to 2003, for foreign markets such as Spain, Italy, Chile, Colombia, Venezuela, Hungary, Russia, and the UK, among others.

The *Expedition Robinson* venture brought to light that the previous export ventures, focusing on Latin America as a main target, were not the company's ceiling and that Promofilm-Globomedia had the opportunity to become part of the global TV industry's value chain. Their experience with *Expedición Robinson* enabled Promofilm-Globomedia to further enhance the skills and training, as well as the size, of their workforce. In addition to acquiring greater technical skills, Promofilm-Globomedia acquired the ability to delegate to independent creative and production teams that could be deployed flexibly to simultaneous productions. According to Levin, "*success arrived when the Promofilm staff understood what it took to reach people's desires in each country (...) and adapt the show to each place*"²⁰

Promofilm trained this network of people using resources that were to a certain extent already available in Argentina. These included skilled technicians and managers, as well as people involved in Argentina's long history of audio-visual production. Resource availability allowed Promofilm to grow fast and at a relatively low cost, while still achieving world-class quality. The availability of these factors also provided favorable conditions for the subsequent diffusion of Mr. Levin's export business model.

Promofilm-Globomedia used talk shows and reality shows as a platform for experimentation in creating their own formats for export to foreign markets. They adapted talk shows and reality shows to the particularities of other markets such as Colombia, Chile, Ecuador, Mexico and the Hispanic market in the United States. These activities led the companies to deal with the region's main broadcast networks, such as RCTV and Venevisión in Venezuela, Caracol and RCN in Colombia, Azteca in Mexico and Telemundo in the US.

Promofilm has since successfully created and produced programs for Telemundo such as "*Protagonistas de Novela*" in 2000, the first reality show that the company produced exclusively for the US Hispanic market. A version for Argentina was not produced, so this was the first time that the company aired a show without previous experience in their home base market. The program was successful and was later produced by Promofilm for five other countries in Latin America, and has recently been aired in Greece.

²⁰ Interview with Mr Levin, our translation.

Promofilm has continued to export formats without pre-testing in the home market: In 2004 they produced *El Conquistador del Fin del Mundo*, a journey through the Argentine Patagonia featuring teams from five countries competing at game events. The show was produced and broadcast simultaneously on five Latin American networks: TV Azteca (Mexico), Gamavisión (Ecuador), Telemundo (US), UCTV (Chile), and SBT (Brazil). The show was also adapted for Basque TV.

Leveraging its earlier experience with the “advertainment” genre, the company created and produced formats for documentary/reality programs such as *Lo Dejo en tus Manos* (a home renovation program sponsored by Loews) and *Mi Primer Hogar* (a home renovation program sponsored by The Home Depot), exclusively for Telemundo.

In 2004 Promofilm purchased the format for *Temptation Island*, a game/reality show owned by Fox, and adapted it to four different foreign markets: the Fox and Telemundo channels in the US, Hungary and Brazil.

The company’s growth led to the opening of offices in various countries in Latin America and the United States, employing teams of local professionals to meet growing demand for formats and programs. But production capabilities were evolving quickly, and competition caught up with Promofilm both in the home base and abroad.

Diffusion

Promofilm was the main actor promoting diffusion of its own export business model. After the success of *Sorpresa y Media* and the sale of production services to prime markets such as the US, Promofilm attained the stature of an industry leader. The outlines of Promofilm’s business model were common knowledge to the community of TV producers in Argentina, and Levin felt that he had nothing to fear in sharing specific knowledge with others.

Promofilm’s crew and Levin himself acted as vectors of diffusion. Production companies such as Cuatro Cabezas, Telefé Contenidos, ARTEAR, Cris Morena Group, Ideas del Sur and Pol-Ka followed Levin as the next generation of exporters, and learned from Promofilm’s experience.

There were, however, other vectors of diffusion of the export business model. International format providers such as Endemol and Promofilm’s Spanish associate Globomedia also spread the export

business model by two channels: providing guidance for the domestic production of formats, and establishing domestic offices to buy formats for export to foreign markets. Early in the diffusion process, Globomedia and Endemol purchased the operations of independent production companies in Buenos Aires.

Diffusion at the domestic level was facilitated by the existence of production capabilities in a dormant state in the Argentine TV and film industries. The most important cultural attribute required to export or adapt TV formats is the ability to adapt programs to different local tastes. The success of Promofilm generated positive spillovers in the form of a demonstration effect.

There are currently at least four large and twenty small industry followers. Two of the large firms remain independent producers – Cuatro Cabezas and Endemol Argentina (currently P&P, following an acquisition) – while the other two are leading national broadcast corporations that have incorporated the production function – Telefé with its Telefé Contenidos division and ARTEAR (Channel 13) with two captive production companies (Pol-Ka and Ideas del Sur).

Cuatro Cabezas is one of the larger followers and currently the export leader. It has been successful at selling original formats from programs developed originally for the domestic market. On its way to becoming an exporter, Cuatro Cabezas repeated the same learning path as Promofilm: It was initially a newcomer to the industry and targeted mainly the domestic market. Despite some initial failures, the company reoriented to producing entire TV shows independently from national broadcasters, innovating on the content side of the business while employing the traditional production model.

Their main product, a format derived from a program called *CQC (Caiga Quien Caiga)* is a long-run commercial export success. It started as an innovative program on Argentine TV, with good response from the Argentine audience. The show is a comedy-based weekly news roundup, and is presented by a trio of anchors that employ heavy doses of irony, as well as street reporters that ask uncomfortable questions to politicians and celebrities, seeking to provoke funny reactions. Alumni from this program have moved on to starring in other programs, which in some cases have also led to successful export formats.

The success of this program provided Cuatro Cabezas with a flagship product with which to attempt sales to foreign markets. Notably, the company's ability in converting the show into a TV format was a direct consequence of an intervention by Horacio Levin. The program was adapted for Spain in 1996, when Mr.

Levin purchased the rights for his associates of Globomedia. Spain was the first country where Cuatro Cabezas exported a format. Later they took an independent path and established its own office in Madrid. They also adapted the show for France, Israel, Chile and Italy. With offices accommodating a hundred people in Madrid and Santiago, Cuatro Cabezas currently supports the production not only of *CQC* but also of *E24*, a documentary/reality show.

The experience with this flagship product enabled Cuatro Cabezas to learn the commercial side of international format trading. Although the company had produced a strong product for the local market, it had not acquired knowledge of international trends in the TV industry or a strong reputation. Critically, however, the type of content with which Cuatro Cabezas was successful in the domestic market was of a nature that could be formatted: it relied on a rich program structure that was relatively independent from the show's TV personalities.

Cuatro Cabezas evolved into a think-tank for the development of innovative formats, and its format creation capabilities allowed it to overcome their initial inexperience in the commercial area. The company has sold other formats for broadcast TV – such as *El Rayo*, *Puntodoc*, *SuperM*, *Algo habrán hecho*, *La Liga*, *E24*, and *Nos pierde la fama*, among others – all of which were originally developed and tested in the domestic market. The firm's success has allowed it to access international cable markets. For example, Cuatro Cabezas has produced programs for HBO (*Sexo urbano*), TNT (*Proyecto 48*), The History Channel (*Historia secreta de las ciudades*) and Discovery Travel and Living (*Ciudades y Copas* and *Casas*).

Since Promofilm started to develop capabilities to deal with formats in the early 1990s, Cuatro Cabezas and Telefé were followers in the domestic market as well. These companies employed formats in 2000 to air successful reality shows such as *El Bar* (Cuatro Cabezas) and *Big Brother* (Telefé). As followers in the adaptation of formats for the domestic market, these companies also developed new capabilities and skills that could later be leveraged for format creation and export.

The pattern of diffusion is intertwined with the evolution of industry structure. Following a period of expansion in the activities of independent production companies during the late 1990s, broadcasters such as Telefé and ARTEAR started in 2000 to take on greater production roles. Promofilm-Globomedia has associated with Televisa and has developed a TV channel from scratch in Spain.

Telefé, a major TV channel in Argentina, underwent a substantial change in strategy in 1999. The company split its production business in two divisions: Telefé Contenidos, in charge of production services and format creation, and Telefé Internacional, a division in charge of international commercialization.

As with other exporters, Telefé started by importing and adapting formats, specifically reality shows and sitcoms. Telefé Contenidos produced *Big Brother* in 2001 and 2002. The company has continued to act as a format importer, and in 2004 produced a domestic version of the successful US sitcom *The nanny*. Employing these format genres was considerably innovative for the domestic market, and required substantial adaptation skills from Telefé Contenidos. In 2006 the company started airing a second version of US sitcom *Married with children: Casados con hijos*.

Telefé benefited from diffusion through a business relationship with the pioneer. Telefé staff learned about implementing the production aspect of adapted formats while leasing studios to Promofilm, when this company filmed *El frijolito*, a Mexican-style soap opera for the US Hispanic market (Telemundo). From this experience Telefé Contenidos reverse-engineered the aspects of the production process that allowed Promofilm to fictionally set the program in Mexico despite producing it in Buenos Aires.

After the success at adapting international formats to Argentina's domestic markets, Telefé Contenidos started to create its own content under the export business model. The channel's inward orientation has changed since the 1990s, when the company targeted the domestic market exclusively and aired mostly light comedies and soap operas. Programs developed under the export business model (either as exports or imports) currently occupy every broadcast hour on the network. One important event in the reorientation of production was, as commented above, the local production of "Big Brother". According to a consultant, "*With the production of any reality show the level of professionalism developed is high*"

Telefé Internacional has sold Telefé's own format products (e.g. *El Deseo* and *Resistiré*), and acted as an international broker for small independent producers such as Ideas del Sur, helping them sell programs such as *Los Roldán*, *Disputas*, *Tumberos*, and *Sol Negro* (through the end of 2005). Telefé Internacional has been involved in brokering sales by several companies: Yair Dori Internacional (*Rebelde Way*, *Rincón de Luz*, *Mil Millones*), Cris Morena (*Floricienta*, *Rebelde Way*, *Rincón de Luz*), RGB (*Abre tus Ojos*, *Kachorra*, *Provócame*), Central Park (*Jesús El Heredero*) and ARTEAR/Pol-ka (*Padre Coraje*).

Telefé has also started to develop fiction formats from programs that have been successful in the domestic market, such as *Simulators*, produced by Daniel Szifron. It is also attempting to extend the international success of *Resistiré*, which is a psychological fiction drama with a running backstory as well as storylines that wrap up on each episode. Innovation in terms of new format types, as was the case with Cuatro Cabezas' sale of CQC, allows local producers to further extend their sale in foreign markets beyond the sales of production services and formats in traditional genres.

ARTEAR, Argentina's other leading broadcast channel, followed a path similar to that of Telefé but started later. ARTEAR's practice until 2003 had been to develop relationships with independent production companies such as Promofilm, Pol-Ka and Cuatro Cabezas, through an open-contract policy. The policy changed when the network hired Adrian Suar, founder and CEO of formerly independent production company Pol-Ka, in the role of general manager and tasked him with creating a pool of captive production capacities: Pol-Ka and Ideas del Sur were taken over by ARTEAR. In 2004 the companies produced the mini-series *Epitafios* for HBO. ARTEAR and Pol-Ka are now producing the *Desperate Housewives* format for Argentina as well as six other Latin-American countries, and plan to create an international format brokering company.

Foreign investment has also provided a channel for the diffusion of the export business model in Argentina, and the main players in this role have been Endemol and Globomedia.

Endemol Argentina started as an independent production company in 1997, under the name "Producciones y Publicidad". In 2001 the company associated with Dutch TV think-tank Endemol and changed its name to P&P Endemol.

The company's biggest success has been the *Big Brother* reality show, with versions in many countries after the initial Dutch version, and the company has specialized in developing formats for inexpensive production. The company was sold to Spanish telecommunications and media corporation Telefónica in 2000. In Argentina this caused Endemol to become a natural ally of Telefé, which is also owned by the Telefónica group.

Endemol Argentina is currently widening its scope to fiction, documentary series, news and children programs. The company exported 700 hours of TV programming in 2005, including formats such as *Cuestión de Peso* to Italy and Spain, and *El ultimo pasajero* to Vietnam, Turkey, Indonesia and Chile.

The Promofilm-Globomedia venture reached a new stage in 2000, when the partners decided to merge both companies and change their export strategy, as they had failed to retain a leading position in Latin American markets. It became clear to the partners that the strategy of replicating a domestically successful format with a quality upgrade (as they had done on the domestic market with *Expedición Robinson*) was under intense competition.

Independent production companies in their destination markets discovered how to catch up with minimum production capabilities. In a period of three to four years, countries such as Venezuela, Chile, and Colombia upgraded their own production industries. Promofilm's office in Venezuela, which at its peak employed almost 150 people, was closed, along with offices in several other Latin American countries. The company retained its offices in Mexico, as well as Miami and Los Angeles in the United States, with teams of local professionals to provide production services for large clients such as Telemundo, Fox, HBO, Televisa and Azteca, among others. Promofilm-Globomedia has become a division of Grupo Arbol – a Spanish media conglomerate with offices in Los Angeles, Miami, Madrid and Buenos Aires.

Under Arbol's management the company is currently producing over 3,500 hours of programming per year, for broadcast and cable networks around the world, and holds a 40% share in Mexican network Televisa. Promofilm-Globomedia's main strategy and efforts have been reoriented to the Spanish market, and it is currently devoted to producing a network channel in Spain, named *La Sexta*, that was launched in 2006.

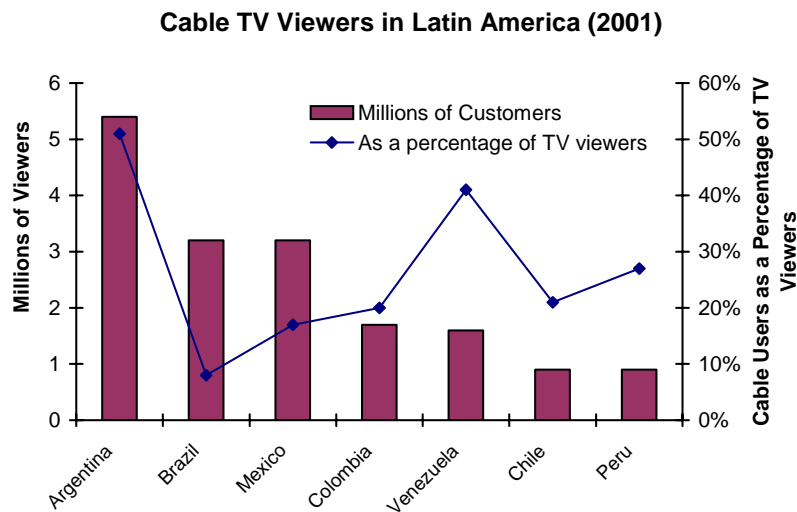
Levin decided to leave his executive post at Promofilm-Globomedia in 2004, when it became clear to him that Grupo Arbol would focus their TV division on the broadcast side of the business. The Argentine office of Promofilm-Globomedia has lost its leading export position to Cuatro Cabezas, Telefé and Endemol.

Although diffusion took place mostly in the domestic market, it was also of a regional nature. As explained above, after 2000 it became difficult for Promofilm to retain a leading position in adapting formats for Latin American markets. Latin American independent production companies caught up with minimum production capabilities, learning Promofilm's practices during project development. Mr. Levin acknowledges that some of the capabilities required by his business model diffused during joint production with partner companies in target markets. Production companies such as Teleset in Colombia

and Magnolia in Italy hired entire task-groups of technical staff from Promofilm during co-productions. Televisa, the largest TV broadcaster in Mexico, recruited an entire group of scriptwriters from Promofilm.

Domestic diffusion also takes place through the start-up of new companies, led by former managers of pioneer or followers that leave employed positions to start their own businesses. New and small companies are attempting to become permanent exporters of content for cable TV channels. Examples include Tandem Producciones, which are former production managers of Cuatro Cabezas, and Nativa Productions Inc, which are former production managers of Pramer, a cable content distributor and producer with a regional scope.

A distinctive feature of these new offshoot producers is that they target production of content for cable TV in the US, Europe and regional markets. The size of the Argentine cable market has aided these production companies in the development of niche cable products, as required by export markets. Argentina was one of the first markets in Latin America to introduce cable TV, and as shown in Figure II.5, the extent of cable TV viewership remains exceptionally high by regional standards.



Source: Morgan Stanley

Specialization patterns in TV exports have also turned out not to be exclusively related to regional coverage. Successful specialization in certain genres and segments, such as young Hispanics in the US or fiction lovers in Russia, has allowed for substantial export growth compared to the replication of domestically successful formats in nearby regional markets.

A second stage in the diffusion process is currently underway. Some elements from the business model for exports are being employed in related products and sectors: content for cable channels and in the advertising industry.

Even though a few firms specialize exclusively in either TV programs or commercials, many are involved in both, as well as in the production of films. The success in exporting TV formats or production services is now spreading to other divisions of the same companies, leading to a similar success in the export of TV commercials.²¹

Although formats and production services are the key elements in the export business model, the development of long-term business relationships and new production methods has also allowed for substantial growth in sales of finished programs. Unlike production under the domestic business model, however, where exports of the finished product were an ancillary activity and had no influence on production, some domestic programming is currently developed with a view to its international marketability. The sale of a domestic program in the form of a “lata” has become integrated into domestic production activity, as this activity is now synchronized with the export business model.

Counterfactual case

In Argentina, the case of Ideas del Sur illustrates an example of failure to export in this industry. With a large portfolio of well-known and successful domestic programs, the company has attempted to emulate the successful experience of Promofilm and other followers but has failed repeatedly.

The company’s degree of specialization in comedies for the domestic market may have been partially responsible for its failure to adapt its program *Los Roldan* effectively for the Mexican and Colombian markets. The program performed poorly in these countries and business failure led Ideas del Sur to downsize its workforce significantly and merge with ARTEAR.

The fact that production in this industry is carried out by loose networks of collaborators means that it is very difficult to keep production secrets. These types of information leaks, however, do not guarantee the complete diffusion of the export business model. Developing a format involves the codification of

²¹ Although TV advertisement exports are outside the scope of our study, it is worth mentioning that out of 1,384 commercials filmed in Argentina during 2005, 712 were made for the domestic market and 672 were exported. Although there are no official statistics on these exports, Eddie Flehner (CEO of Flehner Films, Argentina’s largest production company by film-hours) estimates that exports of TV spots in 2005 ranged between US\$ 70 and 100 million.

production knowledge. In the case of Ideas del Sur, codification was delegated to Telefé Internacional, which went beyond brokering and became involved in format management. As a result, Ideas del Sur voluntarily forfeited a creative role in format creation.

Ideas del Sur failed at learning and carrying out the export business model. The company did not learn how to purge the local content from their programs or develop programs that were suitable for formatting. The main structure of their programs provided an insufficient base from which to attempt adaptation of specific components to local tastes.

Following its failure to produce its own formats, Ideas del Sur has become a format importer, constraining the company to provide production services for the domestic market. Although the case of Ideas del Sur suggests that the export business model may not be adequate or completely defined for comedy based formats, idiosyncratic aspects may have driven the company's failure. Ideas del Sur is owned and managed by the charismatic hosts of its successful domestic programs. The latest generation of production companies, in contrast, is owned and managed by former production managers that worked for the larger established exporters and have had the entrepreneurial drive to start their own businesses. Ideas del Sur's management remained mostly focused on the domestic market throughout the period, and outsourced key functions in the export business.

Public policy

The Argentine national government has not played an active role in either helping the pioneer discover his business model or in promoting its diffusion. There are no national government offices dedicated to production in this field. Other offices or agencies deal with the film industry within the realm of cultural policy and with the aim of promoting Argentina's film industry.

The national government's film promotion agency is aimed at culture preservation and is designed to "defend" Argentine film. Officers in charge of this agency and the film community that supports those policies focus exclusively on national film promotion, as TV production is considered a minor art and a commercial product that does not require governmental support.

Before privatization, the control of all TV content was in state hands. The national administration did not develop any specific policy for the TV sector following privatization. Although local governments have

provided some support to this industry – for instance, local authorities issue film permits – the preeminent role has corresponded to broadcasters and public-private agencies.

Public and private universities, as well as other higher education institutions, have updated communication, film and media programs to incorporate the requirements of the TV industry. Private institutions have pioneered the creation of new career programs in TV production, digital editing, animation and special effects design. Schools that have developed these programs are Escuela de Arte Multimedial Da Vinci, and TEA Imagen.

Case III: Wine

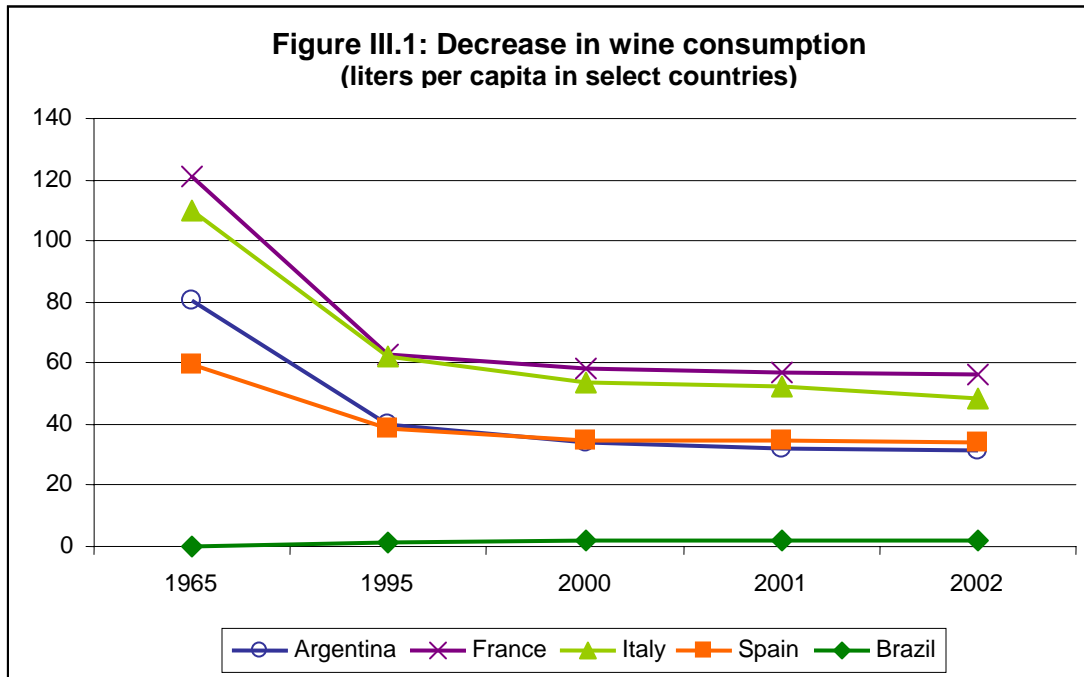
The emergence of a new type of fine wine in the 1970s offered an opportunity for wineries in Argentina to pursue the export of such products rather than dedicating themselves largely to the production of table wines for the domestic market as they had done in the past. The tastes of these new wines were radically different than those of traditional fine wines. To meet the growing demand for this type of wine, wineries would have to use new techniques in the growing of grapes, the making of wine and the manner in which they commercialized their products. Many of the techniques for producing these wines were pioneered by newcomers in this industry in countries like the United States and Australia. Consequently, wineries throughout the world which adapted these techniques would come to be known as “new world” producers even when they were located in countries that were traditional producers of wine. New world producers distinguish themselves from their “old world” counterparts by their scientific approach to the growing of grapes and the making of wines.

Wineries in Argentina captured part of this market for new-world wines by adapting a scientific approach to winemaking. Initially there was a high degree of uncertainty as to whether Argentine wineries could actually make this transition as no one in the industry had any experience with this approach to winemaking. Nevertheless Nicolas Catena Zapata was the first to prove to others in the industry that it was possible. As we will show, the real boom in exports of wines from Argentina occurred in the late 1990s after Nicolas Catena Zapata demonstrated that it was possible not only to produce a new style of fine wine in Argentina but also to sell it on the world market.

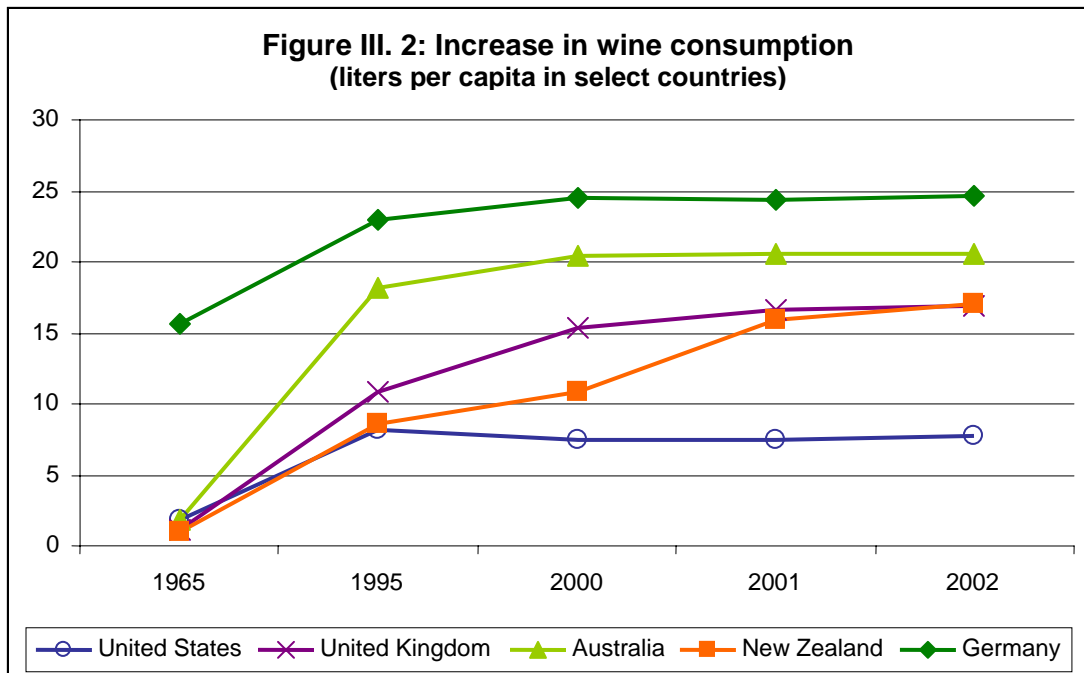
International trade

Starting in the 1970s and throughout the 1980s, world consumption patterns shifted away from lower quality wines and towards beer or higher quality wine. Traditional wine consuming countries such as France, Italy, Spain, and Argentina saw large declines in overall per capita consumption, but this was also accompanied by a substantial increase in the consumption of fine wines as some consumers of traditional wines started consuming fine wines while others switched to other alcoholic beverages. Figure III.1 shows the general decline in the consumption of wines across these countries. At the same time, new consumers of wines emerged in countries such as the United States, Australia and New Zealand. Consumers in these countries tended to consume fine wines made according to the new world criteria. Figure III.2 shows wine consumption in these countries over time. In particular, the United States and the United Kingdom became very large markets for wine. Consumption in the former grew from 1.1 liters

per capita in 1965 to 16.9 liters in 2002, while in the latter consumption grew from 1.8 liters per capita to 7.7 liters over the same period. Wine consumption in both these countries increased among people who were previously consumers of other beverages.



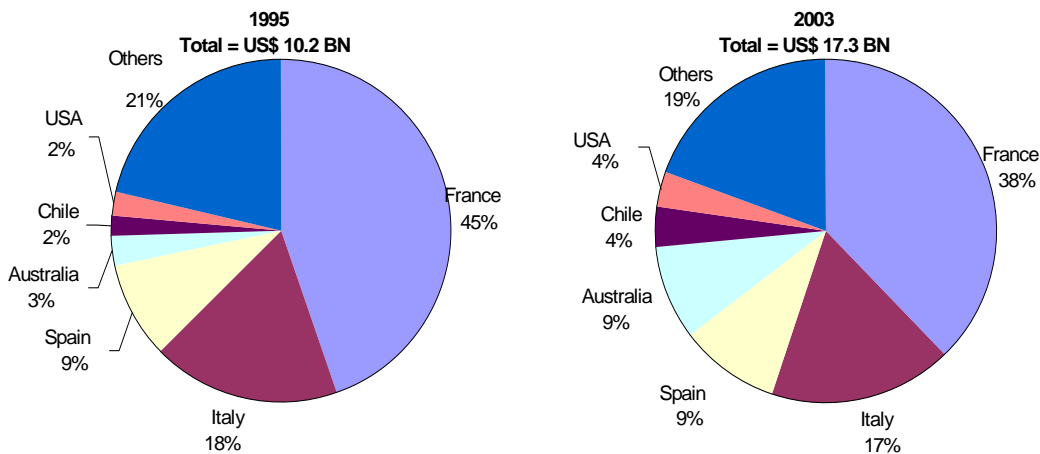
Source: Faostat



Source: Faostat

As a result of differences in consumption patterns and the emergence of new world wines, the international production of wines have shifted, providing new world producers a larger share of this market. This shift has continued even over the last decade as old world producers continue to loose market share to those using new world techniques. Figure III.3 demonstrates the loss of international market share by traditional wine exporters. Traditional producers such as France and Italy have lost market share to new world producers such as Australia, the US, Chile, South Africa and Argentina. It is particularly important to note that France’s share of worldwide wine exports dropped 7 percentage points from 1995 until 2003, starting at 45% of the world market and declining to 38%. This occurred even as some producers in France began embracing new world ways of producing wine. It is also interesting to note that the percentages of both Chile and the United States, two new world producers doubled. Each country saw their share of the world wine market go from 2 to 4%. The largest wine importers are the UK, the US, Germany, Japan and Belgium, in that order. The first three accounted for more than 50% of all wine imports in 2003.

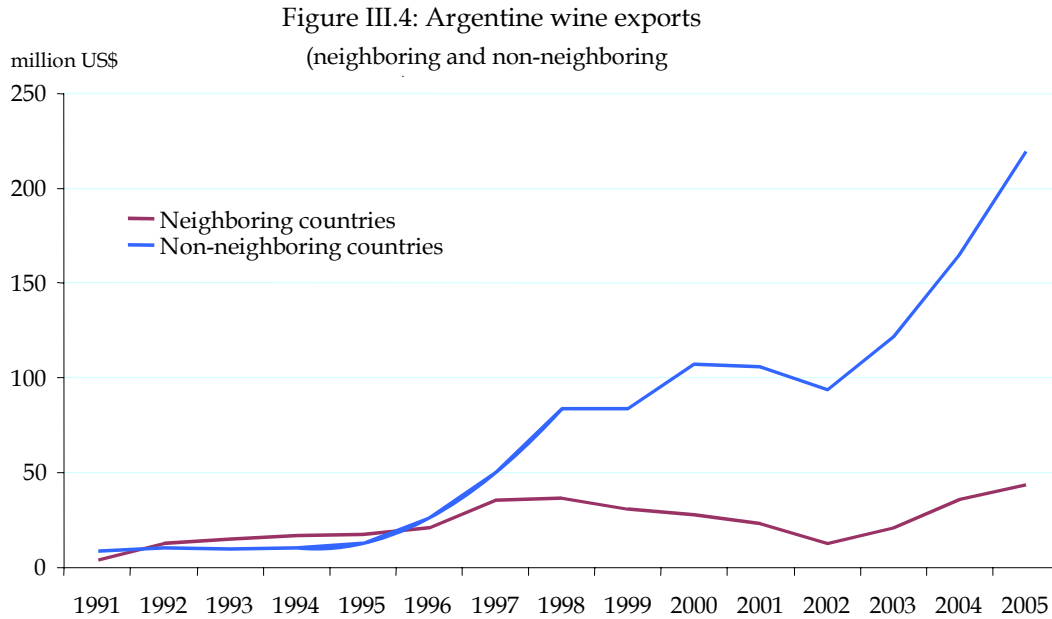
Figure III.3: Market share of the wine industry by countries



Source: Faostat

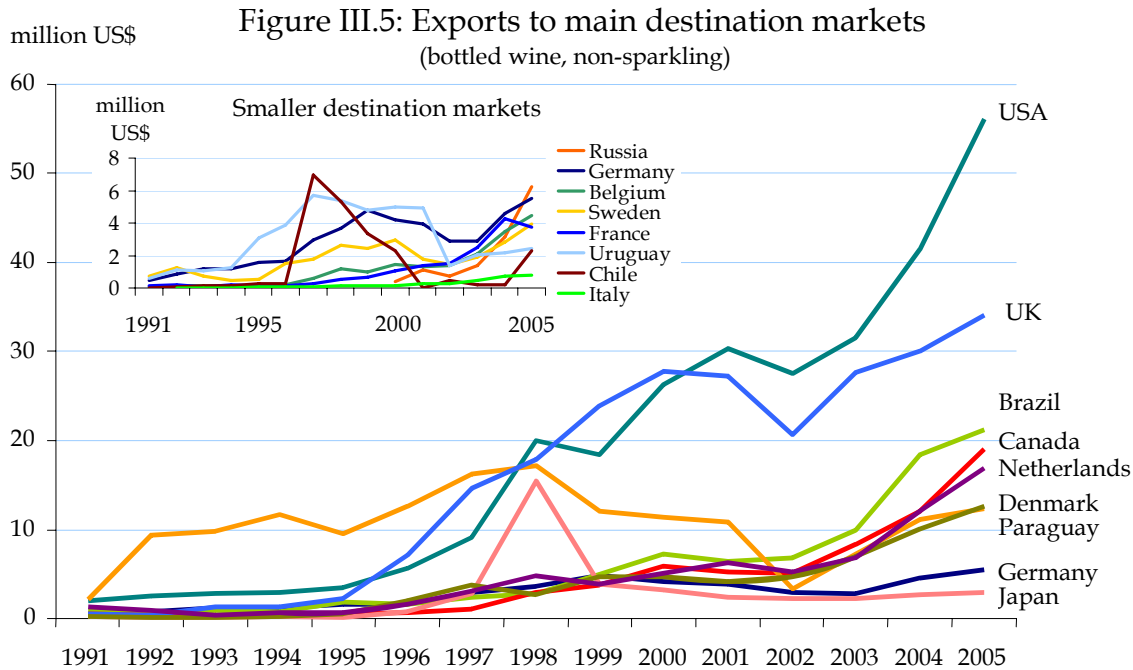
Argentina has been a large-scale producer of wines for decades, but production was mostly for domestic consumption. Argentina has been exporting table wines and grape must for decades. The majority of these exports have gone to neighboring countries. Only in the 1990s did exports of wine become a substantial fraction of sales in this industry. In 1991 Argentina exported US\$20 million of bottled and bulk wine. This figure has grown almost 15 fold to reach US\$299 million by 2005. Figure III.4 charts Argentina’s exports of bottled wine, broken down into exports to neighboring and non-neighboring

countries for 1991 through 2005. Total exports of bottled wine grew at an average annual rate of 23.8% over this period, with most growth occurring in the late 1990s and after 2003.



Source: National Institute of Wine Production

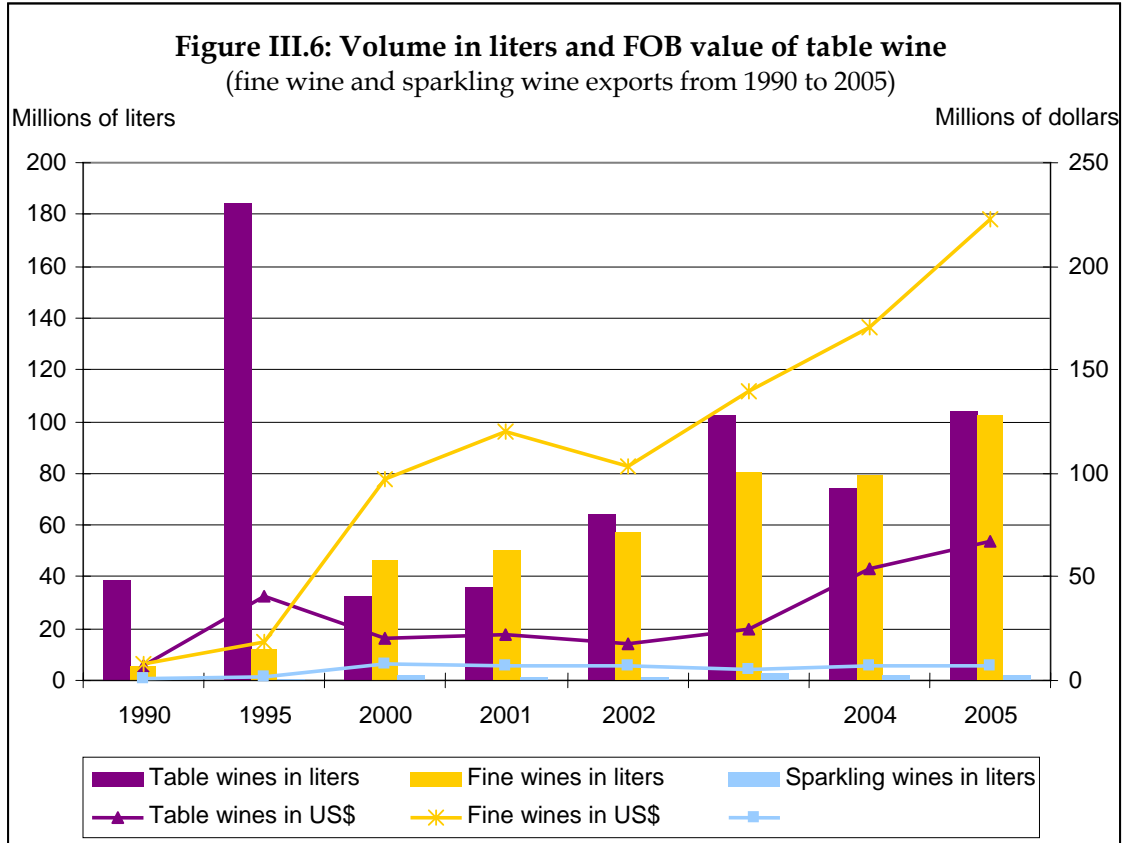
While exports to all markets have grown, the figure shows that most growth has come from exports to non-neighboring countries. Figure III.5 displays foreign sales of bottled, non-sparkling wine to Argentina’s main destination markets. The largest share of export growth has come from sales to the US, the UK, Brazil and Canada. Exports to these countries have grown steadily since the mid-1990s. Exports to Germany and Japan, which are large wine importers, grew mostly in the late 1990s and have since remained relatively constant. Exports to a number of smaller markets are also growing. The scope of countries to which Argentina exports wines has also grown. While it exported to 41 destinations in 1991, this number grew to 103 in 2005. Exports to neighboring Paraguay, an important export market in the early 1990s, did not grow over the period, while exports to Uruguay grew during the mid-1990s but have since declined.



Source: Customs data

Argentina is currently the fifth largest wine producer in the world by volume, behind France, Italy, Spain and the United States, and ahead of Australia, South Africa, Germany, Chile and Portugal. Although domestic consumption has declined over the past few decades, it still accounts for a substantive part of overall consumption. As explained below, export growth was driven almost entirely by upgrades to the supply side of the industry. Total wine consumption in the domestic market declined steadily from 67.6 liters per capita in 1981 to 33.7 liters in 2003. The decline has been entirely due to a lower consumption of table wine: Consumption of fine wine grew from 6.5 liters per capita in 1981 to 10.2 liters in 2003.

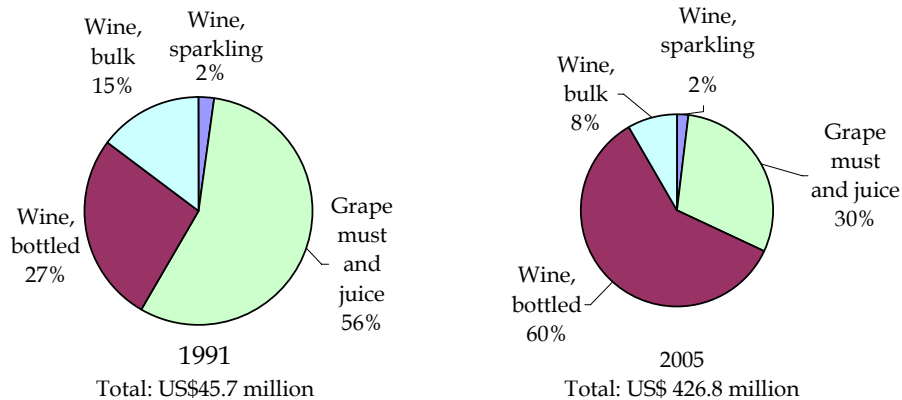
As shown in Figure III.6 wine export growth since 1995 has been driven by exports of fine wine: export values grew from US\$ 103.4 million in 2002 to 224.0 million in 2005, a growth of 217% over this three-year period. Table wine exports have also increased over the period, but have lost ground to higher quality wines: table wine accounted for roughly half of export value in 1990, but barely more than 20% of total value in 2005. Table wine exports spiked in 1995 and immediately afterwards due to harvest loss in Spain. Fine wines also displaced table wine in terms of volume, growing from a very low share of total volume in liters to equaling the volume of table wine exports in recent years. Sparkling wines account for a much lower share of foreign sales, and even though exports grew in the late 1990s, they have remained relatively stable since.



Source: National Institute of Viticulture

Figure III.7 breaks down exports of wine and wine-related products in 1991 and 2005. In addition to growth in the scale of exports, the figure shows that the bulk of exports has shifted from the production of bulk wine, grape juice and must to bottled wine. In particular, the share of grape must, grape juice and wine in bulk declined from 71% of exports in 1991 to 38% in 2005.

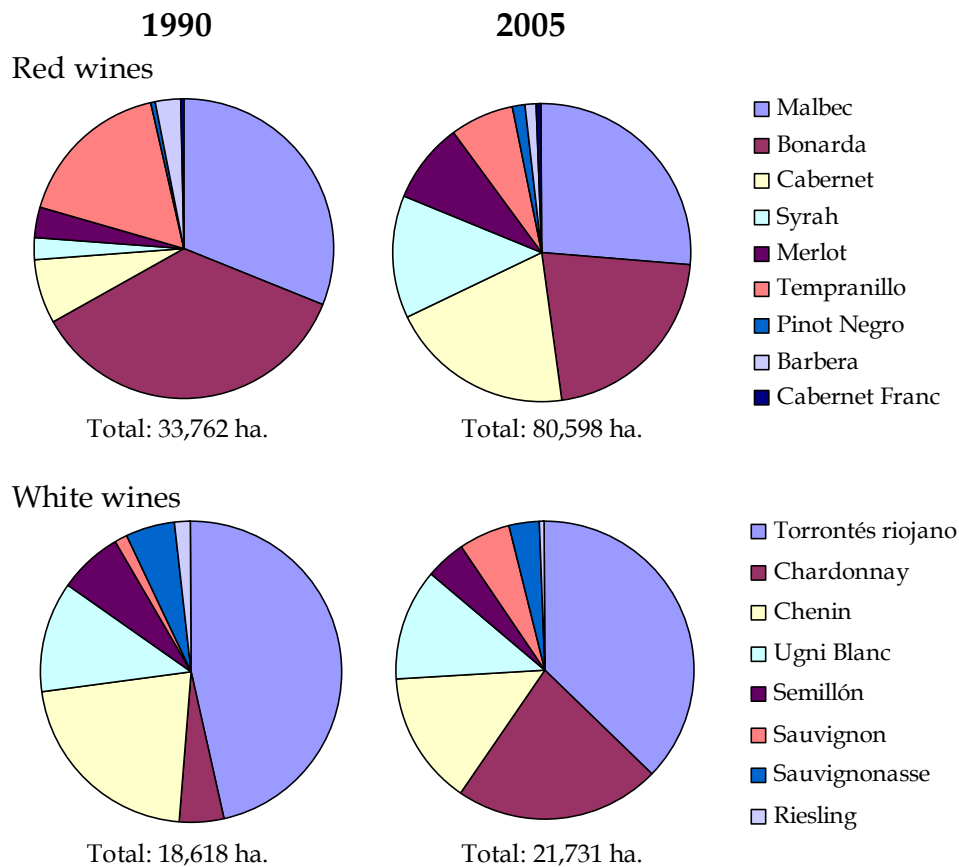
Figure III.7: Exports of wine and wine related products for 1991 and 2005



Source: Customs data

The decline in exports of bulk wine, must and juice was accompanied by the planting of new types of grapes targeted at the production of bottled wine; Argentine producers did not have to introduce new grapes to continue to produce bulk wines, grape juice and must as the type of grape used is of little overall importance and the transition of planting new grapes can take up to 5 years before they can produce significant harvests. Many grape varieties, such as Cabernet Sauvignon, Syrah and Merlot (red) and Chardonnay, Chenin and Ugni Blanc (white), have been introduced to Argentina over the past couple of decades. While Malbec is one of the most traditional grapes in Argentina used in the production of both table and fine wines, it has recently gained recognition for its use in wines made according to new world criteria. It is now known as this the signature fine wine of Argentina. Figure III.8 shows the percentages of the types of grapes used for the production of white and red wines for 1990 and 2005.

Figure III.8: Types of grapes used in wine production

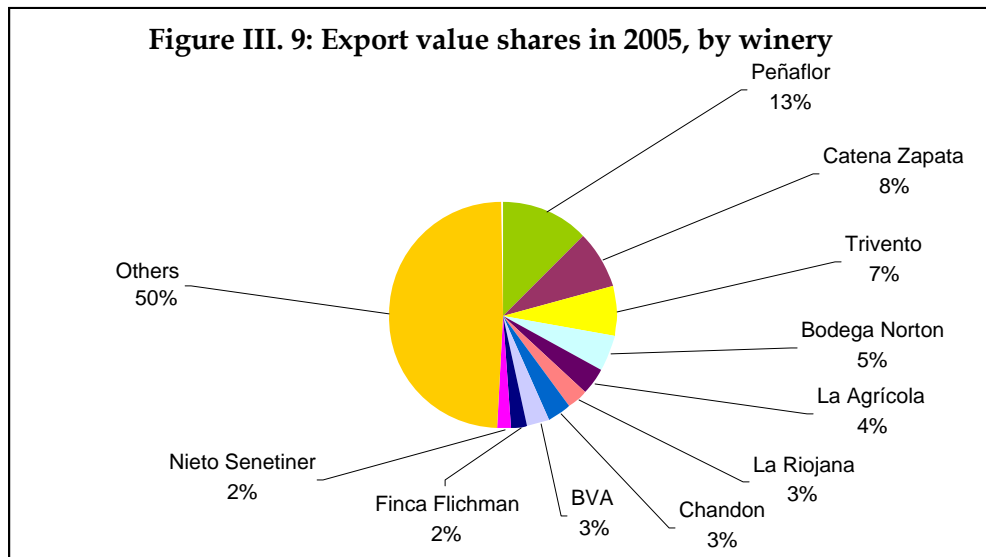


Source: Caucasia Wine Thinking

The wine industry's role as a lead export sector in Argentina is currently well established. More than 210 thousand hectares of grapes were under cultivation in 2006, and 929 wineries are registered with the

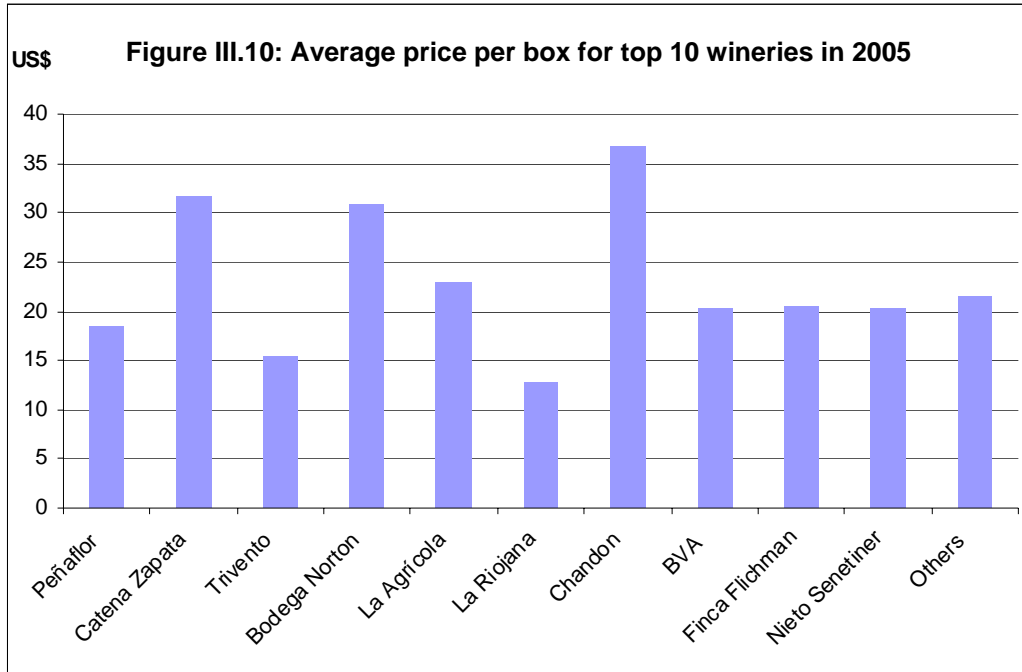
National Institute of Viticulture as currently operating in this industry. Not all of these wineries export their products. Those that do export are largely located in the provinces of Mendoza and San Juan. The province of Mendoza accounts for slightly over 90% of wine exports while the province of San Juan produces slightly over 6% of this total.

Figure III.9 shows export shares by the current top ten exporting wineries (in terms of export value in 2005). Peñaflores (Trapiche, Finca Las Moras, Michel Torino and Santa Ana wineries) is the largest exporter, with 13% of total sales, while Catena Zapata (Bodegas Esmeralda) accounts for 8% of export value. Trivento (owned by Chilean winemaker Concha y Toro) is the third largest exporter with 7% of foreign sales. The ten largest wineries accounted for around 50% of total exports, while the remaining 50% is shared between approximately 265 smaller wineries.



Source: Caucasia Wine Thinking

Export shares mask substantial heterogeneity in terms of sales prices. Figure III.10 shows that Chandon has the highest average retail price per box at a US\$ 37, whereas the retail price of boxes by Catena Zapata and Bodega Norton each sell at an average of US\$ 31. Peñaflores and Trivento, which are two of the top three exporters in terms of value, have lower average prices per box of wine. Chandon's high average price follows from exports of sparkling wine: 28.2% of the company's export value in 2005 consisted of sparkling wine, all of it sold to Latin American markets. Sparkling wine accounted for less than 1% of exports in 2005 for all other wineries on Figure III.10.



Source: Caucasia Wine Thinking

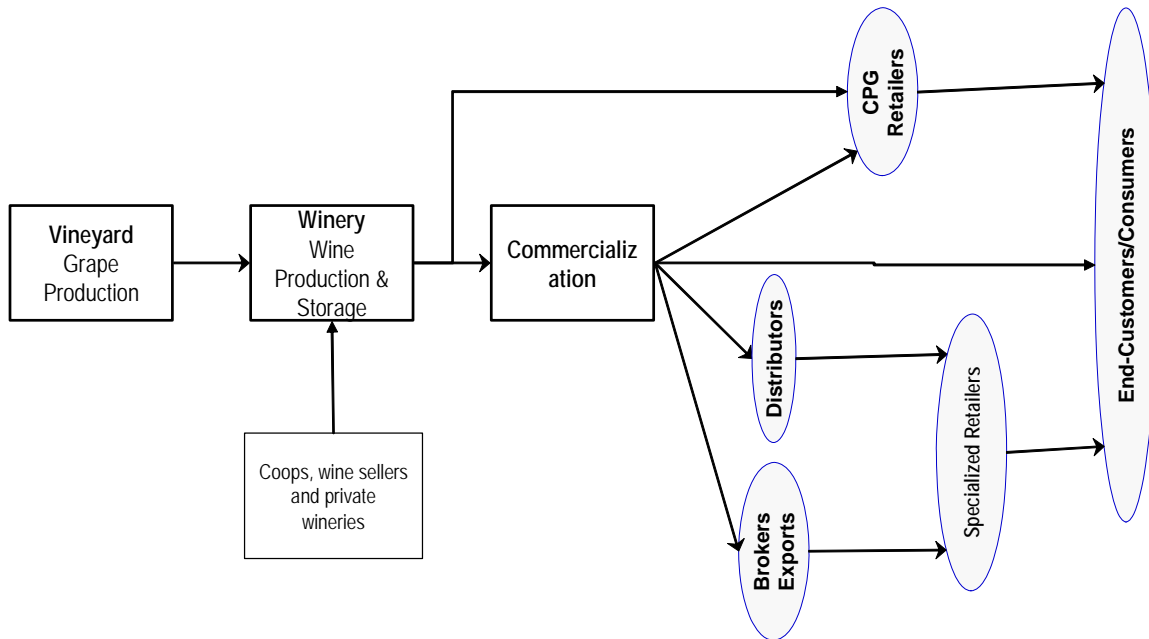
Out of these top-selling wines, Catena Zapata owns two of the highest priced labels: *Catena* wines were priced at an average US\$64.41 per box in 2005, while *Alamos* wines were priced at an average US\$34.97 per box. Diageo's *Navarro Correas Colección Privada* averaged US\$44.86 per box, while Peñaflor's *Trapiche Roble* averaged US\$ 34.50. Smaller wineries also register high export prices such as those on the *Catena* label, for example Achaval-Ferrer, Cheval des Andes, Clos de los Siete, Finca La Anita and Bodegas Caro, among others.

Value chain of the wine industry

This section provides a schematic description of the process by which wine is made and sold. Diagram III.1 illustrates the value chain of the wine industry in Argentina. Vineyards are depicted as the original suppliers, providing the key raw material for wineries. Wineries produce wine from grapes supplied by vineyards. Wineries also store wines, an integral part of the production process. The final role is the commercialization of the end product. Wines can be sold in bottles, tetra packs or in bulk. Commercialization is performed by the winery or by third parties such as brokers or distributors. Smaller wineries tend to work with brokers while larger ones generally work with distributors. Some wineries do actually work directly with large retailers such as supermarkets but this would seem to be rather

uncommon in this industry. Customarily brokers and distributors deal with retailers.²² Technically there is the possibility for wineries to sell directly to end customers but this is indeed rare in Argentina.

Figure III.11: Value chain of the wine industry



Grape production in the vineyard

Grape farming may be independent of winemaking or vertically integrated in the winery. Independent grape farmers sell their grapes on the spot markets or produce them under contract for specific wineries. Producers of higher quality wines tend to exercise greater control over how their grapes are grown. They do so by either owning the vineyards or working closely with their suppliers through long-term contracts. Usually they use a mixture of both strategies. They almost never own 100% of the vineyards that produce their grapes. Wineries producing lower quality wines tend to buy their grapes on the spot market. Larger wineries that produce both higher quality and lower quality wines tend to produce the vast majority of their own grapes for finer wines and buy the grapes for their lower quality wines on the spot market. The spot market for grapes made according to new world standards is rather limited as quality is not easily verifiable in that market and hence not paid for.

High quality grapes are the critical component of high quality wines. Grape quality depends on the plant and on *terroir*, the particular soil and general climate of a region. Hence, the location of grape production

²² In many states in the US there is a three-tier system requiring wholesalers to be independent from importers, so the distribution role is divided between these two agents. US regulations also impede domestic wineries from selling directly to consumers.

is a key determinant of wine quality. Although location can affect climate, variations in rain and solar radiation from year to year can affect quality. Growers can control for insufficient rain by irrigating crops, but they cannot control for excess rain or solar radiation. In recent years, enologists have begun working more closely with agronomists to better select the locations and conditions under which grapes are grown. This type of cooperation is not limited to vertically integrated firms, but also occurs between independent suppliers of grapes and wineries. One of the natural assets of Argentina for this industry is the fact that its soils can accommodate a wide variety of grapes as it has vast expanses of territory suitable for the production of high quality grapes. This provides Argentine wineries with a great diversity of potential products.

Suppliers of grapes for high quality wine have to coordinate production closely with potential buyers. Wineries producing high quality wine require specific grapes and growing conditions. Consequently, many wineries producing lower quality products do not want to wait until they are ready to make their wines to actually buy their product. They generally prefer to find their suppliers before harvesting actually occurs. Negotiations between these buyers and sellers are complicated by the fact that it is difficult to discern the quality of a grape before it is actually harvested. A grape which appears to meet certain levels of quality before harvest can diminish in quality by the time it is harvested. This decline in quality can occur through what buyers often claim is the improper use of fertilizers, the application of too little or too much irrigation and too little or too much pruning. Buyers and sellers of grapes often differ with respect to what actually should be done. Some buyers are weary of the possibility that a producer will not do what is necessary after a price is set before harvest while some sellers believe that buyers are trying to unjustly lower the price they are willing to pay. This problem is complicated by the fact that quality can actually vary within the same vineyard. Hence, buyers have to take samples from a variety of locations in the same vineyard when evaluating grapes. Suppliers of grapes are reluctant to cancel such contracts because the spot market does not generally sell grapes of higher quality. Hence, suppliers of grapes are subject to the hold-up problem.

Wine making

The process of making wine begins when grapes are harvested. The production of fine wines requires a careful selection of grapes when they are harvested. This selection begins in the fields with the manual inspection of every individual bunch of grapes on each vine to see if it is suited to be harvested. Then the grapes are either passed over a conveyer belt for further sorting or put directly in a grinder from where they pass to stainless steel tanks. Grapes destined for lower quality wines are sometimes harvested by machine rather than by hand. Such grapes do not go through the selection process on a conveyer belt.

After grapes are selected they are passed into stainless steel tanks in which the fermenting process occurs. After the prefermentation process is complete grapes are passed through numeric presses to separate the residuals of the grapes from the juice. The juice is then put back into a stainless steel tank for the fermentation process to continue. The fermentation process is nothing more than a chemical process in which the natural sugar of the grapes is turned into alcohol as gas carbons over time raise the temperature of the must in the container in which wine is being made. From stainless steel tanks wine can be passed into oak barrels or put directly into bottles, employing machines that can bottle up to a few thousand bottles per hour. Smaller producers do not have to own their own equipment as mobile bottling machines are readily available for rent.

Traditional wineries producing table wines had to upgrade their winemaking processes and equipment in order to start producing high quality wines. To produce high quality wines, wineries need refrigeration systems, grinding centrifuges, numeric presses, pumps, stainless steel containers, oak barrels, filters, fractionation equipment, and bottling equipment. Although the first fine wineries that emerged in Argentina had to buy all the equipment for the processing and aging of grapes from different suppliers, there has recently been a shift toward wineries buying all the equipment they need for a new establishment from a single supplier who helps with the installation of the equipment. These suppliers are usually foreigners who can offer better financing than what the owners can generally find in Argentina. This development has dramatically impacted national suppliers of winery equipment. Nevertheless, there are some producers of equipment in Argentina that import most of the components and produce tanks or sorters customized to the needs of their particular clients.

Wine commercialization, the distribution channel

The manner in which fine wines are sold differs from the way in which table wines are put on the market. The manner in which fine wines are sold internationally is distinctly different to that for table wines. Although both types of wines can be sold either directly to retailers or through a distributor or broker, differences in target consumer markets imply different sales and marketing approaches. While the former have to suit the general tastes of each particular market, the latter can be exported to practically any country. Retailers purchasing fine wine directly from wineries have to ensure that each particular wine will be appealing to a segment of consumers. In contrast, price is the most important issue for retailers buying table wine. A common practice in the table wine market is for distributors to purchase generic (unlabeled) bottles of table wine and apply their own labels. Whereas country of origin is not important for table wines, bottles of fine wine have to specify not only the winery and country of origin, but often also the region where the wine is produced.

History of the Argentine wine industry

Historically, Argentina was one of the largest per capita consumers of wine in the world. Starting in the 1940s the production of fine wines made in the old world style began to be replaced by the production of less expensive wines made with the same techniques. This shift was driven by the growth in internal consumption for such wines. In essence, the industry remained focused on producing these types of wines for the internal market until the 1980s when some firms began experimenting as described above. Until that time, few winemakers had ever traveled abroad and apparently little was known about how other world producers had been changing the way in which they were making their wines. The relative lack of imported wines further limited the ability of local producers to think beyond the ways they had been producing their wines.

The experiments of the 1980s began a shift from quantity back to quality but now made with new techniques. Although the consumption of table wines began to decline in the 1980s in Argentina, economic conditions and policies designed to support this declining industry during that decade made it difficult for producers to adapt to this change. The economic policies of the 1980s produced not only hyperinflation and negative growth but also price controls and output quotas, which actually lead to the destruction of some highly valued grape stocks. At the same time, hundreds of wineries and thousands of small grape producers were being artificially sustained by state-owned wineries. Other policies of the 1980s required producers to dedicate some of their grapes to the production of juice. This situation changed dramatically with the government of Carlos Menem and the liberalization and privatization policies that his government introduced in the 1990s. Inflation was curbed and price controls and output quotas were removed. The 1990s was indeed a double-edged sword for producers of wine in this country. While the economic stability and the convertibility plan helped the wineries by making imported machinery less expensive, the appreciation of the Argentine peso implied a substantial loss of competitiveness for Argentina wineries.

The importance of a stable economic climate for the wine industry is evident from a comparison of Chile and Argentina during the 1980s. Although both countries were witnessing a decline in the consumption of domestic wine, Chilean producers started the conversion process a few years earlier and were able to realize significant exports by 1985 when Argentine wineries were still experimenting. A few wineries were exporting from Argentina during the apparent period of stagnation in this industry until the 1980s but these exports were sporadic, one-time sales of wines produced for the domestic market using old world techniques. The uncertainties generated by unstable economic conditions in Argentina combined

with state policies supporting existing wines made it difficult for wineries to consolidate their experiments and for this information to diffuse throughout the industry. The regulatory climate simply made this upgrade unappealing.

The root of the growth of the Argentine wine industry lies in the transformation of the manner in which grapes were being grown and wine was being fermented outside of France in the early 1970s. The successful experiments that were taking place in California in particular led 11 judges, nine of whom were famous French wine connoisseurs, at an annual wine tasting in Paris in 1976 to judge a Cabernet Sauvignon and a Chardonnay from the United States to be better than French counterparts. This was the first time in the history of this event that French wines had not won this competition. In the past it was commonly assumed that producers outside of France were only capable of producing lower quality wines. This blind tasting effectively opened the door for what are now called new world producers.

In order to make and export this new type of wine Argentine wineries would have to adapt a new export business model which required wineries to change the way they made and sold wines. Although a few wineries in Argentina were experimenting with new techniques for growing grapes and fermenting wine in the 1980s, the process of conversion from the production of old world wines to the production of new world ones gained momentum in the early 1990s culminating in the entrance of large foreign wineries to this market toward the end of that decade. The dynamic growth of this industry in the 1990s until now can largely be explained by producers which successfully made this transition. The increase in the number of vineyards dedicated to the production of fine wines is evidence of a shift from growing grapes for old world wines, to growing them specifically for the production of new world wines. While in 1990 only 20% of vineyards were growing grapes for the latter category, this number increased to 43% in 2001. The real surge in this industry occurred after an article in the January 1996 edition of the *Wine Spectator*, the most prestigious trade magazine in this field in the United States, claimed that there were only 10 good wineries in South America, nine were in Chile and one was in Argentina. This one winery was Catena. By the end of the 1990s Argentine wines started gaining recognition as more wines from this country were being evaluated by the *Wine Spectator*. As can be noted in figure III.4, exports in this industry began to grow rapidly after the crisis of 2001/2002. Wineries that had upgraded their manufacturing equipment during the 1990s now had the opportunity to introduce their products to international markets, enjoying the advantage of a favorable exchange rate. After this crisis a substantial number of Argentine wineries began to travel abroad to trade fairs and international wine tastings. Some of these producers even started placing advertisements in the *Wine Spectator*.

Nevertheless, by the beginning of the 21st century there were still a large number of wineries that had not made the transition to the production of new world wines. In order to address the lack of quality wines available for export top producers, together with researchers from the National Institute of Agricultural Technology (INTA), formed a strategic plan for the industry in 2000 to develop a systematic approach for analyzing international and domestic markets and a strategy for helping lower quality producers to upgrade their products to meet new world standards.

Most of the large new world exporters in this industry are constantly experimenting with new techniques in new regions. Recently, there seems to be a trend for grape producers to move to higher altitudes. Changes in altitude normally produce dramatically different results. Much still has to be discovered as to how such grapes grow under different conditions. Many producers are actually experimenting with traditional Malbec grapes at different altitudes. Such experiments are necessary for winemakers to be able to continually elaborate different types of wines.

Domestic business model versus export business model

The transformation of Argentine wineries required these companies to face uncertainties regarding not only how grapes were to be grown and wines were to be made but also the manner in which these new wines would be sold abroad. In essence, they would have to apply scientific rigor to activities that they had previously undertaken based solely on traditions and accumulated experience within the winery. These old methods had to be abandoned and more scientific methods developed because the older methods did not enable companies to produce the type of wines being demanded by the emergence of a new class of wine consumers. This transformation was necessary because the market for traditional wines was declining and French wineries were still considered to be the only ones capable of producing traditional fine wines.

Consumers of new world wines who were looking for wines that were more aromatic and lower in alcohol content than the wines previously available. The only way to make such wines was by introducing techniques in the vineyard and in the winery which had been developed by new world producers largely in Australia and the United States. Hence, in order to succeed in this market Argentine producers would have to adapt these methods to conditions in Argentina. The transformation of this process in the vineyard would prove the most difficult as wineries had to conduct experiments to see exactly what type of grapes were suitable to the climate and soil of specific regions; many mistakes were made in this process as the transformation of this industry was taking place. Only with such knowledge

could they be able to produce wines that would be able to compete with other countries producing such wines. By comparison the uncertainties surrounding the fermenting and aging of wine were less as it largely involved importing the proper machinery and paying careful attention to each stage of the fermenting and aging process. The challenge in this area was introducing a scientific rigor to this process.

Until the 1990s exports of wines from Argentina were limited. Those wineries that did export merely sold the same products designed for the internal markets abroad. These wines were not tailored to the tastes of foreign customers. For the most part this was common practice in this industry throughout the world until 1976 when wineries from the United States demonstrated that new world techniques enabled wineries potentially from all over the world to compete with their French counterparts. Until the 1990s Argentina dedicated limited resources to exporting, choosing to take advantage of sporadic opportunities rather than seeking a systematic manner for penetrating new markets. Market research, for example, was practically non-existent as wineries would simply try to sell their product in a particular country without attempting to actually understand its market. In general wineries were focused on the internal market, viewing exports as merely a manner to diversify sources of income rather than an activity that needed a specific strategy. While earlier exports were largely sporadic sales of existing products, current exports are the result of specific efforts to penetrate foreign markets by upgrading quality and customizing wines to meet the general criteria of “new world” wines. If wineries can successfully make such wines, international markets could become the focus of their business rather than just a means for diversifying it. One foreign market could actually become more important for a producer than the market in Argentina.

Commercialization of wines abroad would provide the greatest challenge for wineries as it required them to establish channels of commercialization, while also requiring them to convince the world that Argentina was indeed capable of producing high quality fine wines made in accordance with new world standards. The new export business model required firms to develop relations with distributors over the long-term. This strategy was radically different from the manner in which Argentine producers had exported. Traditionally Argentine wineries did not develop coherent strategies for foreign markets but rather took advantage of sporadic, on-time business opportunities. This style of exporting did not require producers to actually take the tastes of consumers into consideration, neither did it require them to develop long-term relations with suppliers.

Product upgrade

New world producers target consumers who previously had drunk lower quality wines or other alcoholic beverages. These consumers generally do not like traditional fine wines made in the old world style as they are too bold their alcoholic content is higher than what these consumers are seeking. They are looking for wines that are lower in alcoholic content and more aromatic, fruitier and fresher, namely the type of wines produced by new world producers. Nevertheless, wineries can produce a great variety of wines which meet these general parameters. They can use a variety of grapes and elaborate wines in many ways because the tastes of consumers vary. This represents a challenge as well as an opportunity for wine producers as they have the possibility to produce a wide variety of products but they have to ensure that there are enough consumers of the type of product they are producing to justify its production.

Tastes vary particularly across countries. A new world wine that wins a prize in one country can be seen as being rough by consumers in another. Ideally wineries would like to design a wine based on an analysis of consumer tastes and then produce it but this proves impossible in practice as wineries have to use the raw materials provided to them by the area in which they produce. In the end, wineries have to sell what they produce. Argentina is particularly well suited to produce a great variety of wines as its soil can accommodate 28 different types of grapes. This is a particular advantage over Chilean producers as soil in that country is said to work with only 5 different types of grapes. In order to have the chance of selling a wine, it has to be made in accordance with the criteria outlined above, albeit using available grapes. In order to make such wines, firms have to change not only the way they are fermented but also the manner in which grapes are grown.

New methods for grape growing

The production of new world wines starts in the vineyard, not in the winery. When producing new world fine wines, wineries have to pay careful attention to the type and quality of the grapes they are using. First they have to be relatively certain that the type of grape they are producing can be used to make wines desired by their customers. Then they have to ensure that the place where they grow their grapes is actually well suited to that particular vine. Agronomists have to investigate the chemical attributes of soils to understand what types of grapes were best suited to a particular area. Part of this process involves importing new grape varieties to examine which works best in a particular region. In conducting this research, they have to consider that there are significant differences in soil in the same region. This fact holds even between two plots of land located right next to each other. Consequently agronomists and enologists have to have a solid understanding of chemistry in order to successfully analyze soils and

determine what grapes best suite a particular area. Still today vineyards are conducting new research on new terrain in order improve the variety of the wines they produce. They now understand why even a Malbec, a traditional grape used for the production of wine in Argentina, planted in one area tastes different from the same grape planted in a different area. This new way of growing grapes presents a radical break with tradition as it requires wineries to deal with a vast array of uncertainties about how small differences in *terroir* – the combination of soil and climate – can affect the tastes of grapes.

Differences in climates also have a profound impact on the quality of grapes produced. Since grapes used in new world wines have to receive a minimal amount of water, they are best grown in arid conditions. Grapes for new world wines are best grown in arid regions that are close to mountains which can provide an adequate supply of water. In essence, agronomists have to pay careful attention to how much water their grapes receive. If they receive to little water vines can die. However, if they receive too much water, grapes will not be suited for the production of new world wines. Yields from vineyards operated according to new world standards are lower because agronomists intentionally limit the amount of water these grapes receive and trim the vines so that grapes are smaller and flavors are more concentrated. Old world producers of lower quality wines seek to provide their grapes as much water as possible so that they will grow large and provide higher yields.

New world enologists closely observe the progression of the growth of the grapes to be used. If needed the enologist, usually working together with an agronomist, will manipulate the progress of grapes through irrigation or the use of fertilizers. Fertilizers are commonly used but also have to be strictly controlled as they can alter the taste of a wine. The most important decision is perhaps when grapes should actually be harvested. These are some of the critical decisions that can determine whether a wine can fetch a high price in the market place. Enologists can not make up for mistakes at this phase in the elaboration of a wine. This problem is complicated by the fact that techniques that are successful in other countries may not work in Argentina as climate and soil conditions are radically different across wine-making regions. Even techniques which work in some regions like Mendoza may not work in others like San Juan because of variance in climate and soil.

Although old world producers of finer wines realize that their wines are better when they receive less water, they do not pay careful attention to irrigation. Some of these producers are actually located in regions with varying amounts of rainfall from year to year. Hence, the quality of wines varies from year to year. This is largely the case for producers of old world wines in France. The major reason why the quality of wines made in France varies from year to year is the unpredictability of the climate. The

minimal variation in the climate in some regions of Argentina, such as Mendoza, helps wineries to maintain consistent quality from year to year. Conditions in these regions are arid but generally there is ready access to water from nearby mountains.

Unlike their new world counterparts *terroir* is considered by old world producers to be a given. New world producers on the other hand seek to understand minor differences in soils and climates and seek to plant the grapes that best suit the *terroir* of a particular region. As much as possible new world producers try to ensure that the conditions of the *terroir* in which their grapes are planted are the same from year to year. In dryer years, they irrigate their grapes more. Clearly, they can not control the fact that some years can witness relatively heavy rainfalls even in arid conditions. In the end they attempt to make sure that the quality of their grapes is at least the same if not better from year to year.

Nevertheless, there are no recipes for the elaboration of a good wine. No two years are the same. Enologists basically monitor the conditions under which their wines are grown and then see what type of wine they can produce from the type of grape that emerges from these conditions. There is always some variation. Wines from different years are never the same. Although some observers contend that there are no variations in climatic conditions in Mendoza, there are minor changes every year that can make a difference in the type of wine to be produced. In the past vineyards simply never paid attention to what would appear to be minor variations. Clearly these variations are not as dramatic as what occurs in traditional regions in France, but they are critical for the elaboration of finer wines.

Producers worked according to old world standards do not conduct any scientific experiments on soils to see if they can use different grapes. They simply plant the grapes that have been traditionally used in a particular region. Growers work based upon tradition. They do not know why a particular grape works well in a particular region. Their focus is quantity instead of quality and therefore they often heavily irrigate their crops to make their grapes grow bigger and produce greater yields. They are unaware of why a particular grape grows well in a particular location. The focus on quantity over quality does not require suppliers of grapes to work closely with wineries. There are still a significant number of vineyards that produce grapes according to old world standards and they supply wineries that customarily also work according to these standards. The spot market for grapes that still does exist in Argentina is largely for such producers and suppliers. Producers of fine wines buy grapes on the spot market only for their lower quality wines. The critical difference between producers of lower quality wines and their higher quality counterparts is the level of attention paid to the conditions under which the grapes they use

are grown. Hence, it is not surprising that for lower-quality, new world wines companies tend to rely more on their suppliers and even buy some of their grapes on the spot market.

The level of uncertainty in the production of grapes for new world wines is higher. Wineries have to work closely with independent vineyards in order to ensure that the grapes they grow are exactly suited to the wines that a winery wishes to produce. Some wineries deal with this uncertainty through vertical integration. Unlike their old world counterparts, new world producers have to ensure that the grapes their suppliers are growing suits the particular terrior of the region in which the supplier is located. In general it is advisable for a winery either to work with a supplier who already has a vineyard suitable to the grape they wish to produce or buy a vineyard with vines already planted in a region suitable to the grapes they want to use. To plant new grapes is a long term investment as it takes 5 years after planting before a vine can yield the type of grapes that are really suitable for use. Yields are customarily less than half of what they can produce using old world techniques but this is compensated with a higher price. The fact that wineries are looking for very specific grapes grown under particular circumstances makes it difficult for them to find the grapes they are looking for on the spot market. Nevertheless, the majority of new wineries begin by buying grapes from suppliers with whom they work very closely instead of planting their own. This provides them the flexibility to change grapes and experiment before they actually decide what grapes they wish to plant.

Although most wineries begin by buying their grapes from independent vineyards, they generally end up buying their own land and planting their own grapes in order to reduce uncertainty and have stricter control over how the grapes are grown. Some suppliers can provide excellent grapes for two years but then fall short in the third largely because the supplier starves the vine of water for two years. By the third year, the vine has suffered irreparable damage and can not produce the quality of grapes required. Some wineries in Argentina address this problem by working closely with their suppliers and providing them the training and supplies they need. Another strategy for addressing this problem, sometimes employed by the same winery using the previous one, is for a winery to simply rent a vineyard and take over its operation. Regardless of whether a winery decides to work closely with a supplier, rent a vineyard or simply buy one, the critical difference between the new world style of production and that of the old world is the close cooperation between agronomists and enologists. Close coordination between these two parts of the supply chain is critical for new world producers to be able to produce the types of wine expected by consumers of this product.

New methods for winemaking

Although new techniques for growing grapes had to be tested and adapted to the particularities of different climate in Argentina, technologies and techniques for upgrading wineries were readily available in the 1980s. If firms could grow new world style grapes, all that remained was for them to import stainless steel tanks and 225 liter oak barrels. Naturally, they would also have to have an enologist who was able to produce wine according to this new style. In essence, the approach of an enologist working according to new world standards is more scientific than their old world counterparts. In many ways the actual manner in which wine is made has changed little with the introduction of new world wines. The critical difference lies in the scientific approach to wine making.

As mentioned above the making of wine actually begins with the selection of grapes in the field. This process is customarily done manually in Argentina with workers checking each bunch of grapes to see if it is ready to be picked and in the proper condition for making wine. Grapes destined for fine wines are then passed to a conveyer belt in which they are further sorted. At this time twigs and leaves that happened to have been collected with the grapes are discarded. This inspection can be quite extensive. Some of the highest quality producers in this industry have more than 12 people working on the same conveyer belt to properly select the grapes needed for a particular wine. Other quality producers can have five or six people working on this conveyer belt. After this selection is done, grapes are passed through a grinder. Producers of lower quality wines do not undertake this part of the selection process but rather pass their grapes directly to a grinder. In this process enologists have to pay careful attention to the details of how grapes are actually selected. In the past such careful attention was not necessary.

After the grapes have been selected they are then generally passed into stainless steel tanks for processing. Grapes destined for finer quality wines are lowered into these tanks through specialized designed stainless steel containers. Grapes destined for lower quality wines are generally transferred to these tanks through hoses. Producers of finer wines use the former process as they believe the sucking process required to transport grapes through hoses actually damages the grape and affects the quality of the resulting wine. After a period of prefermentation in stainless steel tanks, the must is put through a numeric press to eliminate all of the residuals of the grapes and leave a pure liquid. Then, this must is put back in a stainless steel tank in which the actual fermentation process occurs. Before the invention of such tanks grapes were put in 5,000 liter oak barrels in which the prefermentation and fermentation occurred with residuals being removed at the proper moment. The use of stainless steel tanks, unlike that of 5,000 liter oak barrels, enables enologists to strictly control the temperature of the must during the fermentation process. Old world producers did not use stainless steel tanks and therefore attempted to

control the fermentation process somewhat by putting the oak containers in which this process occurred in cool areas, usually underground.

Stainless steel tanks enable new world producers to closely control how the fermentation process occurs, thereby enabling enologists to better control over the final product. By strictly controlling the fermentation process enologists can better shape the type of wine they produce. The temperature of the fermentation process shapes not only the speed at which this process occurs but also the taste of the wine. To further control the flavor of the final product, enologists can also strains of bacteria to reduce the acidity of a wine. This process was unknown to old world producers yet it is commonly used by their new world counterparts to produce the smooth, lighter wines generally expected by their clients. Enologists have to pay careful attention to these details and adjust the temperature of these tanks on a continual basis. This type of control was unnecessary under the old style of making wine.

The fermentation process is triggered by the yeast. This process produces carbon dioxide and alcohol. Some new world enologists actually introduce yeasts into must as it is being fermented. In general this is not required as grapes already have a natural yeast visible on its outer shell. Fermentation can occur with this natural yeast but the results are sometimes unpredictable as they depend on the nature of the yeast present on the grape. Currently some wineries are experimenting with the use of genetically modified yeasts as a means to gain even greater control over the fermentation process. Hence, enologists making new world wines have to keep up to date on new developments so that they are able to compete with others that are making these advances. In the past, this attention to detail was not necessary as enologists did not exercise this type of control over the fermentation process.

Enologists can control the alcohol content of a wine by carefully measuring the sugar content of the grape to be used. Enologists can use a saccharometer to determine the exact sugar content of a grape and thereby determine the exact alcohol content of the wine to be produced. As mentioned above, this is critical for new world wines as generally customers of these wines are looking for products with lower alcohol content. Naturally if consumers change their tastes and start seeking more alcohol in their wines, enologists working according to new world standards can adapt to this change by carefully selecting grapes that have a higher sugar content. Working with agronomists they can actually change the way in which their grapes are grown so that they produce grapes with higher contents of sugar. Producers of lower quality wines actually add sugar to must in order to achieve higher alcohol content. The critical distinction between new world and old world producers in this context is the fact that old world producers

did not understand the exact chemical processes involved in fermenting wines. They knew simply that alcohol content could be raised by artificially adding sugar.

Customarily new world wines spend a few months in stainless steel tanks even after the fermentation process is complete. Lower quality wines are generally stored in rubber coated cement tanks so as not to occupy space in the relatively expensive stainless steel containers. Wine can be stored in stainless steel or cement tanks as long as desired by an enologist. All wines are actually mixes of different grapes. Varietals, wines that carry the name of the grape on the bottle, have to be made primary from the grape on the label. Lower quality and higher quality wines are actually made from different mixes of grapes and therefore do not carry the particular name of a grape on the label. Enologists who produce high quality wines pay careful attention to the mix of grapes they use in making their wines.

Lower quality wines are generally sent straight from these tanks to bottles. Higher quality wines are stored at least for a few months in 225 liter oak barrels. The highest quality wines can spend as much as 18 months in these barrels. This process enables the wine to take on the tastes from the barrel. Enologists carefully chose the barrels in which this aging process occurs. They are generally French or American oak barrels that are toasted differently, ranging from light to medium to heavy toasting. The enologist selects the origin of the barrel and the degree of toasting based upon the type of wine she wishes to create. Finally wine is put in bottles after the aging process is complete. It does not have to be shipped directly after this process is complete.

Marketing upgrade

The techniques for marketing new world wines abroad are dramatically different than those previously used by exporters of old world wines. In the past, wineries exported what they produced for the domestic market and did not focus on adapting their wines to tastes abroad. In contrast, wineries have to follow basic trends dictated by consumers in order to sell new world wines on the global market. These trends change gradually over the years and have to be followed if wineries are to be successful in the international market. Yet, these trends are not very specific. Over time, customers have demanded wines that are less aggressive and easier on the palette. In general consumers are looking for fruity wines that have at least a hint of flavoring derived customarily by aging in 225 liter oak barrels imported from France or the United States; clearly some consumers seek wines with other characteristics but in general the current world market is dominated by demands for such wines. The goal of new world producers is to work within these general guidelines to develop wines with very specific tastes. This task is complicated

by the fact that consumption of the type of fine wines consumed varies over time. Preferences for specific grapes and for general tastes vary over time.

Wineries often experiment with different grapes to capture specific niches within the market. However, they generally concentrate their business on producing one or several of the classic wines in this business, namely Malbec, Cabernet Sauvignon, Chardonnay, Sauvignon Blanc, and Merlot. Syrah, a wine introduced by Australian producers is a relative new comer that is gradually becoming one of these classics. Even within these classic wines enologists working together with agronomists can create wines with distinctive characteristics and tastes by using the same grapes from different areas – differences in terrior, including the altitude of a particular piece of land provide different tastes – and/or elaborating wine in different ways as outlined above. Minor changes in climate prevent even the same enologist from making the same wine year after year. The job of the enologist is to fit her wines within this general framework but also provide them an individualistic flavor. At the same time, enologists try to surprise their clients every year with new, if subtle, twists in the wines they make. Enologists constantly taste each others wines to seek to understand how they are made. Even if an enologist can understand basically how a wine was made, she can not reproduce it as the conditions under which the grapes are grown is quite different. At the same time, an enologist has to listen to advice provided by their foreign sales representatives so that they can try to adapt their wines as much as possible to trends in their target market(s). Ideally these representatives would like to design a product and have an enologist produce it. Although enologists can adjust the attributes of their wines to different tastes, the limitations of their vineyards and *terroir* place significant limits on their ability to fully adapt wines to the specific attributes outlined by their sales representatives.

Producers of fine wines find it beneficial for marketing purposes to develop icon wines, a wine that sells for more than \$50 a bottle. Quite often the production of these wines is not profitable because despite their high price, the volume produced is customarily very low. It can be as little as a few hundred bottles. Yet, these wines provide a winery exposure in some of the more important wine magazines such as the Wine Spectator. Paradoxically, the average consumer generally does not like such wines. They are radically different from the fine wines they usually drink. Nevertheless, the production of such wines by a particular winery is generally seen as a signal to consumers that it is a high-quality wine producer. Hence, the image generated by the creation of such wines can help to improve the sales of a winery's "lower quality" wines. Nevertheless, wineries tend to first produce higher quality wines and then move toward lower quality brackets. Although this is more difficult than moving from lower quality wines to higher quality ones from the standpoint of production, it does provide a level of prestige to a winery

which then customarily spills over into their other lines of wines. In essence, an icon wine serves as a driver to communicate the high level of quality of winery's operation.

While the preferable strategy for wineries is to move from higher quality wines to lower quality wines, the evolution of the taste of an individual consumer of fine wines goes in the opposite direction. They buy lower quality wines of the brands or countries that they believe, perhaps because of the ability of particular wineries to prove their ability to produce icon wines, to be of a high quality. If they like these wines they are likely to move to more expensive wines from the same country or winery. Hence, the reputation of a particular country can prove critical for the sale of wineries from that country. At the time of purchase, consumers are faced with an extremely broad offering of wines from a wide variety of countries. There are good wines that don't sell because either the winery is unknown and/or because the country of origin is not known by the consumer to be a producer of fine wines. Although consumers like to try different wines, they face a high level of uncertainty when making their choice. Hence, they customarily base their choice on what they know about a particular winery and/or a particular country. Hence, country of origin is particularly important in this industry. The same is true for the region in which the wine is made. Wineries are generally interested in promoting quality within their region as they are aware the consumers often associate wines with regions. Hence, if they drink a bad wine from a particular region, they are less likely to drink another wine from that area.

Because the country of origin is critical for consumers when selecting the wine they wish to drink, the quality of wines offered by wines from a particular country takes on particular significance. Quality should not be confused with taste. Consumers expect lower priced wines to taste inferior to higher price ones. In essence, they have a general idea, for example, about the taste of a \$6 bottle of wine. If this wine does not have the quality of a \$6 dollar bottle of wine, consumers are not only less likely to buy a more expensive bottle of wine from the same winery but also may assume that all wines from the same country have a lower quality than what actually may be the case.

Marketing by a winery is a critical tool for convincing consumers that it can indeed produce high quality wines. The same would seem to be true for countries. Naturally, countries and wineries have to make wines that live up to the reputation generated by marketing campaigns. Marketing can be conducted through channels such as advertisements in relevant trade magazines or even wider publicity campaigns targeting a broader audience. However, marketing also occurs when the product is actually consumed. Unlike the majority of products on a lunch or dinner table, wine and beer are some of the few that actually display a label. The consumer does not know the origin of the many products on the table.

Labels on bottles of wine basically act as a means for marketing the product people are drinking. Hence, they are a critical component of a winery's marketing strategy. People often examine bottles of wine to learn about its origin. Hence, the label has to be attractive and communicate key elements about the wine to the consumer. Consumers pay attention not only to country but also the region of origin. They also expect to find a brief description of the wine that describes its characteristics and perhaps some details about how it is made. If the wine is aged in oak barrels this is generally mentioned as it is taken as a sign of quality. Like any piece of marketing in this industry, the wine has to meet the image portrayed on the label. At the same time, wineries basically try to convince the consumer that they are drinking something that is actually more expensive than what they paid. Naturally, wineries have to ensure that labels do not peel off the bottle. This is a sign to the customer that the quality of wine is lower than what the winery is usually trying to communicate. This was a common problem for the wine industry that has been resolved simply by wineries paying more attention to this issue and making minor corrections in how labels are applied.

The commercialization of Argentina wine internationally is dramatically different than what it was when wineries focused on the domestic market. Now wine producers have to develop the appropriate channels to distribute their wines internationally. International wineries that open branches in Argentina have a particular advantage in this area as they can leverage their existing international commercialization channels to sell their wines produced in Argentina. Wineries that are not owned by foreign companies face the challenge of creating their own network of international distributors. The majority of foreign subsidiaries would seem to use the existing distribution networks of their international owner.

Domestic wineries that are not at least partially owned by foreign companies have two means for selling their wine abroad. They can work through an intermediary that sells their products to different markets throughout the world or they can have an agent in each particular country in which they want to sell. The agents can be importers, consignees or supermarkets. Small and medium size wineries tend to use intermediaries while larger players tend to have their own agent. Sometimes foreign consultants help establish connections for Argentine wineries to sell their products abroad. Commercialization through operators usually involves firms bearing some costs for marketing and distribution in the country to which they are exporting. While table wine producers do not have to necessarily invest in marketing their wines, managing a customer's perceptions becomes more critical for finer wines. Many of the big distributors want companies to provide them with a wide variety of wines. So it is not worthwhile for wineries to concentrate on the production of just one wine.

Distribution channels are increasingly consolidating. This is especially true in the UK. Like distributors, supermarkets also want a large variety of products to offer their clients. One of the challenges of wineries working for such distributors is meeting the strict controls for quality demanded by these clients. Sometimes these distributors send their own controllers to check the operations of the wineries that supply them. Having a well-made product is not enough to ensure that a distributor or a supermarket will buy it. These companies are increasingly demanding a high quality of service from the back offices of wineries. Supermarkets and distributors demand that wineries meet their particular needs and consistently fulfill their orders. If they find that a winery is unable to do so, they are ready to switch to alternative winery. Too often exporters in Argentina in this business overlook the fact that they have to support their sales. The product is not the only thing that they are selling. They are also selling services to their clients. These issues are particularly important for large producers of lower quality wines as logistical considerations can prove to be quite complicated for wineries focused on sales of volume. This issue is less important for average producers of new world wines that do not have to sell large volumes.

The wineries that export to the United States tend to work with one distributor that manages sales of their wines throughout the country. Laws on alcohol consumption in the United States vary from state to state so it is nearly impossible for a winery in Argentina to directly conduct their sales in that country. As for England, there is an important difference between off-trade, namely sales in supermarkets, and on-trade, sales in restaurants and bars. Wineries that wish to pursue real volume have to sell their wines off-trade. Although most wineries would seem to work through wholesalers some have managed to sell directly to supermarkets.

Pioneer

Nicolas Catena Zapata was the first person to elaborate a new world wine in Argentina *and* successfully sell it abroad. In 1992 he sold his first bottles of fine wine abroad for a US retail price of \$15 dollars a bottle, making him the first to reach this milestone for Argentina. Even Chilean producers up until this time had been unable to sell wines at this price on international markets. Thus, Nicolas Catena Zapata was able to set the benchmark not only for the Argentine industry but also for their rivals in Chile producing a wine that he could sell at this price. He effectively demonstrated that it was possible for Argentine producers to reach this level of quality. Shortly thereafter other Argentine wineries followed in his footsteps. In the meantime, Catena continued to work on improving the quality of his wines. In 1997 he was the first Argentine wine producer to sell an icon wine, fetching a price of \$80 in the United States.

In this sense, he was pushing the industry to reach even higher benchmarks after his initial success in 1992. In order to make these achievements Nicolas Catena Zapata had to transform his traditional old world style winery and establish a new network of distributors who had previously not known that an Argentine winery was capable of producing wines that would be appealing to new world consumers. The actual techniques for transforming his vineyards and changing the way in which his winery elaborated wines would come largely through the diffusion of techniques from other new world producers while his distribution network was established through his own efforts of traveling and convincing distributors and leading journalists that his wines were indeed worth the price of some of the higher quality wines in the world.

Nicolas Catena Zapata has strong roots in the wine industry of Mendoza. The Catena family first planted a vineyard in Mendoza in 1902 with the goal of providing wine for the domestic market. Over the years the family was able to increase not only the number of vineyards it owned but also the size of their wineries, making this winery one of the largest and most prosperous in Argentina. Nicolas took control of the family business in 1963, ushering in an expansion and diversification of the firm. By 1976, Catena's winery was producing over 20 million bottles of wine, making Catena one of the world's largest wineries. Now Catena has 2,000 hectares and an annual production of 30 million liters. Bodegas Catena Zapata owns parts of Escorihuela, Sacon, Esmeralda and Rutini wineries. At the time when he took over his family's winery, Nicolas was studying for his Ph.D. in economics from Columbia University in New York. He would travel back and forth from New York on a regular basis while studying for his Ph.D. in order to continue to run the family business. His experience living in the United States would provide him intimate knowledge of the how to do business in that country.

By 1979 Nicolas had transformed his company into the leader in the Argentine market. At that time, the company was selling 38% of the wines consumed in Argentina, being the leader in all categories of wine except for one in the medium price range. In the beginning of 1980 Nicolas decided to sell off his lower quality wineries and focus only on the production of high quality wines. When he sold these wineries, he was not thinking about exporting. He simply sold them to take advantage of over valued asset prices in Argentina at that time. Like many other old world producers at that time, he did not believe that it was possible for wineries to compete with French fine wines. There was a common belief that only French *terroir* could produce such wines. Clearly the blind tasting of 1976 had shown otherwise. Nicolas was aware of this event but he knew very little about how this tasting was actually in the process of transforming the world wine industry.

In the latter part of 1980 he accepted a position as a visiting professor with the Department of Agriculture and Resource Economics at the University of California, Berkeley. He accepted this position so that he could further his studies on pricing policy and inflation. His position with Berkeley had nothing to do with the production of wine. Nevertheless, 15 days after arriving at Berkeley he decided to take a tour of wineries in the nearby Napa Valley. The first winery he visited was the one owned by Robert Mondavi, one of the wineries responsible for revolutionizing how wine was being made in California. Nicolas became particularly interested in Robert Mondavi's obsession with quality. On his trip to Mondavi's winery and his subsequent trips to other wineries in Napa Valley, Nicolas realized that the production methods at his winery in Mendoza were "prehistoric". The technology and methods used by Nicolas in his wineries in Mendoza were of Spanish and Italian origin and were far outdated according to what Nicolas was seeing in Napa Valley at the time. He had never imagined that science could be important for the production of wine. During his trips to Napa he realized that enologists in Argentina were not as rigorous as those he met in California.

Nicolas would remain at visiting professor at Berkeley until 1984. During his three years as a visiting professor there, he would travel back to Argentina roughly once a month to continue running his family winery. Over his three-year stay in California, he would continually travel to wineries in Napa Valley improving his understanding of how to make new world wines and befriending many of the owners of top wineries there. One of his most important friends during his stay in California would be Robert Mondavi, a person who happened to have a B.A. in economics from Stanford.

Although Nicolas Catena Zapata was often traveling back to Mendoza during his stay at Berkeley, the real transformation of his winery began in 1984 when he returned to start transforming his winery into one modeled after the new world producers he had seen in California. His vision was to transform his family's wineries into new world competitors that would export a substantial portion of their wine. His decision to transform his winery, according to Nicolas, was not based on a detailed economic analysis of potential markets but rather a desire to emulate the success he had witnessed in the United States. He realized at that time that producers in the United States were competing directly with French producers in the market for fine wines. His goal was to do the same.

After returning to Mendoza in 1984, he began researching the best areas in the province to undertake his experiments while at the same time importing clones of new types of grapes from France and California that he thought would be suitable for the climate in Mendoza. He knew that he would have to select those grapes that would provide minimal yields per hectare. He had learned in California that this was the only

way to produce new world-class wines. During this experimentation phase Nicolas Catena realized that Mendoza was perfectly suited for the cultivation of grapes for high quality wines because rainfall in that region is relatively scarce. He first experimented with Chardonnay and a Cabernet Sauvignon, two grapes that were practically unknown in Argentina but perhaps not out of coincidence were the two grapes used by Californian producers in 1976 to win the blind tasting in Paris. In the process of his experiments he recognized that he was making many mistakes. Although the cost of these experiments were relatively high, he realized that even if the experiments were a complete failure he would not have jeopardized his entire business.

These first experiments lead Nicolas in 1986 to produce his first wine made in accordance with the style of new world producers. This wine was an experiment that he only sold in the domestic market. First he wanted to see if he could do it before venturing into attempting to sell his wines abroad. After producing this wine he realized that his wineries were still far behind those which he had seen in Napa Valley. While he was conducting his experiments on new world techniques he was traveling on a regular basis to California to learn how to improve what he was doing. Nevertheless, the results of his first experiment leading to the production of his first new world wine in 1986 made him realize that he would need the help of international consultants if he was going to be able to produce wines that could effectively compete on world markets. Consequently, Nicolas contracted top consultants on new world wines from Italy, California and France. The first consultant he contracted was Paul Hobbs, perhaps one of the most famous consultants responsible for transforming many wineries in California. For Nicolas his investment in contracting these consultants was the key to his success.

With the help of these consultants, Nicolas was able to develop wines that he could sell on the world market. The grapes that he harvested in 1990 were transformed into the wine that he sold in 1992. By being able to sell his wine at \$15 dollars a bottle, he was setting the benchmark for those to come. Now Argentine producers knew it was possible for them to produce wines that were even potentially better than their Chilean counterparts. These new wines, a Chardonnay and a Cabernet Sauvignon, were well received in the United States. His wines were given remarkable reviews, enabling him to sell out his entire production of the wines that he had made especially for export.

To a certain extent, Nicolas Catena Zapata was thinking about the commercial side of his business even before the results of his experiments were clear. He had decided even before the grapes for his 1992 wine were harvested in 1990 that he would attempt to sell his wines at twice the price of the most expensive wines being sold from Chile. His goal was to demonstrate that Argentine producers could produce wines

that were better than the ones that were at that time being exported from Chile. Although he achieved this goal, he would still have to find ways to promote his wines so that he could create the basis for consistent foreign sales. Until his success with his wines in 1992, his winery had taken advantage of specific opportunities to sell their wines. They did not have to consistently work on developing and nurturing their distributors and final consumers. They came to Catena, albeit on an irregular basis for specific transactions. Presently, they receive requests from buyers wishing to conduct such transactions but it is the policy of the winery not to accept them. Now they work exclusively with distributors who are interested in selling their products over the long-term.

Nicolas Catena Zapata realized when he first started producing wines for the United States that the key to penetrating this market lay in working closely with journalists writing on wines in that country. This task was particularly difficult at the beginning because Argentine wines were simply not known in that country. Hence, Nicolas had to introduce journalists to his country and demonstrate to them that his country was capable of producing quality goods. Consequently, one of the first events he organized for journalists in the United States was a show with two of the top tango dancers from Argentina. He traveled with this show to seven different cities in the United States to ensure that his winery would become known throughout the country. In general Nicolas believes that commercialization abroad requires independent producers like himself to personally travel to other countries to introduce new products to journalists and potential distributors. Still today Nicolas himself travels to talk to journalists and suppliers because he is convinced that even though his trade mark is relatively established, it is the only way that people abroad will respect producers who are not connected to a larger multinational company.

His efforts to promote his wines and produce them at a level of quality equal to that of many new world producers outside of Argentina led the *Wine Spectator* to contend in an article published on January 31, 1996 that there were only 10 world class wine producers in South America. Nine of them were said to be in Chile and the other was in Argentina, namely Catena. Shortly after this article appeared international wine producers started setting a foothold in Argentina. However, Nicolas felt that he would have to continue to try to produce better wines even after this article appeared in the *Wine Spectator*. From the time in which he sold his first new world wines in the United States for US \$15 until the time in which this article had appeared, no other winery except Catena had been able to make a wine that fetched more than \$50 in the United States. This changed only in 1997 when Nicolas himself sold one of his wines for \$80. The famous wine critic for the *Wine Spectator*, Robert Parker claimed in his review that it was a “great wine”.

Diffusion

The wines developed by Nicolas Catena Zapata in the 1990s set the benchmark for the industry. His success showed wineries in Argentina that they could not only produce new world wines but they could also successfully market and sell them abroad. The ability of Catena to sell his wines at a retail price of US \$15 demonstrated that Argentine wineries were capable of competing with new world rivals from Australia, Chile, and the United States. The initial success of Catena Zapata in confronting all of these challenges clearly reduced the uncertainties of those that followed.

Although Familia Zuccardi was also conducting experiments on these techniques in the early 1980s, Nicolas Catena Zapata was the first person to commercialize new world wines from Argentina. Other wineries would wait until the 1990s to make the conversion to new world wines when the regulatory climate was more stable and Catena Zapata and Familia Zuccardi had demonstrated that it was possible to develop wines made according to new world standards. All of the wineries in this sector that sought to produce new world wines would have to transform their existing operations by experimenting with techniques with which they were largely unfamiliar. It is not a coincidence that many of the followers were actually subsidiaries of international wineries as they had already had the experience of transforming their own operations in other countries. Catena and Zuccardi showed them that it was possible to do in Argentina. The companies had the particular advantage of already having established channels of commercialization. The prior existence of these distribution networks, as we will describe, was perhaps the greatest challenge facing new world wineries.

To a certain extent the business model that emerged in the Argentine wine industry was a result of diffusion of emerging techniques for growing grapes and making wine from new world producers in the Australia, the United States and France. As mentioned above Catena initially learned these new techniques largely for his experience in California. Nevertheless, his use of international consultants after his initial stages of experimentation proved critical in helping him to produce the type of wine desired by people in the industrialized world. Hence, in many ways his success was based upon diffusion from other countries. The techniques for growing grapes according to new world standards diffused to others in the industry later also through international consultants traveling to Argentina and enologists from Argentina visiting wineries abroad. The latter traveled to new world producers to see what types of techniques grape producer in these countries were using. Then they returned to Argentina to see if they could use these techniques in this country.

Although developments in Chile showed that South America could produce wines according to new world standards, there appears to have been little contact between producers in Argentina and those in Chile. Furthermore, the majority of Argentine producers in the 1990s were setting their sights on producing wines that were of a higher quality than those being exported from Chile. Foreign consultants played a critical role in bringing critical know-how on the growing of grapes and the elaboration of new world wines to Argentina.

Nevertheless, Catena Zapata was continually setting the benchmark for the quality of new world wines that could be produced in Argentina. Throughout the 1990s he was selling the most expensive wines from Argentina. Only in the beginning years of the first decade of the 21st century would other wineries be able to produce wines of a quality that would fetch similar prices as those reached by Catena Zapata. Moreover, most of the wineries which achieved similar results were only able to do so after having been bought by foreign companies. The only two domestically owned wineries to have achieved similar results as Catena Zapata in this first decade of the 21st century are Familia Zuccardi and Dominio del Plata. One of the cofounders of the latter winery, Pedro Marchevsky was actually the head agronomist for Nicola Catena Zapata from the early 1980s until he founded his winery in 1999 with Susana Balbo, a person who had worked as an enologist and foreign sales representative for several smaller wineries in Argentina. Now we turn to a discussion of these two wineries before moving on to a description of how foreign wine producers came to Argentina in the late 1990s to build on the success established by Nicolas Catena Zapata.

In the early 1980s Familia Zucardi, also known as Bodegas la Agrícola, began converting its vineyards to the production of new world wines. At that time, this winery also began thinking about starting to export. In the early 1980s the winery believed that the best way to overcome the declining internal market would be to develop products for export. The winery was aware that this would require making an upgrade to new world products. Although they began participating in international trade fairs in 1991, their first wine to be sold in the United States, Santa Julia Oak Reserve, fetched a price of \$8, only one dollar more than their Chilean counterparts at the time and \$7 less expensive than the wine that Catena sold one year earlier in the same country. Although Familia Zuccardi would continually improve the price and the quality of their wines over the years, they remained behind Catena. Familia Zuccardi sold its first bottle of wine abroad for \$20, Familia Zuccardi Malbec Mendoza Q, in 1998, one year after Catena had sold a bottle in the same country for \$80. Until now, Familia Zuccardi has not been able to sell a wine for more than \$45, an achievement that the winery first achieved in 2002.

Familia Zuccardi actively works to promote the exports of their products. The current president of the winery, Jose Zuccardi contends that their general strategy is to export around 50% of their production, like they are currently doing. For him it is best to attempt to grow their share of both international and domestic markets while maintaining their production roughly divided between the internal and the foreign market. Like Catena, this winery also contracted foreign consultants to help them improve the implementation of new world techniques for growing grapes and harvesting wines. In contrast to Catena, they first started using such consultants in the 1990s. Unlike the pioneer in this industry, the focus of Familia Zuccardi is to work with traditional grapes but to grow them and harvest them with the techniques of the new world. Some of their most famous wines are made with the tempranillo grape, a fruit that has a long history in Argentina and that was traditionally used only to make low quality wines according to old world techniques. They have recently started producing organic wines for export. They currently have 250 hectares that are certified for use in producing organic wines. The goal of this winery is to eventually convert the remaining 400 hectares that they own into certified organic production. Jose Zuccardi contends that this is not difficult for the winery as they have never used fertilizers.

Although Dominio del Plata is a relatively new winery, established in 1999 by Susana Balbo and Pedro Marchevsky, it has come to be an important exporter of wines from Argentina. The founders of this winery have strong roots in this industry in Argentina. As mentioned above Pedro Marchevsky was the lead agronomist for Catena and Susana Balbo is a widely respected enologist who had also worked commercializing wines abroad in the 1990s. Susana Balbo was active in diffusing new world techniques before she started this winery with Pedro Marchevsky. She had worked as an enologist in the 1990s helping wineries to make the conversion to new world techniques. Susana and Pedro established their winery with the explicit goal of developing wines for high-end consumers in the United States and the United Kingdom. They currently export over 90% of their production, 97% of which is sold in these two countries. The first thing that this couple did when they decided to start their own winery was to travel and take courses on wine making. Their winery was created with the explicit idea of first understanding what types of wines consumers in these countries were looking to consume and then finding the grapes and facilities necessary to produce them. Consequently, they started their business first by renting a winery and buying their grapes through suppliers. Although they now currently own their own winery, they still depend heavily on their suppliers for the grapes used in their wines. Susana Balbo contends that they do not have to own their own vineyards in order to produce excellent wines. However, for her it is critical to work closely with their suppliers and ensure that they become practically partners in the business. This is the only means for ensuring that suppliers will provide them exactly the grapes they need.

Large foreign producers of wines and champagne, along with an institutional investor, Donaldson, Lufkin and Jenrette (DLJ), began investing in the production of wines shortly after the article by the Wine Spectator appeared contending that Catena was one of the top ten producers of fine new world wines in Latin America. Although the international producers of wines and champagnes that invested in Argentina had already implemented new world techniques for growing grapes and making wines, there was a certain level of uncertainty as to how they would have to adapt their wine growing techniques to the particularities of the *terroir* in Argentina. Naturally, their level of uncertainty was reduced by the fact that Catena had shown that it was possible. Perhaps the most difficult part of exporting wine from Argentina, namely commercialization, did not present a significant problem for international wineries and producers of champagne because they could tap into their existing channels of commercialization. In this sense, they had a distinct advantage over those wineries that were owned solely by Argentines.

Nevertheless, the investment group DLJ did not have an advantage in this regard as they had no experience in the wine industry before buying a part of Peñaflor in 1997. It is interesting to note the Wine Spectator article in January of 1996 seems to have attracted many foreign investors to open wineries in Argentina as two important wineries, namely Chandon and Trivento started producing wine from Argentina the same year. They were quickly followed one year later by Sogrape and DLJ. First we will turn to the experiences of Chandon before discussing those of other international investors

Chandon is the most interesting case because they are the closest competitors of Catena and explicitly claim that his winery is their benchmark. Chandon began operating in Argentina in 1961 with the goal of supplying the domestic market with champagne. They continued to produce only champagne for the domestic market until 1996. In that year they created two new products for export, a sparkling wine and a fine wine. While the sparkling wine entered the international market rather rapidly, they would not export their first bottle of Terrazas, their first wine, until 1999. Both of these products were specifically designed with the idea of exporting them to the United States. The company concentrated largely on the sparkling wine product until 2004 when the success of this product began to cut into the market share of other sparkling wines produced by subsidiaries in other countries. Consequently, The Argentine subsidiary was asked by their French headquarters to stop production of this product. This product had been the focus of their export activities up until that time. The canceling of the sparkling wine project caused the subsidiary in Argentina to turn their attention to solely exporting wines.

From the beginning of the wine project, the goal of Chandon was to target upper-end consumers. This group of consumers was chosen as the target for Terrazas largely in order to keep the Argentine subsidiary in line with the general strategy of the larger company. This wine was sold internationally through the same commercialization channels as their champagnes. Although this presented the company with certain advantages, it also proved a challenge as many of their distributors were not accustomed to selling wine, a beverage which does not have the brand loyalty of champagne and hard alcohol, the most important products in the Chandon portfolio. They also had to teach their distributors about the importance of regions and countries in shaping the quality of wine while at the same time providing them information about how wines were actually made. Chandon currently owns 1,500 hectares of land in Argentina, out of which only 850 are currently being used. Hence, it has a lot of capacity for future growth.

Peñaflor is one of the most traditional and largest wineries in Argentina. It has consistently had a large share of the domestic market. Although this winery was one of the first to export old world wine in 1965, it did not seek to develop wines specifically for export but rather merely sold the same wine internationally as it did domestically. Its most famous wine, Trapiche, was first Argentine wine to gain any real recognition outside of Argentina. Despite this success, the owners of the company largely neglected the export of wine. Originally they did not view the exports of wine as a critical part of their company. Hence, the company did not dedicate enough resources to the export of wine, choosing instead merely to take advantage of sporadic export opportunities.

Peñaflor was unwilling to devote resources to the export of wine because wine only represented a small percentage of the total revenue of the company. It was a large, diversified company that practically dominated the market for beverages and juices in Argentina for a significant period. This orientation began to change when DLJ bought a 33% stake in the company in 1997. Although this investment group immediately suggested ways to reorganize this company, real change did not start to occur until it bought another 57% stake in 2002. After gaining control of the company, DLJ focused the company solely on the production and export of wine, selling off all of the other beverage units and investing the resulting capital in upgrading the grape growing and wine making facilities to resemble new world producers. Today the company owns 3,000 hectares spread across Mendoza, San Juan, Salta, Catamarca and La Rioja and the machinery to fill 52,000 bottles per hour. Together, the seven wineries that now make up Peñaflor employ 1,300 people. It currently exports its wines to over 60 countries.

Sogrape is an example of a larger international winemaker that decided to establish a foothold in Argentina by buying Finca Flichman, one of the oldest traditional producers of wine in Mendoza that traces its origin back to 1873. Sogrape bought this winery in 1997 with the idea of converting it into a new world winery. After buying the winery it imported stainless steel tanks and all of the other equipment needed to make a new world winery while also updating the manner in which grapes were grown to meet new world standards. Sogrape began looking all over the world to buy a new winery because the firm was prevented by Portuguese law from buying more wineries in that country; it already had 45% of the market in Portugal. Top executives decided to buy Flichman because they knew that Argentina had the capability to produce good wine but they were unsure whether the Argentines actually knew how to sell what they made. One of the reasons why Sogrape decided to buy Flichman, an important producer of Argentine wines, in 1997 was the observation by one of the executives of this company that Argentineans in this business spoke very poor English. They could not be exporting successfully if they did not speak English well. This strategy seems to have paid off. Now 50% of their production is dedicated to exports, earning the company over USD \$5 million in 2004, a 60% increase from the year before.

Trivento is another example of a large foreign wine producer that decided to set up operations in Argentina. This company is part of one of the most important producers of wine in Chile, Concha y Toro. Unlike Sogrape, they decided to set up their own wineries instead of buying existing ones. In 1996 they began operations in Argentina. The wineries of Trivento enable Concha y Toro to complement their own range of wines with those that are generally not grown in Chile. At first Trivento sold its wines through the channels of commercialization that had been established by Concha y Toro in Chile. Top executives at Concha y Toro decided to have Trivento create its own channels of commercialization a few years later after discovering that the wines they were producing in Argentina were competing directly with those that they were producing in Chile. They currently export to the United Kingdom, Scandinavia, Holland, Canada, Switzerland, Brazil, Germany and the United States. They have two establishments that are capable of producing 27.9 million liters of wine a year.

Counterfactual case

Although Bodegas Lopez was one of the oldest and largest wineries in Argentina, they still have not yet fully upgraded their operations to introduce many of the important techniques of new world producers. Despite the fact that they do use stainless steel tanks to control the temperature at which their wine is fermented, they do not produce wines that have the taste of the new world. Instead they continue to produce wines that are bold and heavy rather than light and fruity as is desired by new world consumers. Although the

nature of the market has changed, this winery continues to export the same wines that they produce for the domestic market. To a larger extent their business remains connected primarily to the domestic market. They only export 10% of their production and apparently do not have plans to either increase this percentage or transform their operation to meet new world standards.

This winery was founded in 1898 by Jose Lopez Rivas, an immigrant from Spain. Carlos Alberto Lopez, a member of the third generation of this family acts as the president of this company overseeing its operation with the help of his son. Even the higher quality wines that this winery produces are still made in the tradition of the old world. This winery even continues to use the same style of bottles that were popular in Argentina 20 years ago for some of its wines. These bottles have long necks and thick bottoms rather than the more standard bottle commonly found in most stores across the world. In terms of production the winery has introduced the use of stainless steel tanks to ferment its wine even while maintaining the use of 5,000 liter oak barrels to age some of its finer wines. As mentioned above, new world producers use 225 liter barrels to age their fine wine.

The top management at this winery seems unwilling to change its model for doing business. In September of 2003 The Exxel group decided to sell their 33% stake in this winery after the family refused to develop new product lines and launch an aggressive marketing campaign. Nevertheless, the company has more than enough capacity to continue to produce the same wines. It has a 12,900,000 liter capacity in stainless steel tanks, 5,240,000 liter capacity in 5,000 liter oak barrels and 40,000,000 liter capacity in rubber lined cement tanks. It currently exports the same products sold in the domestic market to 25 countries, 14 of which are in Latin America and three of which are located in Eastern Europe.

The role of government and associations

Many Argentine wineries have yet to fully upgrade the manner in which they grow their grapes or the manner in which they make their wine. Some wineries have not changed any of their techniques in this regard. Nevertheless, there is general consensus in the industry that it is in the interests of even higher end producers that more wineries make the upgrade to more sophisticated techniques. As mentioned above, low quality exports by such firms in Argentina could potentially hinder the possibility that consumers would try better wines from this country.

One of the major problems for producers who have not changed the manner in which they make wine or grow grapes is the lack of consistency. If wines are not consistent from bottle to bottle or year to year –

meaning that sometime the quality is much lower and sometimes higher for the same wine – consumers will stop drinking that wine and turn to other producers that can deliver consistency. Since wines are marketed under countries and or regions, consumers are unlikely to try wines from regions or countries which are unable to meet this demand. The fact that consumers usually begin drinking wines of lower quality before moving to higher quality ones, it is essential that lower quality wines are consistent. A \$5 dollar bottle of wine has to taste like a \$5 dollar bottle of wine. If it tastes less expensive, the customer loses confidence in the region and/or country from which it came.

Producers of lower quality wines that focus on sporadic exports are not necessarily interested in improving the quality of their wines. They can simply find new clients when their quality is sporadic from year to year. Consequently, all wineries in the industry should be interested in having even lower quality wine producers develop longer-term relations with their suppliers. In essence, all wineries in Argentina would benefit if those who were producing and exporting according to the new model would shift to the new export model. There are several organizations in Argentina that help wineries to upgrade the way they grow their grapes and how they make their wines. Paradoxically, there are not organizations that help wineries to actually improve the way in which they commercialize their wines abroad.

One example of an organization dedicated to diffusing information among grape producers is The Regional Consortium of Agricultural Experimentation (CREA). It seeks to spread knowledge among growers of grapes throughout Argentina. The division of this non-profit organization dedicated to this industry coordinates monthly meetings of different groups of grape growers, usually made up of 12 members each, to discuss common problems they are facing. This organization has helped both medium and large vineyards solve problems and improve the quality of the grapes they produce. Participants in CREA contend that they are not giving away the secrets to their wines or losing their competitive advantage by participating in meetings organized by this organization. It is merely a forum for grape producers to share information and experiences in an attempt to improve the productivity and quality of all its members. The willingness of big and medium sized vineyards alike to participate in such groups is linked to the fact that they believe that the industry as a whole should work to increase the number of international consumers who buy Argentine wine. If more people buy Argentine wine, everyone will benefit. The focus on quality arising from these organizations has actually led to the improvement not only in the production of grapes for fine wines but also in the production of table wines. Even the quality of table wines has improved over the past decade thanks to experiments originally undertaken to develop fine wines.

The National Institute of Agricultural Technology (INTA) also works with producers to develop new techniques for growing grapes. The information provided by INTA is more technical in nature than what is normally generated by CREA. INTA actually generates detailed mappings of micro climates in different wine producing regions of Argentina. Unlike CREA, INTA also researches new techniques for elaborating wines. INTA conducts research for many different wineries, including those producing some of the highest quality wines in Argentina; even Bodegas Catena Zapata contracts them to do research. Since, INTA is dedicated to promoting the industry and not specific wineries, it only agrees to conduct research that will be shared with others in the industry. Diffusion is part of the contract.

To some extent wine producers in Mendoza, Argentina have always worked together informally to diffuse information regarding the growing of grapes and the elaboration of wines. The advisory council of INTA in Mendoza has served as a general forum for grape producers and wine makers to meet to discuss their concerns in Mendoza. In 1999 they began to formalize the coordination of the activities of various support agencies, such as INTA, CREA, the Department of Agricultural Sciences at the National University of Cuyo in Mendoza, and the Federal Council on Investments. After studying the case of the success of Australian wines, the advisory board of INTA came to believe that the strategic plan formulated by the important actors in this industry in Australia was one of the key to the success of the wine business in that country. Hence, they began formulating a strategic plan for Argentina in 1999 and finished developing it in 2000. Like their Australian counterparts those who formulated this plan in Argentina decided to include associations of wine producers and representatives from the public sphere. The advisory council of INTA formed teams made up of representatives from public and private institutions as well as important wine producers to benchmark Argentine products and policies against those of competing countries such as Australia and Chile. In its initial stage, the advisory council of INTA decided to include grape and wine producers from San Juan. The advisory board's specific goal with regards to exports was to increase the worldwide market share of Argentina from 2% to 10% by the year 2020. The producers and civic associations involved in the formulation of this plan realize that they will have to cooperate on a wide range of issues in order for this goal to be reached.

In essence, the goal is for Argentine producers to cooperate to take market share from other countries rather than simply compete with each other and potentially undermine the overall growth in the market share of the country as a whole. Many wineries in Argentina believe that it is important for the members of this industry to have a common vision of where it should go. This vision and the cooperation it entails do not require wineries to abandon their different strategies or even target markets. The idea of the strategic plan emerged from local companies and institutions which specifically wanted to form a new

way of interacting with the national government. They were aware of similar plans that had been developed and promoted by the government for the meat industry, which failed because the administrators did not actively interact with the actual producers to understand their needs. Instead, they developed programs without consulting the firms or social actors involved in this industry. Their programs proved a little use to actual producers in this industry.

The strategic plan served as the basis for the passing of a law by the national government of Argentina in November of 2003 to form COVIAR, The Argentina Wine Corporation. This new public/private entity was funded by a tax on sales of wine and grape juice. COVAIR was charged with implementing the strategic plan developed by the advisory council of INTA. This new entity has only one administrative manager, a technical manager, a spokesman, a legal advisor, an administrative assistant and a secretary. In essence, COVAIR serves as an umbrella organization to coordinate activities and set priorities for the industry and then contract out organizations to undertake the programs and investigations that are deemed necessary for the growth of the industry. In general Wines of Argentina serves as the mechanism for coordinating the promotion of Argentine wines abroad, the viticulture fund serves as the mechanism for improving the internal market for wine, while INTA is charged with investigating and disseminating information regarding technical issues.

Wineries from San Juan were intentionally provided more representation on COVIAR than what pure statistics on production would justify. They were given 50% of the representative seats on the board of COVIAR despite the fact that this province only accounts for roughly 30% of all national wine production and 6% of all exports from this industry; by comparison Mendoza accounts for roughly 60% of all national production and 90% of all exports. Although San Juan has always been seen as the smaller child to Mendoza in this industry, it was thought that by giving them equal participation in COVIAR production in that region could be upgraded. There are indeed some producers of fine wines with wineries in San Juan but for the most part production in that region is largely still dedicated to table wines. Nevertheless, some observers in the industry believe that eventually that region could produce some excellent wines in the future. What is needed is simply more investigation into what types of grapes raised in what type of manner would best fit the *terroir* of that region.

It is not surprising that the idea for the strategic plan emerged out of a local group in Mendoza. Historically, this province has always prided itself on its independence from the national government. Furthermore, the ethnic background of its inhabitants is rather diverse with immigrants coming from Italy, Spain and even France. No one political party ever fully dominates this province, so the democratic

tradition is quite strong. In San Juan, the second largest exporter of wine (6% of the national exports) behind Mendoza (90%), immigrants largely came from Spain and the government in that city has traditionally looked to the national government for help and guidance. Hence, there is little tradition of different groups working together

Wines of Argentina and ExportAr offer wineries help in establishing contacts with potential foreign clients. They organize wine tastings in other countries or in Argentina so that potential clients can sample a variety of wines from this country. The former organization customarily organizes tastings for larger, higher quality wines while the latter generally focuses on smaller producers. ProMendoza, a semi-public organization charged with promoting exports from this province and intricately involved in the strategic plan and COVIAR, developed a system for evaluating whether a particular firm was actually capable of performing well in the trade fairs it sponsored. Wines of Argentina facilitates connections between Argentine wineries and potential clients but does not get involved directly in any negotiation. They also provide wineries with information about consumption patterns in particular foreign markets to help them evaluate whether or not they should target a particular country. In addition, Wines of Argentina also promotes Argentine wines abroad by speaking with journalists and manning stands at trade international trade fairs. This organization carefully selects the wineries that it represents at such events. It conducts blind taste tests before every event and selects the top wines from that test to represent at a particular event.

The rationale outlined in the previous paragraphs rationale does not assume that Argentina will not export table wines. The goal for all producers is to improve quality and not necessarily move into the production of fine wines. With that said it is important to note that new production practices generally associated with fine wines help to improve the quality of lower quality wines. The active promotion of diffusion of knowledge could improve the overall profitability of the industry more than what would occur if each winery were acting on its own. This logic underlies the desire of important wineries and supporting institutions to form a strategic plan for the industry.

Clearly the development of a country brand is important for this industry. If more international consumers come to know Argentina as a country that produces high quality wines, all the wineries in this country could potentially benefit. The goal is for Argentine wineries to work together to take market share from producers of other countries. If that can be done, there is room for many to prosper. One observer of this industry who is rather skeptical about the strategic plan and COVAIR believes that in the future consumers will switch from identifying the quality of a wine with a particular country and will

switch to associating quality with a particular company. They will not care where a wine is produced but rather what company actually produces it. Clearly, this potential development has to be troubling for those who support COVAIR and the strategic plan. However, such a development may be years away. Until then, it may well prove beneficial for wineries to join together to promote the production of high quality wines in this country.

Public policy

If it is true that the country of origin will continue to be important for consumers in selecting the wines they choose to consume, it would seem critical for Argentine producers to continue working together to promote the upgrading of this industry. Such cooperation can help even those targeting the lower end of the market to produce better quality wines and thereby potentially attract these customers to buy higher-end wines made by different wineries. Thus, the success of higher end producers would seem to depend, at least partially, on the quality of their lower-end counterparts. At the same time, the great variety of grapes and the different ways in which they can be grown and turned into wine in Argentina would seem to offer many different market niches for a wide variety of producers. Finally, the success of the Australian strategic plan would seem to indicate that this type of cooperation could lead to further growth in this industry.

Clearly INTA has proven to be one of the critical organizations for diffusing information in this industry. Its contracts with specific wineries to conduct research on methods for growing specific grapes, seems to be an interesting model that provides the winery signing the contract with excellent research while also insuring diffusion of the knowledge gained. Although the national government reduced the funding of INTA in the 1990s, it would not be advisable for the government to simply reinstate this funding as the retraction of these funds could have been critical in making this organization work more closely with wineries. This policy recommendation does not deny the fact that the work undertaken by INTA was critical for the success of this industry.

If the government were to choose to provide further financial assistance to this industry, it would be advisable for it to provide funds directly to COVAIR as this organization understands best where money should be allocated. In this manner, the government could move toward a new public management approach in which they seek to stop funding specific programs and direct funds to umbrella organizations that are more familiar with the particular needs of an industry. Nevertheless, the government should ensure that COVAIR does not simply turn into a mechanism for seeking the government and its agencies.

The fact that it has representation on the board of this organization should help prevent this from occurring. Nevertheless, the government should work closely with this organization to ensure that any funds it is providing are well used. Perhaps it could set specific goals in cooperation with COVAIR as a means for ensuring its accountability.

The most important challenge facing wineries in Argentina today is commercialization. Wines of Argentina is currently working on a campaign to promote the consumption of Argentine wines in foreign countries. This campaign should help familiarize consumers in targeted countries with the great variety of wines Argentina has to offer. At the same time, the work they have done in organizing tastings of different wines from this country surely has helped spread awareness of the high quality of wines produced in this country. Their policy of selecting wines to represent at trade fairs through blind taste tests would seem to be the only way to ensure that Argentina becomes known as a producer of high-quality wines. This policy also serves to push wineries in this country to continually improve the quality of their products. It would not be recommendable, nor practical, for Argentina to somehow forbid the exportation of low quality wines.

Although Wines of Argentina has sought to help wineries in a variety of ways, one area in which they are apparently lacking is some type of assistance in helping firms to develop long-term relations with potential and existing clients. Perhaps Wines of Argentina could create forums such as those undertaken by CREA to help wineries exchange information and experiences about building such relationships. Like CREA, wineries would not have to reveal any trade secrets in such meetings. Such assistance could help those wineries who are still conducting sporadic exports to reevaluate their strategy for exporting. At the same time, INTA would have to work closely with such wineries in order to ensure that they would be able to deliver a consistent product to their clients. Without quality on the production side, long-term relations with distributors would seem difficult to achieve.

In general, greater cooperation on issues related to commercialization may prove beneficial to the industry as a whole. One mechanism for promoting further exports in this sector could be the formation of alliances or cooperative arrangements between some of the smaller producers in this industry. Such agreements between independent producers could either seek to export their products jointly or simply meet to exchange information about best practices for commercializing their products. It may even be the task of national or state governments to encourage firms to form such agreements.

Case IV: Wooden furniture

Studies of the wooden furniture industry from the perspective of exporting countries should provide interesting insights into how small and medium sized enterprises in countries like Argentina can position themselves in highly competitive industries in which products are not differentiated according to brand names but are still highly differentiated both horizontally and vertically. The growth of exports from this sector in Argentina demonstrates that developing countries do not necessarily have to focus on the production of low-end furniture in order to gain market share in advanced industrialized societies. Some Argentine companies are even directly competing with high-end producers from Italy, the leader in this segment.

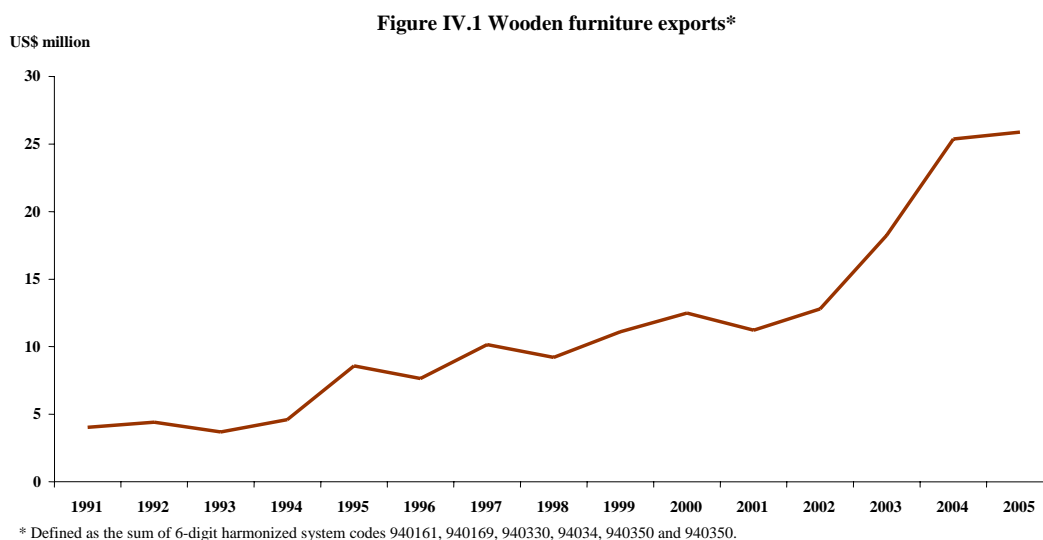
The vast majority of firms can for the most part easily adapt their production to meet the challenge of producing high-end furniture. Such changes are possible because of the flexible nature of production in this industry as a whole. Producers seem to have little difficulty in changing the size of their products and the component parts that go into them. Although this industry in Argentina has the proper technology to produce high-end furniture, many firms in this sector do not pay careful attention to the quality of the products they are producing. This difficulty arises from the fact that such careful attention to details, described below, is not required for the domestic market. Solving this problem does not require new machinery but rather a new way of working.

Firms also can not simply sell products they produce for the domestic market in other countries. For the most part, these products have to be adapted to the tastes of the particular market being targeted. One of the critical elements in this process would seem to be having access to designers who are able to help these firms adapt their products to the tastes of consumers in other countries. As these tastes change, firms have to be capable of changing their designs and production while ensuring that their new products do not cannibalize their existing ones. In order to consistently penetrate foreign markets firms need to develop close working relations with their distributors. However, many of the companies in this industry, as of yet, have been unable to move beyond one-time, sporadic deals. When firms are able to forge long-term relations with distributors in foreign countries, they sometimes are unable to meet the volume and variety of products which these distributors demand over time. It should be noted at the outset that we contend that an export business model, and the product and market upgrade it entails, is just beginning a process of diffusion in this industry. We contend that there is one person in this industry that understands the model and is in the process of attempting to implement it. International buyers are interested in buying furniture from Argentina, but only if it meets very specific requirements that are related more to

how something is designed and built rather than a dramatic change in the actual production process or the machinery involved. Changing the manner in which a firm operates, we contend, is an investment that, at this level of development in the wooden furniture industry, is the key component that is generally missing.

Overview of Argentine exports

Argentine exports grew relatively steadily from 1993 until 2001. However, the real boom in exports from this industry started after the devaluation of the Argentine peso in 2001, growing from \$10 million in 2001 to \$25.9 million in 2005. Figure IV.1 shows the sector's total export values from 1991 to 2005. It can be observed that exports grew approximately 15% per year from 1991 until 2001 while this growth was roughly 40% per year between 2001 and 2004. The decline in the growth rate from 2004 until 2005 may indicate that the competitive advantage generated by devaluation has dissipated over time. In other words, the rapid growth rate after 2001 could be explained by decline in the price of Argentine furniture products bought about by the devaluation of Argentina's currency.

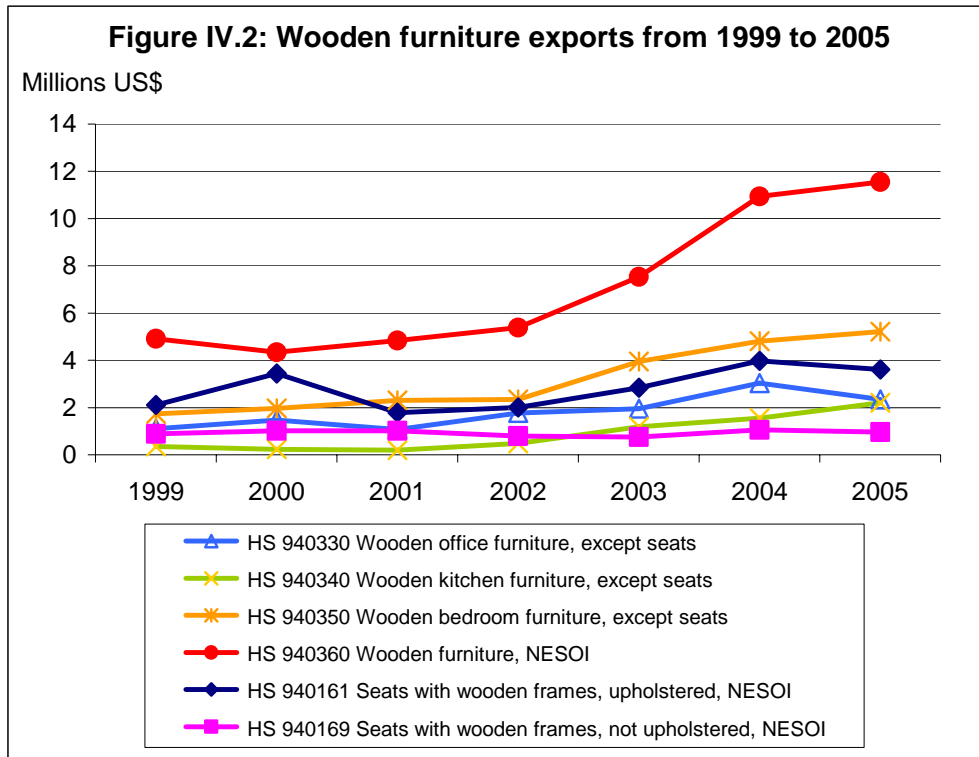


Source: Customs Data

We define this industry as the 6-digit positions of HS 940330, 940340, 940350, 940360, 940161 and 940169.²³ In other words, within this group of firms we find producers of “other furniture”, stuffed and

²³ The wood furniture sector is defined by combining four 6-digit positions (HS 940330, 940340, 940350 and 940360) from the 4-digit furniture code with two 6-digit positions (HS 940161 and 940169) from the 4-digit code for seats. Although the metal furniture sector is included in the same 4-digit category as wood furniture, it is excluded from our analysis as this industry has a very different production process and far more concentration. Furthermore, the metal furniture industry exports primarily to

unstuffed chairs as well as makers of office, kitchen, and bedroom furniture. As can be observed in figure IV.2, the category of “other furniture” (HS 940350) has consistently exported more than the other categories and has the highest level of growth. It consists mainly of dining room tables. The second largest exporting within this group is bedroom furniture (HS 940350). Exports in 2005 consisted of 82% wooden furniture (45% other, 20% bedroom, 9% office and 9% kitchen) and 18% seats (14% upholstered and 4% not-upholstered).

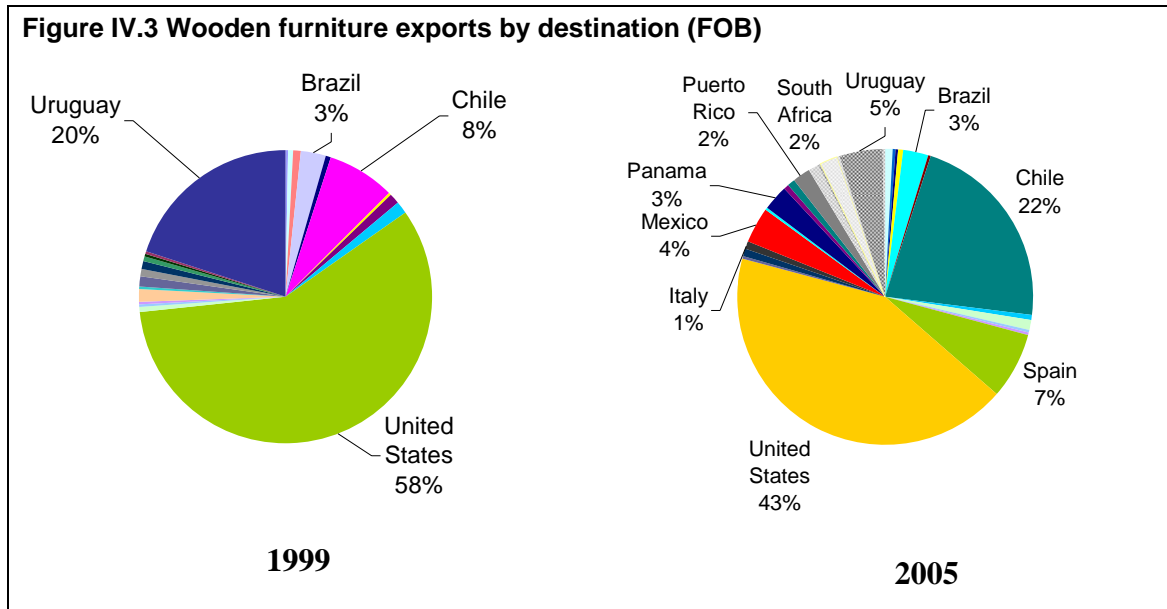


Source: Customs Data

The primary destination of exports from Argentina is currently the United States. Out of the \$25.9 million exported in 2005, the United States accounted for 42.8% while 30.1% went to countries within Mercosur and 7.2% to Spain. Figures IV.3 shows how destinations for wooden furniture from Argentina changed from 1999 until 2005. Although the United States in 2005 accounted for a lower percentage of exports from Argentina than in 1999, it still remains by far the largest importer of wooden furniture from Argentina. The percentage of exports going to countries belonging to Mercosur (Uruguay, Chile and Brazil) has remained relatively constant, albeit it with a dramatic decline in exports to Uruguay – from 20% of total exports in 1999 to 5% in 2005 – and a dramatic increase in exports to Chile – from 8% in

countries in Mercosur and other regional markets. The sector was also defined to include wooden seats because they are often

1999 to 22% in 2005. It is interesting to note that the destinations for exports from Argentina have grown more diverse, even as Latin America remains by far the largest continental importer of Argentine wooden furniture. In 2005, eighty-two percent of furniture exports were to countries in the Americas. Within this continent, the United States is the main importer, followed by Chile, Uruguay, Mexico, Panama and Brazil. Within Europe, most exports go to Spain, followed in order by Italy, France and the United Kingdom. Exports to Asia account for only 0.01% of this total.



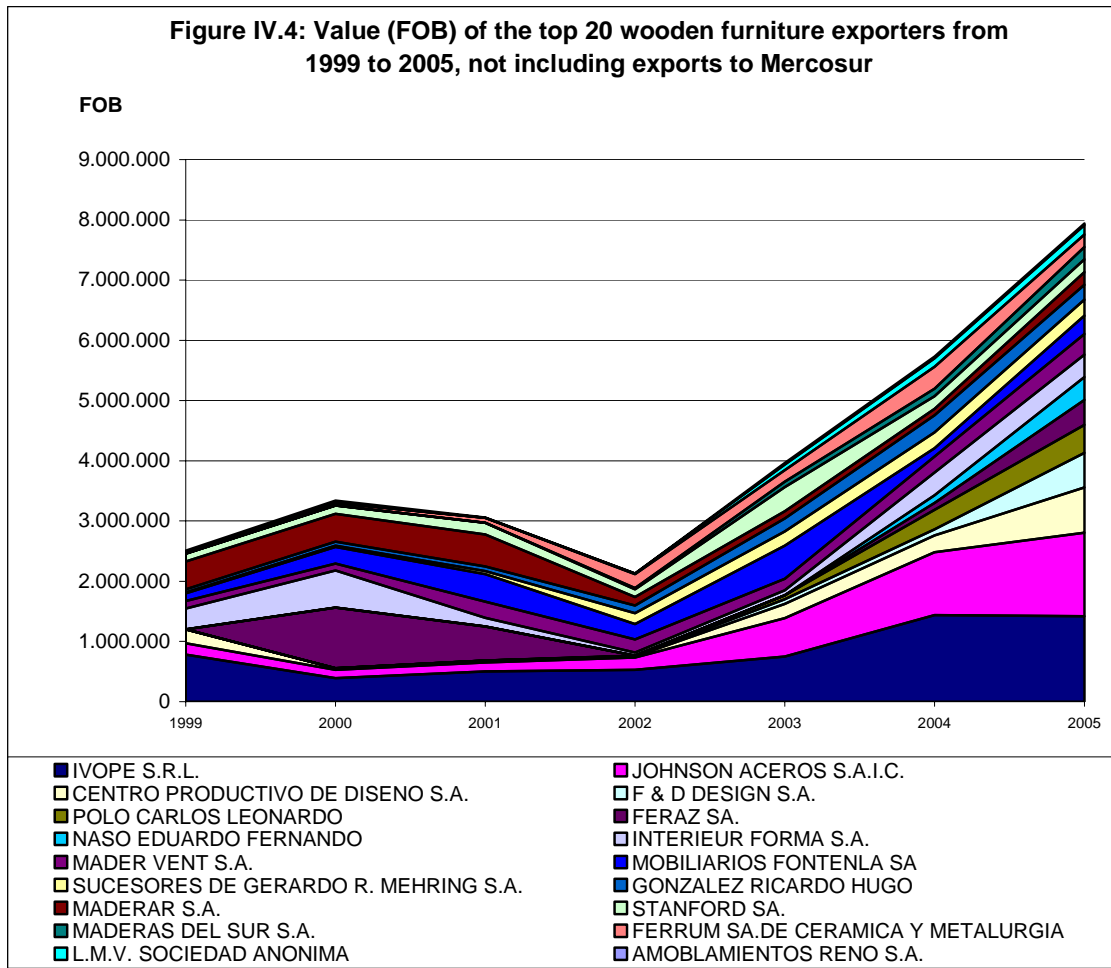
Source: Customs Data

Main exporters in Argentina

The structure of the wooden furniture sector in Argentina mirrors that of the worldwide sector as a whole. Globally 90% of firms in this sector are SMEs with less than 20 workers. In Argentina there are 2640 companies, 90% of which are SMEs. The average company in Argentina has 7.1 employees. Within Argentina 50% of firms are located in the Province of Buenos Aires, 16% in the province of Santa Fe, 12% in Cordoba, 9% in Misiones, 5% in Mendoza while the remaining 4.5% are scattered over the remaining provinces. Out of the top 10 exporters identified for our study one was partially owned by a Swedish company, while another was partially owned by a U.S. company.

produced by the same companies as those in the other positions identified for our study.

Figure IV.4 shows the evolution in the value of furniture (FOB) exported in 2005 by the top 18 exporters in Argentina to countries outside of Mercosur.²⁴ As can be seen in this diagram, exports outside of Mercosur have more than tripled when compared either to 1999 or 2002.



Source: Customs Data

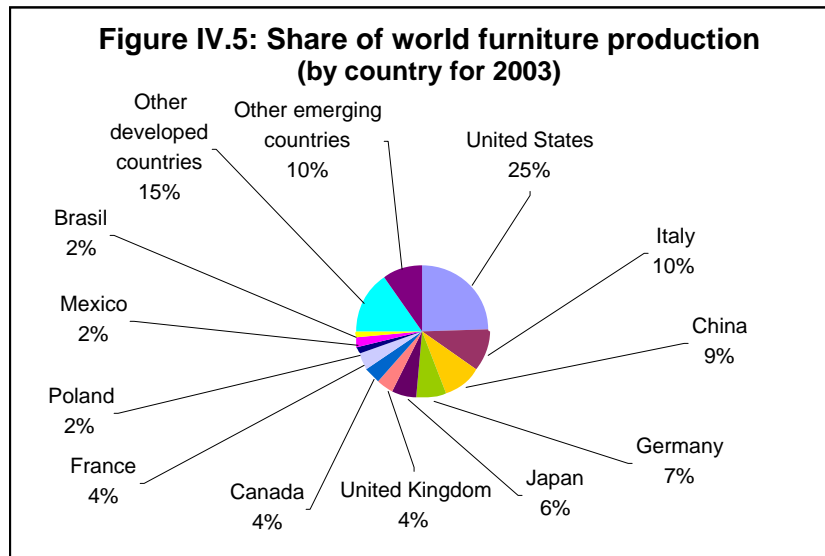
International trade

As a whole, worldwide production of furniture grew from an estimated amount of \$107.37 billion in 1999 to an estimated \$129.97 billion in 2003. Figure IV.5 shows the shares of the main worldwide furniture producing countries in 2003. Surprisingly, some of these countries are also some of the main importers of

²⁴ It should be noted, however, that the data presented in Figure IV.5 might not be completely accurate due to the fact that in many cases producers sell their products through intermediaries. Although Blanco Marcelo and Ketras Cargo rank as two of the top 20 exporters, the former was not included in this figure because it is an exporter of antiques and the latter was excluded because it is merely an export company, it does not manufacture anything.

furniture. This list includes countries from the developed world, namely Italy, Germany, Japan, and the United Kingdom as well as some from the developing world, specifically China, Poland and Brazil.

Worldwide imports grew from an estimated \$14.9 billion in 1999 to an estimated \$21.5 billion in 2003, an average annual growth rate of 9.59%. For the most part trade within this industry occurs between industrialized countries (US, Canada, European countries, Japan and China). In 2003 all of the top five importers of wooden furniture were advanced industrialized countries. The United States imported \$9.29 billion followed by Germany with \$2.03 billion. The other importers were the United Kingdom, close behind Germany, at \$2.1 billion, France with \$1.59 billion and Japan with \$1.15 billion. Except for China, all of the countries within the top 5 exporters in 2003 were also advanced industrialized countries.



Source: Customs Data

Surprisingly, Italy has remained the top exporter of wooden furniture for the past five years. Italy accounts for 19% of all exports followed by China with 17%. These countries are followed by Germany with 13%, Canada with 12% and Denmark with 9%. Although over the past five years these rankings have not been the same, these countries have represented the top five exporters over this period.

Italy's focus on the production of high-end furniture enables it to maintain its leadership position. Italian furniture firms are characterized by a high degree of horizontal integration in a market composed mainly of small and medium producers working together in networks. This structure enables them to quickly alter their production processes to produce different styles of furniture; differences in these models are discussed in greater detail below in the section on the supply chain of this industry. Vertically integrated,

mass-producing firms like those found in Canada, Germany, and China, find it difficult to quickly adapt their production to changing styles. Like all of the other top five producers in this industry, Italy depends on imports of wood from foreign countries.²⁵ The focus of Italian producers on high-end wooden furniture requiring constant adaptations of changing styles and tastes enables them to avoid the pressure of competing directly with the other top three producers.

Other countries generally can not protect their industries from competition originating in Asian countries. The fact that its production in Germany and Canada is highly mechanized with world-class machinery does not offer them any protection from competitors with lower labor costs because producers in other countries with lower labor costs also have the latest machinery. Consequently, it is not surprising that production in the low-end sector of this market has moved to other countries. Production in Canada has come under increasing pressure from Chinese producers because they are both focused on the lower-end of the market and produce their products with dedicated production lines that follow the precepts of mass standardized production. Firms in both countries depend heavily on imports of hardwoods from the United States. Despite its lack of proximity to the U.S. market, the Chinese have come to replace the Canadians as the top exporter to that country; now Canada only has 20% of the U.S. market. One potential explanation for this shift in production to countries like China is the fact that labor accounts for 40% of production costs in this industry worldwide. Clearly labor is less expensive in China than in Canada.

Lower labor costs have enabled China to become the second largest furniture exporter in the world. By the end of 2005 it had almost gained the same market share as Italy.²⁶ Its main destination is the US, where it has an estimated 40% share of the home furniture market. It specializes in unassembled furniture made of pressed wood. Although Chinese products are relatively inexpensive they are not known for their design.

The pursuit of lower labor costs in this industry has caused a shift from production first from Taiwan to Malaysia, then to Indonesia. Recently, Vietnam has come to be a major competitor based primarily on lower labor costs and the installation of the latest machinery. The only apparent strategy available to those countries which do not want to enter into this race to the bottom would seem to be a focus on semi-

²⁵ Argentina, by comparison has a distinct advantage in being one of the few world producers of furniture that actually does not have to import wood. Although Argentine producers do have to pay international prices for the wood they use, they do have the advantage of having lower shipping costs.

²⁶ China's case is the result of an industrialization process that took part in the nineties, through foreign direct investment and joint-ventures' development. Many firms have been established in Chinese territory with foreign capital. Some of the investing countries are the US, Italy, Germany, Denmark, Spain and Singapore.

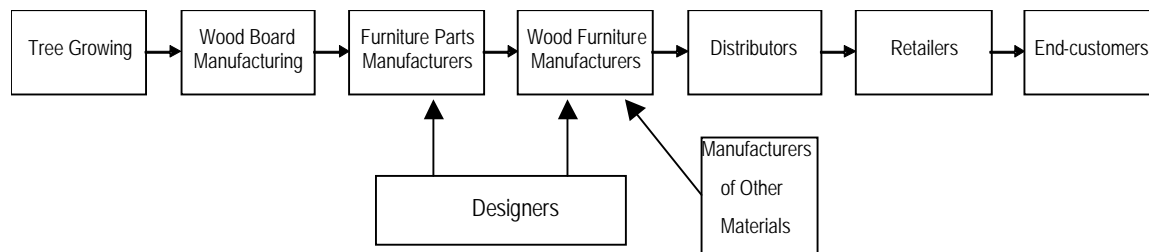
customized products that can be adapted to changes in consumer tastes. This is evidently the avenue being pursued by the majority of Argentine firms in this sector.

Globally, the furniture industry is characterized by a diversified demand that results in the existence of a variety of distinct market segments. Moreover, the demand for furniture varies considerably with changes in styles and trends, so producers have to have flexible organizations that are capable of changing designs and production with changes in the market. Secondly, patent protection is weak in this business. Therefore, firms face difficulties in capturing returns from innovations. Finally, economies of scale do not play a significant part in comparison to other industries. Although there are a few exceptions, firms in this industry worldwide, as mentioned above, tend to be small.

Value chain of the wooden furniture industry

In this section, we provide a schematic description of the value chain of the wooden furniture industry. We have included the main roles in this value chain from the growing of trees to the end-consumer. Figure IV.6 shows this value chain.

Figure IV.6: Value chain of the wooden furniture industry



In this Figure some roles have been grouped together, such as that of the manufacturing of other materials, while others such as the suppliers to the manufactures of other materials have not been included at all. This simplification was made to facilitate the description of the most relevant roles. Some roles were excluded because they were not considered to be determinant factors in either the value chain or the discovery-diffusion process. Next, we describe each role of the wooden furniture value chain.

Tree Growing

There are two main types of trees used in manufacturing wooden furniture, conifers and laticifers. Dark tropical and light woods in the latter are most frequently used for furniture manufacturing. These trees

yield high quality woods and are sourced from natural forests. Traditionally woods such as eucalyptus, which are neither dark tropical or light woods but which are part of the laticifer category, are used for industrial purposes. Improvements in the quality of wood from eucalyptus trees, along with the fact that they are generally harvested from planted pieces of woodland, have caused them to be increasingly used in the production of wooden furniture. Environmental restrictions related to the use of most laticifers, have caused manufactures to begin making more furniture from conifer. Traditionally fast-growing tropical pines were shunned by the industry because of their low quality. Today, producers of wooden furniture are increasing turning to them because of restrictions placed on the use of other woods. In general eucalyptus and pine trees are preferred because they are planted and harvested and not simply taken from existing forests.

Argentina's geography is suitable for growing *conifers*. Thus, this country has a distinct competitive advantage as it is able to go against the general trend of using lower quality pine. Nevertheless, wooden furniture manufacturers are reluctant to switch from carob wood, the traditional preference of firms in Argentina, with eucalyptus or pine because neither is as noble or as stable as the former. Ivope, one of the leaders in this industry has recently started experimenting with using eucalyptus wood but currently believe that it can only be used for certain models of furniture. Hence, they can not use it to fully replace carob. Part of their problem in using eucalyptus wood is the fact that their clients are accustomed to a certain style of furniture that is made with carob. Furthermore, the latter is much sturdier than eucalyptus and sturdy, large furniture is one of their hallmarks. Mehring, another one of the leaders in this industry uses pine for almost all of its furniture and is not interested in switching to other types of wood. Ivope is the only exporter in Argentina that certifies that its wood comes from planted forests. One major consultant in this industry has said that clients in Germany are practically the only ones which want to be assured that the wood in the furniture they buy comes from certified forests. There are only a few environmentally conscious people who worry about this issue at the time of purchase in the United States.

Wood board manufacturing

Wood board manufacturers buy logs and product boards from growers. In the manufacturing process, logs are sawed in different ways to obtain wooden boards. The sawing process produces scrap, consisting of mainly wooden chips that are then used to make pressed wood. Both types of boards are the main inputs for the furniture manufactures. Generally, wooden board and furniture part manufacturers are located close to forests. The transportation of logs on special trailers can be considerably costly. The fact that there are few producers of wooden boards and pressed wood in Argentina causes buyers to be at a relative disadvantage.

Furniture parts manufacturing

We consider furniture parts to be those components that are central to the furniture manufacturers. Such parts can be critical in convincing the final consumer to buy a piece of furniture. There are other materials used for wooden furniture manufacturing such as stains and glues that do not have a significant impact on the end-customers purchasing decisions. Since they are not critical for the production of wooden furniture, they are not specifically discussed.

Furniture parts can be made by the furniture manufactures or they can be sourced from a supplier. Furniture parts include wooden parts and other parts made of metal or plastic. Manufacturing furniture parts requires equipment and skills that these manufacturers generally do not possess. Consequently, wooden furniture manufactures tend to rely on close cooperation with these suppliers, even to the extent of sharing design specifications with them. Since parts are tailored made for every particular piece of furniture, manufacturers in this industry need to coordinate their production with that of their supplier. In general, these suppliers provide wooden furniture manufacturers with economies of scale that they could not enjoy if they decided to do these operations themselves. For the most part, wooden furniture manufactures in Argentina tend to rely on suppliers to produce particularly intricate parts. They chose to outsource such production largely because they do not own the numerically controlled machines required to make such components. They can potentially make such parts by hand but this simply requires too much time. In the general region of the province of Santa Fe in which three of the major manufacturers are located, there are three small shops that specialize in using numerically controlled machines to make such parts.

Wooden furniture manufacturing

There are two general organizational models for wooden furniture producers throughout the world. The first model, the German style of organization, is dominated by large and medium-sized companies that outsource little if any of their production and focus on the economies of scale using advanced machinery. The second one, the network-based Italian model, consists largely of smaller firms that outsource the production of components parts to closely linked suppliers. Both are addressed below.

Networks of suppliers and producers in the Italian wooden furniture industry generally consist of firms that design, furnish and assemble furniture and those that supply component parts. By working closely with a large number of suppliers within the network, helping them to upgrade their production and resolve technical issues, the first type of firms are able to rapidly adapt their products to changes in consumer

tastes while also ensuring that the component parts meet particular specifications and levels of quality. Occasionally these networks include a lead firm which designs and exports furniture assembled and furnished by others in this organization. Such firms negotiate with foreign buyers on behalf of the other firms in the network, thereby enabling lead firms to provide their clients with a wide variety of different products. Hence, these networks are able to supply markets with a wide array of products adapted to the lasted trends while also being able to deliver the volume of goods generally sought by distributors. With the helpd of the Italian embassy in Argentina, Mehring, one of the lead firms in this industry in this country, recently began forming such a network in order to be able to achieve similar results.

As mentioned above, Germany is the second worldwide producer and the main European consumer of furniture. Its imports exceed its exports due to high per capita income that allows the German population to maintain high levels of consumption. In contrast to the Italian case, German producers are considerably vertically integrated. They tend to dedicate their operations to a few product lines and offer a limited variety of furniture models. The largest 10 producers account for over 25% of total production in Germany. Their competitive advantage lies in economies of scale in production, commercialization and financing. The products of these companies are considered to be high quality, durable and functional. Although the quality of the production is indeed world-class, the production system does not enable manufacturers to adapt easily to changing styles.

Distribution

Wooden furniture manufacturers tend to sell their products to distributors and not directly to the end-client. Larger distributors tend to specify the design of the furniture they are seeking while smaller ones buy products designed by the furniture manufacturer or an agent contracted by that party. Some smaller scale distributors work with manufacturers to help them design furniture. There are no international distributors that actually have offices in Argentina. International intermediaries in general are not interested in establishing a foothold in Argentina because the quantity of furniture sold from this country simply does not justify it.

Retailing

There are a variety of retail outlets. Generally these stores tend to specialize in selling practical furniture, do-it-yourself furniture kits, medium-range furniture, or high-end products. While higher priced furniture is mainly sold through specialty stores, the lower end products such as practical furniture and do-it-yourself furniture kits are sold through home-improvement retailers. The latter tend to impose design, marketing, quality, labor and environmental standards on the manufacturers of the furniture they buy.

These stores prefer “ready to assemble” or “do it yourself” lines as they have lower shipping and assembling costs. The former look more for independent producers who are able to design their products on their own. As discussed below, this would appear to be the market segment best suited to the capabilities and limitations of Argentine exporters.

Design

Traditionally, design has been a key differentiating factor for higher-end furniture. However, it has recently become an issue for lower-priced items as well. At present, even do-it-yourself furniture kits need to have to some sophistication in order to be accepted by end-customers. Moreover, to some extent all manufacturers have to take into consideration particularities of the country to which furniture will be exported. Dimensions of products have to be adapted to the particularities not only to the particular tastes of people in the target country but also to the particular dimensions of the people themselves. Furniture designed for the small, but luxurious, apartments in Japan, will not fit the spacious rooms of the houses of the upper-middle class in the United States. Even within a country, differences in styles and dimensions can be significant. In the end, one of the key elements for successfully exporting furniture to other countries is the adaptation of this product to the particularities of a particular country or region. If such adaptations are not made, even a high quality product will not sell in the target country. Details regarding how vary across countries and how they change over time are discussed at greater length under the section entitled product upgrade.

The evolution of wooden furniture manufacturers in Argentina

Although the manufacturing of wooden furniture has a long tradition in Argentina, it has traditionally not been an important export sector in this country. When firms in this sector did export, they customarily were simply taking advantage of sporadic, one-time opportunities rather than seeking a more systematic way of developing this potential source of revenue. Consequently, they tended simply to export what they sold in the domestic market. In the 1990s some companies started to take advantage of opportunities to simply produce furniture designed by a specific client without seeking to leverage such opportunities to generate further exports by either actively seeking more clients or diversifying the type of products they actually produced.

Argentina has the proper factor endowments to be an exporter of wooden furniture. Contrary to most of the leading manufacturers of wooden furniture in the world, Argentina companies have ready access to wood. Although some companies in this sector are currently looking to purchase some machines to

improve the performance of specific tasks, firms in this sector generally possess the necessary equipment to produce high-end furniture. This sector is dominated by small-scale producers. Except for Platium, a producer of low-end furniture with practically no exports outside of Mercosur, Argentina has not had any firms that resemble the German model. Argentine producers of wooden furniture, like their Italian counterparts, traditionally began as small carpentry shops that move into the production of furniture by purchasing machinery.

Although the vast majority of the owners of factories in this sector are well versed in technical aspects of production, their skills in designing, marketing, and selling new furniture to foreign markets is lacking. These latter type of skills are missing because the needs of their potential international clients are simply different than those of their clients in the domestic market. The latter customers are not accustomed to dramatic changes in the styles of furniture as they do not change their furniture as often as customers in the advanced industrialized world, the preferred target for exports in this sector. Manufacturers in this sector are also accustomed to producing the same product for a variety of clients, while international distributors in the advanced industrialized world are accustomed to having their suppliers provide them with a variety of products. As we will see under the section on product upgrade, these differences presents a distinct challenge to Argentine producers seeking to sell their products to countries like the United States in which consumers tend to change furniture more often. This is particularly true for consumers of high and medium incomes. As we will see, this is the market which most Argentine exporters in this sector are targeting.

The convertibility plan, the pegging of one peso to one dollar, in the 1990s in Argentina had a profound impact on the operations of wooden furniture producers in this country. Although it enabled firms to import new machinery at relatively low costs, it also exposed firms to increased competition from foreign producers. Imports from Brazil in particular served to undercut many producers causing some to go bankrupt. Many producers disappeared during the 1990s because of such foreign competition. This problem was only exacerbated by the decline of the economy in the late 1990s, in part driven by the Brazilian devaluation. Some of the firms that survived were only able to do so because they were exporting. The companies that took advantage of the peg of the Argentine peso to the U.S. dollar to buy new machinery were particularly well positioned to export. The upgrade in quality of these machines enabled firms to cut and mill wood more precisely, thereby enabling them to target higher-end markets abroad as even higher- end consumers in Argentina do not pay as much attention to details as similar clients in foreign markets like the United States, the major importer of Argentine products from this industry.

The firms that exported during the 1990s generally viewed this activity not as one requiring a separate strategy, but rather an activity to be undertaken merely to survive until the internal market recovered. In essence, manufacturers in this industry viewed foreign markets as secondary to the domestic ones. Hence, they tended to export excess stock or take advantage of specific opportunities that may have happened to appear. The vast majority of firms did not have a specific export strategy nor did they produce products that were only for export. In the cases in which they did make furniture only for export, the business seems to have arisen out of sporadic opportunities and not out of a specific strategy. The furniture that they did export that was not part of one of these opportunities was generally the same as what they were selling domestically. They did not adapt their products to foreign markets but instead sold abroad the same furniture that they made for the internal market. It was common for firms in this industry to view exporting merely as a means for overcoming the declines in the domestic market resulting from recessions. They would concentrate on exporting simply until the crisis passed and then they would turn their attention to the domestic market. Many firms still have not changed their overall strategy in terms of exports despite the fact that it could prove more profitable if firms began working closely with their international distributors seeking to develop products that are oriented toward their particular needs. Naturally, this type of relationship with a distributor would require firms to differentiate themselves not only through their products but also the services that they provide their clients.

Nonetheless, the crisis of 2001/2002 was apparently a turning point. It convinced a growing number of firms to develop specific export strategies that went beyond merely relying on foreign markets as a means for surviving fluctuations in the domestic market. They began to see these markets as a potential source of consistent growth and revenue. To fully tap into these markets these firms realized that they would have to develop products targeted specifically at certain foreign markets and seek to establish consistent contacts with distributors. Although some firms in this industry have this vision, many of them do not know quite how to implement it. As will be demonstrated below, there are firms and a broker in this industry that understand better than other companies what they actually need to change to realize a new strategy for exporting. In general many producers in Argentina know how to produce high quality furniture and they have the proper technology and training to do so. What is missing for the vast majority of these firms the ability to adapt their products to the styles and demands of different countries and to actual sell their products abroad to a limited number of distributors on a consistent basis.

The potential orders that firms can receive from exporting can be substantially larger than what they could hope to get in the internal market. Ivope and Mehring, two of the leading firms in this sector outlined below, occasionally have to turn to other firms in the industry to help them meet such orders; once Ivope

actually had to ask Mehring for help with an order for a hotel for Disney in Florida. If done well, some firms in the industry believe that exporting can be more predictable than selling furniture on the domestic market. As we will see with our counterfactual case below, those firms which do not make the necessary upgrade tend to view more stability selling on the internal market.

Many firms are unwilling to make the long-term commitments needed to develop on-going relations with foreign distributors working from their particular countries. As outlined below, firms need to change some critical details in manner in which the produce products for export in order to meet the high levels of quality demanded from the most attractive markets like the one in the United States. Even after making such changes, it customarily takes over a year before a company can even sell its first container of furniture. Many companies try once or twice to export in this new way and then relinquish because they do not have immediate success. Furthermore, once they are initially successful, they have to work hard to meet new demands of this same client. To a large extent what wooden furniture manufactures that want to tap into the potential of demanding markets in advanced industrialized countries need to change the way the understand how business is conducted and what quality actually means for clients in such countries. The changes required to properly serve such international clients require investing in change, not in new machinery.

Although some firms are receiving more demands for greater volume and variety of products in Argentina, this has not caused leading firms to seek to move toward the German model of greater scale through mass production using automated machines. This type of production simply does not suite the high-end products that most exporters in this sector produce. Like the Italians, these firms have to be able to change their production quickly to meet changes in styles and dimensions. Mass standardize production simply makes this type of flexibility difficult if not impossible. Even our counterfactual case has not shifted to this type of production despite the fact that the changes they make to their products to export are quite minimal if any. The fact that they receive orders for a wide variety of dimensions rather than a wide variety of styles makes combined with difficulties in financing any large-scale project to make such an “upgrade” makes the firm reluctant to even think about such a dramatic change in their production style.

Some of the initial growth in exports after the economic crisis of 2001/2002 in Argentina can be explained by firms that saw no alternative but to export what they had originally intended for the domestic market. As the economy began to strengthen in 2003 these firms tended to reduce their exports and shift back to producing primarily for the domestic market. Such firms clearly did not embrace the new export model. Nevertheless, now some of these firms have started thinking about embracing this

new export model as the domestic market has started to level off. Clearly, they are behind those firms which embraced the export model after the crisis of 2001/2002.

Domestic business model versus export business model

The crisis of 2001/2002 presented firms an opportunity to reexamine the manner in which they were conducting exports. Many firms in this sector did not take advantage of this opportunity but rather reverted back to traditional practices once the internal economy recovered. Those companies that did take advantage of this crisis to reexamine their export strategy are still largely in the process of fully understanding and implementing a new export business model. The challenge of this new model is understanding the need to change the way firms understand what they need to do to export consistently over time. Firms have to change the way they work and not the actual machines they use. They have to pay attention to details, whether these involve ensuring the finish on a table top is consistent or ensuring that they are able to meet the wide variety of demands of their clients. In short embracing this model involves firms upgrading their products as well as their marketing.

Contemporary furniture would seem to be the proper market segment for wooden furniture manufacturers in Argentina. By focusing on this sector they could avoid competing directly with countries with significantly lower wages. A focus on this particular market segment would enable manufacturers to tap into the traditional carpentry skills of workers in this sector as well as the institutional structures that emerged over the 20th century to support this type of work in Argentina. In order to compete effectively in this market segment firms have to be able to consistently develop new products. By focusing on developing new products rapidly wooden manufacturers can move up market within the contemporary furniture niche and avoid competing with lower cost producers in this segment. The particular challenge for pursuing this strategy is the ability to continually design furniture that meets the changing styles of consumers in selected target markets. Although Argentina is not well known for its designers, it would seem to have the capacity to produce designers with the capacity to develop new products in this manner. Now we turn to a discussion of what is involved in upgrading products and marketing in this sector.

Product upgrade

The majority of exporters in the Argentine furniture business focus on upper-end of this market, namely contemporary furniture. In recent years consumers in the upper end of this market in advanced industrialized countries have started changing their furniture with shifts in style. Consumers of

contemporary furniture with more limited resources do not tend to change their furniture as often. Consequently, this latter type of consumer is likely to buy furniture by producers outside of Argentina that are more likely to have a system of production resembling the German model. Argentine producers would seem well suited to producer furniture for the upper end of this market as their production system is more flexible than countries with more mass-standardized systems of production. Argentine manufacturers simply can not compete with the scale of production that firms in these countries can produce. Consequently, Argentine firms have to build on the strength of their flexible production system by seeking clients that want smaller batches but more value added. Argentine firms in this sector simply can not compete with this scale of production nor the low wages paid by their main competitors, namely Brazil, China, Vietnam and Malaysia. Firms in Argentina are under the added pressure of more flexible producers in these countries that are able to copy designs and produce the same furniture at lower costs. Hence, the vast majority of Argentine producers have to focus not only on manufacturing high-end furniture but also changing the designs of the furniture they make.

In essence, Argentine manufactures of wooden furniture have to develop their own designs and work seriously over time with their distributors. Only by developing such relationships with their international buyers can they avoid the possibility that a distributor will not act in an opportunistic manner that proves to the detriment of the manufacturer. Firms that simply pursue sporadic, one-time sales are more likely to be victims of this type of behavior.

Designers are critical for wooden furniture manufacturers in Argentina. They have to know how to adapt furniture to the particular tastes of a target country while at the same time keeping up to date on the changes that are occurring in the living habits of people in other countries. Thus, they also have to be perpetually developing new products for a company's target markets. This task is complicated not only by the fact that tastes and styles can be dramatically different from those in Argentina but also by the fact that they are changing over time. One example is how the introduction of plasma televisions in the United States - a product which is just starting to significantly penetrate the Argentina market - impacted the production of living room furniture. When these televisions were introduced in the late 1990s, firms had to create furniture to fit them. They also had to find ways to highlight the size of the television in the furniture designed to hold it. As this market became relatively saturated within the medium and upper end of the market, firms had to design new types of furniture to hide these televisions. Another example is the recent trend for people in the United States to buy furniture that looks like antiques. To give their furniture this look does not require any change in production but rather a person striking the furniture with a sharp object before it is stained. Some consumers in the United States are looking for dining

room tables that reach up to three meters in length. Making such a table does not require firms in Argentina to use different machines but rather to calibrate their existing machines differently. Nevertheless, it does require firms to find ways of designing such tables so that they do not warp over time. The problem resides in the design, not the production.

Tastes and styles within a country can also differ. Within the United States, for example, tastes and styles vary across regions. People in Chicago generally will not buy the furniture sold in New England and people in these regions generally do not like the type of furniture sold on the West Coast. Ivope, for example, sells almost all of its furniture on the west coast. They have tried to sell their products on the east coast but largely to no avail. Part of the reason behind their relative lack of sales is related to the particular style of their furniture. Their furniture is very large and dark while at the same time having hints of an American Indian style, traits that are not highly valued on the East Coast.

In general it is difficult for manufacturers in Argentina to sell pieces of furniture designed for the U.S. markets on either their domestic market or other foreign markets. The dimensions of the furniture are simply much larger than those found in Europe and Argentina. The large size of living quarters in the United States as compared to these other countries is one of the reasons why there are such differences in styles. Because of such differences even across Europe, firms that seek to sell their products in more than one foreign country have to adapt their furniture to each country. The tastes and styles of some countries can actually prove to be similar to that of consumers in Argentina. Mehring actually discovered that they could sell table and chair set in Spain that they sell in Argentina. Firms need to study their potential markets carefully, as such cases are indeed rare. It is more than possible that a firm can fail in exporting a particular piece of furniture even when the quality is exquisite simply because it does not fit the current tastes of the target country.

Manufacturers seeking to export on a consistent basis are under pressure to develop new products rapidly. While Mehring attempts to develop new products every 2 years, Ivope tries to have at least one new product ready for the world renowned trade fair in High Point, North Carolina that happens every six months. This trade fair is the most important in the world with over 750,000 square meters of showroom space. Manufacturers and buyers from countries around the world travel to High Point twice a year to learn about new development in the industry and make commercial contacts. The innovations which firms make for this trade fair are not necessarily radical ones. Sometimes they are nothing more than new variations on older products. Ivope, for example, recently introduced new tables with metal instead of wooden legs. Mehring recently started producing chairs with leather instead of its traditional cloth

covers. In developing such products companies have to pay careful attention that they do not cannibalize their existing products. Ideally firms would like to continue selling their older products while at the same time expanding their market share with new ones.

Although Argentine universities are producing qualified wooden furniture designers, only recently have producers demanded trained professionals who know how to design furniture for other countries. In the past, companies sold Argentine designs, so there was no need for professionals with these skills. It is important to highlight that the quality of the designs in Argentina would appear to be relatively high. They are simply not the designs that foreign customers want to buy. Quality in designs is not the issue but rather the type of design is the problem. Most local designers would seem to simply lack the skills necessary to adapt products to the tastes and styles of different countries. IVOPE works closely with its sole client in the United States to design products for that country. Other firms work with Jorge Etchebehere, and his sales representatives in the United States to adapt their products to this market. These sales representatives actually sell the furniture of these producers in the United States. They travel to Argentina to provide local producers general advice about styles and trends in that country. With this information, designers seem more than capable of producing designs of the types of products desired. In the end Argentine designers would seem to be capable of learning how to adapt furniture to the particular styles of people in advanced industrialized countries. These designers do not need new skills but rather, like the firms for which they work, they need to develop a new way of approaching what they are designing. In this sense, what they are missing is information and very specialized training in the particular customs and habits of the country for which they wish to design furniture.

In order to produce the type of furniture being demanded by consumers in advanced industrialized countries, wooden furniture manufactures do not have to make investments in new machinery. Changes in designs only require changing the calibrations of machines to produce products with different measurements. For example, the dimensions of chairs and beds are simply larger than those found in Argentina. Hence, producers simply have to make pieces a little larger. In developing a new product, a company may decide simply to change its legs. Hence, the need to make new matrices for this part is the only change that needs to be done. These matrices are simply put in standard machines that cut or mill along the given pattern. The actual work of the operator of the machine does not change nor does a producer need new machine to make this part. If the part is particularly complicated requiring a numerically controlled machine, firms tend to outsource the production of the particular part to suppliers that have such machines. Even for such companies the actual work varies little. It just involves an individual programming the machine to perform a particular operation. Once a person has learned to

program the machine, they can practically produce anything required for a piece of wooden furniture. The actual assembly process for a chair with larger dimensions or a table with iron legs is basically the same.

As far as production is concerned the critical difference between furniture produced for the domestic market and those produced for export lies in the attention to detail paid by the workers performing a particular task. Producing products for export in this sense does not require workers to have new skills but rather to have new ways of operating that focus on small details that make the difference between a product for the domestic market and one for export. In this sense quality is produced not with different skills or with different machines but rather with workers that are trained to pay attention to small differences.

Workers in Argentina are not accustomed to paying particular attention to the exact size of the pieces of wood they are cutting. If it is one half of a centimeter more or less than what is stipulated in the design, consumers on the domestic market will still buy it but foreign distributors will reject it. The same is true for staining. The domestic market does not require a particular piece of furniture, more or less two separate pieces in the same set, to have a consistent color. Variations even in color of the surface of a table are acceptable in Argentina but not on the demanding international markets in the advanced industrialized world. Differences in color across the same surface in a piece of wood result not from problems in the staining process but rather customarily from problems in the drying process. Those firms that can export in Argentina generally have their own machines for drying wood. Their workers also know how to use them. The problem results from workers not paying careful attention to the drying process. Workers also can not use wood that have knots in them for products that are intended to be exported. For the domestic market this detail is not important. Despite the fact that packaging is not customarily thought to be important for products such as wooden furniture, it proves actually to be an important issue for exports. In the domestic market firms do not have to worry about how their products are boxed but for exports it is an important issue. The client wants nice boxes with no marks indicating that somehow the furniture has been thrown about. In general international customers would seem to be more critical about the details than the usual customer found in Argentina.

Customers in Argentina simply do not pay attention to such details. Even people who have been working in this industry in Argentina sometimes do not detect minor flaws that are obvious to people in countries like the United States. Hence, it is generally important for firms to have some feedback from consultants familiar with these issues before they attempt to export to advanced industrialized countries. All of these

details have to be addressed for a distributor to consider buying a piece of furniture from an Argentine producer. The problems are relatively small but as we will see if they are not addressed firms can have difficulties in consistently making sales to a particular country. As we will demonstrate, the person we have identified as our Jorge Etchebehere is working on diffusing this knowledge throughout the industry. Potentially such quality upgrades can prove to be a positive spillover for the domestic market as companies learn to produce furniture with higher levels of quality. Nevertheless, for this upgrade to occur, workers have to get accustomed to working in a different way. Once these workers have developed “quality habits”, working in this way can become a routine.

Manufacturers in this industry in Argentina also have to ensure that their suppliers are producing component parts that meet these requirements. In this sense, the formation of an industrial district on the lines of that which exists in Italy could help address the problem of diffusing this information to suppliers in this industry in Argentina. Although some suppliers can produce component parts at the level of quality required for exported furniture, they are usually reluctant to invest in matrices. One of the leading export firms claimed that their suppliers do not have difficulty producing necessary components. The difficulty emerged in convincing the supplier to invest in the production of specific matrixes necessary to produce these components. The quantity of parts demanded by this particular client does not justify the investment in making these matrixes on the part of the supplier. This lead firm says that sometimes they can convince suppliers to produce the necessary matrixes by explaining to them that other firms exporting to the United States will need the same component parts. In essence the problem of scale requires firms to seek ways to convince their suppliers to make the investments required for them to properly supply what the firm is demanding. With greater coordination between suppliers and their clients in this industry, perhaps through an industrial district, this problem could be addressed.

Marketing upgrade

In addition to the problems associated with designing and producing products properly for export markets, firms in the wooden furniture export business in Argentina also face a significant problem in moving beyond mere sporadic, one-time exports to a consistent export strategy. As outlined above, this switch involves a dramatic transformation of the manner in which the vast majority of exporters in this business are accustomed to conducting transactions. They can no longer simply export excess stock. They simply are not accustomed to working closely with a limited number of distributors to develop a variety of products over time. They may have a few clients abroad to whom they sporadically sell the same product, but they have not transformed the way in which they conduct business with foreign clients. Although

Argentine producers have traditionally handled limited volumes of production for export, they are nonetheless not accustomed to meeting specific demands of their distributors. If an Argentine firm can prove to a distributor that it can meet their requirements, this person is likely to work with this firm in the future. If not, the distributor will look for another manufacturer. What appears to be a one-time contract for specific goods can be turned into a long-term relation if the manufacturer takes the time to ensure that a contract is fulfilled in the way desired by the customer. There would appear to be sufficient distributors looking to work with wooden furniture manufacturers from Argentina. The challenge for firms in this country is not only to change their quality habit in manufacturing, as outlined above, but also to change their perception about how they work with their distributors. They have to invest time and money in developing relationships with them instead of just seeking sporadic deals that can be terminated quickly.

Once an Argentina factory starts working closely with its distributors, they often find that these distributors are demanding volumes and variety beyond the capacity of a single Argentine factory. In the past they had simply sold what they had or made specific products to order. Now, they are confronted with distributors who want a large variety of goods from the same producer. If the wooden furniture manufacturer is unable to deliver the variety desired, the distributor is likely to look for a different partner. Even firms that have the resources or can potentially obtain them are reluctant to increase the size of their operations due to fears that foreign demand may not be stable or that macroeconomic conditions might change.

Hence, leading firms in this sector often turn to other manufacturers to help them meet the demands for quantity and variety demanded by distributors. Organizing the production of these goods can prove just as difficult as adapting products to the tastes of a particular country. Problems arise because many companies simply either do not fulfill their obligations or they send products that do not meet the quality standards in terms outlined above demanded by consumers in the developed world. The export manager of Mehring works very closely with the other companies he contracts for foreign orders to ensure that they are making products that meet these quality requirements. He works to ensure that the size, color and consistency are correct. He often tests firms with small orders to see if they can meet their quality requirements. He monitors their operations closely to ensure that they are manufacturing products the way they should because he knows that if bad products are sent under his name, it can damage his reputation and lead to a decline in their international sales. Jorge Etchebehere's operations in this regard are similar to those of Mehring. The only difference is the fact that he is an intermediary and not a producer.

In order to work more closely with the firms that supply them with pieces of furniture for export, Mehring has started to form an industrial district based on the Italian model in order to resolve this problem. This company contends that the industrial district is one of the keys to Italian success in this business. Except for these districts, Argentine furniture manufactures would seem to possess almost all of the resources to directly compete with Italians in this market. They have the raw materials and knowledge to produce furniture at this same level of quality as their Italian counterparts. The prices that some Argentine manufactures have fetched for their products in this segment would seem to indicate that they are more than capable of competing directly with the Italians. Besides the structure of an industrial district, Argentine manufacturers also have to contend with the fact that the Italians designers are widely recognized in this field. In general within the contemporary furniture segment, manufactures tend to associate themselves with a well-known designer. Clearly, the latter strategy proves more difficult in Argentina. Nevertheless, intermediaries like Jorge Etchebehere are attempting to develop designers capable of making designs similar to their Italian counterparts. Clearly Argentine is decades behind their Italian competitors. However, they are undertaking initiatives to catch up. In many ways, Jorge Etchebehere already operates an industrial district, albeit in a virtual form.

There is general agreement in the industry that firms have to seek to develop distributors who act as their partners in foreign countries. Companies have to move beyond the mentality of looking at each sale as an isolated event. The key is selling greater quantities and varieties to the same distributor rather than looking for new clients. Firms can even chose to work with just one distributor in a particular country. Although the vast majority of wooden furniture makers in Argentina are targeting the upper end market, brand names are customarily not important. The final customer usually is not even aware of the name of the company that produced her particular piece of furniture. Clearly a brand name can help generate business with a distributor but it is not necessary for wooden furniture manufacturers to invest time and money in developing and marketing their brand name in the traditional sense of undertaking advertising campaigns. Instead they need to build a reputation for their company through their ability to meet the varying demands of their clients in a timely way with products meeting the quality standards demanded by consumers in the advanced industrialized world.

Despite the fact that brand names would appear not to be important for this industry, the idea of having a country trade mark is appealing to most companies in this industry. If Argentina became known for producing good furniture, there is the potential for all the firms in this sector to grow. The market in the United States alone could more than accommodate all manufacturers in Argentina. Even smaller markets can potentially be big markets for this sector. The fact that many leading companies are helping firms to

upgrade the quality of their production in terms outlined above, indicates that firms are not afraid of diffusion knowledge within the sector. Their greatest fear would seem to be the possibility that companies which are not serious about exporting can undermine the image of those that are. Paradoxically the diffusion of information about how to improve the quality of wooden furniture made in Argentina and improve relations between distributors and their Argentine clients, could lead to larger sales for all of the businesses in the sector.

This is an issue that The Argentine Federation of Wood Industry (FAIMA) is attempting to address. While they do not want to prevent firms from exporting, they do not want to undermine the success of those who have established themselves as quality producers. The top management at FAIMA believes that some type of quality certification is necessary for furniture exported from Argentina. They are working with a group of Italians to develop this type of certification. In contrast to people at the Federal Council on Investments, some participants in this industry believe that not all Argentine producers should be allowed to display their products at the internationally renowned trade fair of wooden furniture manufacturers in High Point, North Carolina; attendance at this biannual trade fair is almost obligatory for any company that wants to export to the United States as it serves as the main arena for companies across the world to demonstrate their new designs and meet with U.S. distributors. The observers contend that companies have to prove they can make new designs and produce good products at reasonable prices. If any firm is allowed to participate in this trade fair, it has the possibility of undermining the producers that are producing to these standards. Argentina has to be associated with a high quality product.

Those firms in this sector that obtain contracts to export to a foreign country and do not fulfill these contracts with furniture that meets the quality standards of that country can undermine the possibility that the distributor involved will work with the firm in the future. Companies in this sector that operate according to the old business model sometimes look for export contracts when their sales on the internal market decline and then abandon these contracts in mid course when their sales on domestic market pick up. This behavior clearly undermines the possibility that the distributor involved will work with the company in the future. Adapting the new business model also requires firms to change the way in which they fulfill their contracts. In the domestic market delivery and payment times are often negotiated after a contract is signed and even after these terms are set, it is understood that there is some flexibility. So a manufacturer can delay shipping products and buyers can delay paying without severe repercussions. This is simply a custom in the domestic market. However, such behavior in the international market is intolerable. Hence, firms have to learn how to work in a different way when they chose to export. This could appear to be minor issues but it can make the difference in the success or failure of a company's

exports. These issues revolve more around customs than the lack of some type of infrastructure. It is just an accepted way of doing business on the domestic market. Apparently, wooden furniture manufacturers that can adapt their products to the styles of a particular market can be successful without changing their back office procedures. However, those companies that have been successful realize that they need to turn their attention to these issues if they are to continue exporting consistently to countries like the United States.

In the end, firms in this sector have to make a long-term investment in changing the ways they operate their back office operations and in the ways they address quality concerns of their potential clients. Investments in new machinery would not appear to be a critical issue. However, firms have to make concrete capital investments in developing their foreign markets. They have to be willing to travel, spend money, participate in trade fairs and even send some of their products free of charge to potential clients abroad. Yet, building a new export business model goes beyond merely attending trade fairs. Firms also have to deliver quality products in a manner that accords with the specific demands of their clients. Many firms either do not understand that they have to make such investments or abandon the new export model when they realize how much time and effort it takes to convert their operations to meet the specific demands of foreign clients.

Pioneer

Jorge Etchebehere is a commercial agent who not only fully understands the new export business model but also helps firms to implement it by directly working with them to upgrade the quality of their production and upgrade how they market their products abroad. His personal experience in this industry exporting furniture for a number of Argentine manufacturers of wooden furniture provided him the vision of what firms need to do to compete effectively on the global market. His experience in helping firms to implement this business model in the areas of design and production has helped him to further refine this model. His first experience selling furniture in the United States taught him that wooden furniture manufacturers need to pay attention to small details in their production in order to effectively export their products, while his interest in the U.S. culture and contacts with people from that country taught him that the people from the United States are obsessed with quality in their products and the services that back them up. His experience with a designer he hired to evaluate the prototypes of his clients taught him that small details in a design can be critical in determining the successful export of a product. Finally, his work with sales representatives he hired from the United States to help manufacturers adapt their furniture

to the tastes of upper-end consumers of wooden furniture in the United States enabled him to begin training Argentine designers to adapt furniture to the tastes of consumers in that country.

Although he is technically a commercial agent working to export wooden furniture, he is in reality more like a consultant. His only direct source of income from these manufacturers is the commission on the sales that he makes in the United States. He offers his “consulting” services to his potential clients because he believes that if these firms do not adapt the new export business model, he will not be able to export any of their furniture. In this sense, he is acting to diffuse knowledge about this export business model while at the same time trying to benefit from the diffusing of this knowledge. He often visits the factories of his clients to help them make the product and market upgrade. With regard to the former he shows them how small mistakes in the production process lead to quality problems that will not be tolerated by customers in the United States. He also explains to them that they have to be careful about the way they dry their wood as this affects the consistency of the staining process. He also brings his sales representatives from the United States to show his clients how to adapt their products to the tastes of consumers in that country. As for the market upgrade, he works directly with the owners of these companies to convince them to commit themselves to an export project and to fulfill their promises. Etchebehere is still in the primary stages of establishing his business. Although he represents a number of different companies in this industry, his total sales for any particular year would not equal more than that of the 10th largest exporter in this sector. The most significant problem he faces in expanding his business is convincing the firms he represents to be committed to the project of fully implementing the new export business model.

Jorge Etchebehere’s experience in dealing with people from the United States began in 1969 when at the age of 16 he was an exchange student in New Jersey for 3 months. It was at that time he began to understand the way of life of people in that country. He used the knowledge he gained about the U.S. culture in a job he had when he was working for Argentine company selling seeds and fertilizers provided to them by Monsanto. Although he did not work directly for Monsanto, this company provided him training in sales and marketing on a regular basis by their representatives that traveled to Argentina from the United States for that purpose. Usually they used translators but they did not need them to interact with Jorge. He also helped these representatives with presentations they made in Argentina and interacted with them on a social basis as well. He eventually stopped working for Monsanto when he had to take over 500 hectares of farmland; some of his clients were not able to pay him so he took the land as a means for covering their debt with him. He had to sell the land after he had a bad year.

In 1991 he began working for Genoud, an important manufacturer of furniture in Argentina, as a sales assistant. In the first two years he worked with this company he traveled around Argentina selling furniture. Two years later the president of Genoud decided to send Etchebehere abroad to sell furniture for his company. Even though he had not had any previous experience in exports, he soon found himself taking a 6-month course from a local university and leaving for his first trip to the United States as a sales representative for this company. On that trip he realized that the products he was attempting to export would not sell themselves. His potential clients were asking for a lot of technical information that he could not provide. Consequently, on his initial trip he did not sell anything. Although other Argentines in this industry have come back from similar trips thinking that the companies that they met simply did not like their products, Etchebehere's experience working and socializing with people from the United States taught him that this was not the case. The people he met on his trips just wanted to have more information about his products. Etchebehere did not have this information and so he returned to Genoud's factory to familiarize himself with every step in the production process. At this time, he also took advantage of the fact that the president of Genoud at that time was also the president of FAIMA, the Argentine Federation of Wood Industry, to travel around the country with him visiting different wood furniture producers. Six months after his return to Argentina to familiarize himself with how furniture was produced in this country, he returned to the United States and began selling furniture for Genoud.

As a result of his visits and the number of different orders for a variety of different furniture products he made when working for Genoud in the United States, he realized that he did not have to limit himself to selling furniture for just one Argentine company. He could represent many of them in the United States. In 1997 he decided to create his own company, moving from Pergamino, where Genoud is located, to Buenos Aires to establish it. Shortly thereafter taking this decision he decided to put an advertisement in a trade magazine in the United States indicating that he was looking for sales representatives in this business. He received 20 resumes. He sent pictures of the furniture being produced by various Argentine companies to all of the people who responded to his advertisement and one of them, a designer, wrote him back contending that none of these products could be sold in the United States. He told Etchebehere that the furniture was well made but was not designed in a way that would make them appealing to consumers in the United States. Etchebehere contracted this person to come to Argentina to help companies adapt their products to the styles and tastes of the United States. While he was undertaking this activity he also managed to help Fontenla, one of the leaders in this industry outlined below, to sell its first shipment of furniture to the United States. He has also helped make commercial contacts for Mehring in the United States.

In 2001 he developed a project with the Federal Council on Investments (CFI) to start helping manufacturers to learn how to upgrade the design of their products so that they could export. He organized meetings with groups of companies and two specialists on U.S. furniture to teach Argentine manufacturers of wooden furniture how to make products suited to the tastes of people in that country; this project is detailed below in the section on diffusion. In 2003 Etchebehere contracted two sales representatives in the United States who have more than 30 years experience in the industry in that country. Together they formed Argentine Resource Goods (ARG) to sell furniture in the United States. This company operates a warehouse in Washington DC in which they store products of various Argentine producers. They also represent the interests of eight Argentine wood manufacturers. Although Mehring is one of the companies that they represent, Etchebehere basically just acts as an agent for them. ARG has a 300 square meter showroom that distributors can visit to see the furniture of the 8 Argentine companies that they represent. Their warehouse in Washington DC enables potential buyers to purchase merchandise from several different Argentine companies without having to wait for the delivery from Argentina. His partners in ARG in the United States also work on commission. Even when his partners come to Argentina to provide advice to potential clients, they are not charging their potential clients. They work with them with the hope of being able to sell the manufacturer's products in the United States. In many aspects Etchebehere's commercial structure resembles that of the industrial district that Mehring is in the process of creating. Mehring, like Etchebehere, exports furniture produced by other companies. They are also work with these companies to help them make the necessary product upgrade.

These representatives come to Argentina on a regular basis to provide general advice and help Argentine firms adapt their furniture to the tastes of people in the U.S. market. In these meetings, they provide general advice about how these firms can improve quality, packaging and even pricing. However, they also provide very detailed advice about styles and tastes in the United States. Although they provide these producers advice on measurements, dimensions, sizes, weights and general appearance, their help goes beyond these technical issues. Their assistance is critical because they often detect the type of quality errors outlined above in furniture that Argentine producers are seeking to export. They also provide local designers an understanding of how their potential clients live, what criteria they have for choosing furniture, what colors they like, etc. It is even important to understand how they eat and how they place furniture within their homes. These details help designers to properly understand the particular tastes of the end-client in the target market. In these meetings Etchebehere attempts to create a dialogue between these representatives and the firms he represents. This interaction enables firms to produce unique pieces of furniture that they can position well in the market. Etchebehere contends that it is important to start the process by thinking about what design and quality characteristics clients abroad are

seeking and then going back to the design and production process to see how these issues can be addressed. Etchebehere believes that it is critical to involve managers from every part of the production process in these meetings. As mentioned above, this is a long-term investment that can take years to yield results. Some producers are just unwilling to commit the time to make these changes. Etchebehere contends that firms have to understand that it may take a lengthy period of time before a firm actually sells anything abroad. Nevertheless, many producers stop trying to export if they do not succeed after their second attempt.

Because Etchebehere is a commercial agent, his source of income are commissions that he collects on sales. His partners in ARG in the United States also work on commission. Even when his partners come to Argentina to provide advice to potential clients, they are not charging their potential clients. They work with them with the hope of being able to sell the manufacturer's products in the United States. In many aspects Etchebehere's commercial structure resembles that of the industrial district that Mehring is in the process of creating. Mehring, like Etchebehere, exports furniture produced by other companies. They are also work with these companies to help them make the necessary product upgrade.

Diffusion

No firm in this industry fully understands all of the components of the new export model we have outlined above and therefore no firm has fully implemented it. Although Etchebehere fully understands every part of this model, he is still in the process of convincing firms to implement it. In this sense, diffusion is not complete.

Nevertheless, there are some firms in Argentina who have implemented parts of this business model. As we will demonstrate below, Mehring appears to be the firm that has most fully implemented it at this time. This company understands and has fully implemented the components of the product upgrade. However, it has yet to fully understand and implement components of the marketing upgrade. It has yet to develop long-term relationships with distributors to which it can consistently supply a diversity of furniture. Ivope, on the other hand, has pursued a business model distinct from the one we have outlined above and its model has not diffused within the industry. It is distinct from other companies because the company does not conduct any sales from Argentina. They only produce furniture from this country. The designs of its furniture are largely done in the United States. Its sole distributor is its majority shareholder who lives and works in the United States as the owner of a distributor that sells furniture from Ivope and another company in Peru. Each case is discussed in turn.

Mehring

Gerardo Mehring founded his company in 1953. In 1980 he went to Italy to buy machinery and upgrade his plant with the machinery he would need to export. At that time, he did not have any international clients but he knew that he would have to upgrade his facilities to be able to export in the future. Shortly before his trip he recognized that the buying power of the Argentine consumer was declining while at the same time the exchange rate of the Argentine peso made the purchase of machinery abroad relatively inexpensive. With the machinery bought in Italy he created the first production-line factory in this industry in Santa Fe. Until that time, all of the producers in that province were organized like traditional artisan shops.

The process of developing foreign clients took some time. By the late 1980s Gerardo Mehring tried to gain access to foreign markets by taking some of his chairs to foreign embassies with a hand-written letter by him explaining what his company was producing. His idea was that the embassies would send the furniture back to their home countries and hopefully make some contacts for his business. The first real experience with exporting did not come until 1988 when the company sent its first shipment to Uruguay, making them the first furniture company to ever directly export from the province of Santa Fe. Gerardo had realized that some wholesalers from Uruguay had been buying his furniture from shops in Buenos Aires and shipping it to their country. Hence, he decided to try to ship his furniture directly. He stopped exporting to Uruguay shortly thereafter due to the high tariffs and the bureaucratic difficulties imposed by Argentine customs.

In 1990 Mehring was approached by Reno, a producer of kitchen furniture manufacturer detailed in our counterfactual case, Mehring agreed to produce this bed despite having never produced a futon sofa bed before. The company with which Mehring made the contract sent a designer to their factory in Argentina to help them design this product. They still export sofa beds today. However, their market share in the United States declined significantly in the late 1990s due to competition from companies in Asia. Although this product was unknown on the domestic market before they started exporting it, the company actually sells more of this product on the domestic market than it exports. Up until this point, Mehring had not made the transition to specializing in contemporary furniture.

The greatest problem Mehring faced during the 1990s, and to some extent still today, is the volume of furniture demanded by clients in the United States. They have actually lost U.S. clients because the factory had not been able to meet the volume demanded by these clients. Gerardo felt he needed time to

grow but the orders were coming in too fast and he knew that with his existing capacity he could not meet this demand. At this time, Mehring continued to export even though it was losing money. Hence, they had recognized at this time, as outlined in the section on marketing upgrade, that exporting was long term investment. In the late 1990s Mehring would start tapping into the resources of local firms as a means for attempting to provide clients with a greater diversity of products. Still today they have trouble trying to find other producers who can upgrade their production to meet the requirements laid out in the section above on product upgrade. By relying on sporadic sales, the firm is unable to sustain a constant level of sales and perhaps for this reason is unwilling to make an investment in a further expansion of its operations.

During the mid 1990s Mehring learned a lot about the U.S. market by attending, the internationally renowned trade fair in High Point, North Carolina. This biannual trade fair is the most important one in the United States for this industry. It is where manufacturers meet distributors. At this trade fair Mehring met some potential clients and learned how to adapt their products to meet the particularities of that market. Nevertheless, the company would have to return to Argentina to see how they would be able to change their production to implement what they had learning. In essence, they were just beginning the learning process. Upon receiving a contract to make folding directors chairs they learned that people in the United States like to assemble their own chairs. Hence, the people at Mehring learned to write instructions for assembling their chairs, make drawings illustrating how to put them together and separate different parts into different types of bags. Although this type of work was totally different for this company, it gave this manufacturer a taste of what they would have to change in order to continue to export.

The clients that Mehring contacted in the mid 1990s, including the one for the directors chairs, made prototypes and worked with Mehring to adapt them to the particularities of their production process. At this time they were still not designing their own products for foreign markets. One of the most important problems Mehring faced at this time was dealing with differences in standard measurements for furniture between these two countries. These differences are what required the firm to have to adapt the prototypes made by their clients to their production process and that of their suppliers. Differences in these standards and the nature of the machinery possessed by Mehring caused them to often have to adapt such prototypes to meet their capacities and the components provided by their suppliers. To have reproduced the prototype would have required totally different machinery and Mehring realized that it was not really necessary to have it. They could simply adapt the product to their capacities. The buyers seem to have tolerated the differences in measurements.

Mehring learned the importance of integrating design into its export business model after a trip its export manager made to Puerto Rico in 1997. After having sent some designs to Mehring, the client told them that their quote was too expensive. He claimed that he could have someone produce it in Brazil at a much lower price. However, the contact was willing to buy products that Mehring itself would design. In 2000, three years after the initial contact, Mehring started exporting chairs it had designed itself to this client in Puerto Rico. These shipments were soon followed by tables and then bedroom units. They were able to make such sales because they had hired two designers to work on this and other projects. It is important to note that Mehring does not make bedroom units or tables. They contract other firms to make these items. They produce solely chairs. This experience demonstrated to Mehring that they could not compete with the Brazilians. They would have to move up market and begin competing directly with Italians.

At the High Point traded fair in October of 2000 the Association of North American Furniture designers awarded Mehring and Saloon, a U.S. manufacturer of tables to which Mehring had sold chairs since 1998, their highest award for their Dynasty Collection. The chairs that Mehring sent to be part of this collection were the same that they were selling in the domestic market. Nevertheless, the winning of this prize caused Mehring to start working together with Saloon to develop new models every year for the stand that Saloon has at this trade fair.

In 1998 Mehring began working with a local designer, Elisabet Arn, to adapt their products to the tastes and changing styles of people in foreign countries. She had been trained in Argentina and Italy and was therefore more than capable of approaching design from a foreign perspective. This designer works on commission for Mehring. She contends that it is necessary for designers to be involved in every part of the production process. In essence, she helps Mehring and other firms make the product upgrade described above. She has worked for FAIMA and CFI on projects with Jorge Etchebehere to diffuse information about how to adapt furniture to the styles of other countries. Shortly after they started working with her, Mehring sent Ms. Arn to Italy to learn about Italian industrial districts. Mehring believed that this type of organizing production and sales could help them meet their challenge of selling a greater volume and variety of products.

Enrique Mehring, the production manager, had gone to Italy in 1992 to buy new machinery and had returned interested in Italian industrial districts. This model was appealing to the managers of Mehring because it showed how a group of independent firms could work together to manufacture and sell products. Now, for example, part of the production of some of Mehring's tables is done by one of the

firms in the industrial district created by this company. They began with 5 companies and now there are 28 in this district. The Italian embassy has been involved in helping them to construct the industry district. Over the past three years, eight Italian experts have visited them to help them construct it.

Mehring is in charge of the design of products and production of products done by firms in the district. Each firm produces the products and/or does the production processes for which it has expertise. Furniture produced through the district is then sold under the Mehring name. In essence, it works as the broker by coordinating production and selling the final products. Being a member of this district does not prevent firms from selling their own products under their own name. Furthermore, working in the district can help firms to improve the products that they sell under their own name. Mehring demands high level of quality and shows the firms how to meet it. This knowledge spills over into the production that a firm undertakes on its own for the internal market.

Ivope

The business model of Ivope is distinct from what others are doing in this sector and would seem to be the result of pure happenstance, not out of a careful analysis of markets and production capabilities by either Ivope or their partner in the United States. Hence, the business model of Ivope is quite distinct from that of others in this industry. Ivope never successfully exported furniture on their own. All of their exports were funneled through their business partner in the United States. The success of this partnership enabled Ivope to discontinue selling their furniture in the domestic market and to dedicate 100% of their production to solely exporting furniture through their partner to the United States. The company never developed other channels of commercialization. Although Ivope had to upgrade their products to meet the specific demands of their U.S. partner, it never upgraded the marketing component of their business model as this end of their business was handled by their distributor in the United States.

Ivope started as a small carpentry shop in 1985 when the domestic demand for furniture made with carob wood was just beginning. Although their shop was using this wood, they quickly found that consumers in the domestic market were generally not interested in the high level of quality of their product. Consequently, they decided to export. The company made its first shipment to the United States in 1990. However, the buyer of this container stopped payment on the \$30,000 check she had sent as payment for this furniture. They meet their future partner in attempting to recover their container. Like them, their future partner, Gerry Cooklin, had also had a similar problem with the same person who had bought

furniture from Ivope. Gerry Cooklin is a person of Peruvian descent who owns Southcone, a distributor of furniture for a Peruvian company Exportimo.

In 1991 Mr. Cooklin agreed to invite Ivope to share a stand with him that he had in the trade fair in High Point. After successfully selling some of the furniture of Ivope at this fair, Southcone agreed to become the distributor for Ivope in the United States. The style of the furniture sold by Ivope was similar to that sold by Exportimo. In 1995 Mr. Cooklin bought 20% of Ivope after one of the three founding partners decided to leave the company; the remaining 13% was split between the two other owners. Two years later Mr. Cooklin bought another 40% of the company, making him the majority share holder. Southcone has one showroom in Los Angeles and another in San Francisco. They had to close a showroom in New York shortly after opening it because of the lack of sales in that region. Ivope had never sold to anyone in the United States until beginning to work with Mr. Cooklin.

Production between the factories of Exportimo and Ivope are coordinated by Southcone. In general, Ivope produces chairs and tables for dining rooms, while Exportimo produces bedroom sets. Ninety-five percent of the chairs sold by Southcone are manufactured by Ivope. Although the factory in Peru does produce some tables, the vast majority of them are made in Argentina. Ivope does produce some lines of furniture for bedrooms and dining room collections together with Exportimo. However, the scope is limited as coordination between these two plants is rather difficult. Problems in coordination arise for small details such as the type of wood used by each factory. In general, it is difficult to produce two pieces of furniture in different factories in different countries that have the same consistency. Although Ivope does employ two designers, the basic designs of the furniture are made by Southcone.

The majority of the sales of Southcone are in California where the firm is based. This particular state is well-known for having a variety of legal restrictions on firms especially in regards to issues involving the environment. Ivope was actually forced to stop its operations in 2000 when the California state legislature passed a law requiring chair manufacturers to use fire-proof foam. Consequently, Ivope had to stop operations for three months to find a supplier of this type of foam that could get its product certified in the United States. In constructing export business models companies should attempt to ensure that their sales are not limited to one particular state within the United States as such difficulties can arise. Other companies in this industry contend that it is advisable to actually not focus on exporting products to one country as such a focus makes a company too dependent on the economic situation of the country to which they export.

Counterfactual case

Despite the fact that Reno was one of the first companies to export from Argentina, this company has not developed a new export business model. It continues to export practically the same products in practically the same way that it did more than 25 years ago. The business model of Reno is not advisable for other companies in this sector as it is rather unstable. Foreign competitors can quickly emerge to reduce a company's market share if, like Reno, it focuses on market segments with thin margins.

The company was founded in 1956 and was the first Argentine producer to offer modular kitchen furnishings. This sector is particularly difficult because kitchen furniture is generally customized to the space of the client or imported in standard relatively inexpensive pieces from low-end producers like China. The founder of this company traveled to Europe in the 1970s to understand the design and production of kitchen furnishings. In 1981, the company started exporting to the United States. Shortly thereafter their exports to Spain began. He had a warehouse in Los Angeles in the first half of the 1980s. He was forced to close it in 1986 because his firm was losing competitiveness. The Company's second experience with exporting came in 1990 when it opened a subsidiary in Spain. From there it bought parts from all over Europe and sent them back to their plant in Argentina to be assembled. Their operations were later expanded in Spain to manufacture kitchen furniture for that country. Through their office in Spain they were also able to gain financing for their projects at much lower interest rates than what they could obtain in Argentina. Currently international invoices represent 5% of their total sales. As mentioned earlier, Reno helped Mehring gain a foothold in the United States.

The products which it commercializes internationally differ little from what they sell on the domestic market. The manner in which it customizes its products, namely changing colors, finishing and details such as draw handles, is the same for the internal as well as the external market. Furthermore, it has not moved up market to produce higher-end kitchen furniture. Consequently, the high level of competition in its particular market segment means that its margins are rather slim, making it susceptible to changes in governmental policies in the area of exports. Those manufacturers in this industry that find themselves producing higher end products have higher margins and are therefore better able to absorb reductions in their margins resulting from changes in governmental policies regarding exports. The fact that the margins of this company are rather thin, has caused the owner of this company to decline to dedicate more than 20% of his domestic production to exports. He contends that dedicating any more of his production to exports could put his whole company at risk.

The export strategy of this company is partially shaped by the first export experiences of its founder, Arcadigni Reno. In one of his first attempts to export furniture to the United States he was forced to open a warehouse in Los Angeles and fill it with a six-month supply of furniture so that the buyer in the United States could be certain that Reno would not simply stop supplying him if Reno received a better offer. Reno decided to open this warehouse even though it caused him to lose money on the deal made with his client in Los Angeles as he was hoping that he could develop a long-term relationship with this buyer. This project lasted only two years, after which time the buyer simply started working with a new supplier. Similar skepticism about the reliability of Argentine manufacturers of wooden furniture by a buyer in Spain caused Reno to change his strategy by opening up a factory in that country. Unlike other leading producers in this industry, Reno is actively developing a brand name at home and abroad. Like one of the leaders in the wine industry, he contends that in the future people will be interested in brand names than the country of origin of a particular product. He believes that it is even possible in the future for him to close his factory in Argentina and start supplying this market from another country.

The role of government, associations and a broker

The government only appears to be peripherally involved in promoting this export sector. It is indirectly involved through institutions such as ExportAR and the Federal Council on Investments (CFI), two important institutions for wooden furniture exporters in Argentina. Yet these are not the only institutions helping with exports in this industry. The Argentine Federation of Wood Industry (FAIMA), an umbrella organization of different chambers of commerce in the wood processing and wooden furniture industries also provide assistance to firms in this sector. While ExportAR seems to concentrate solely on the commercialization of products abroad, the latter two organizations are directly involved in diffusing knowledge throughout the industry. These three institutions and the CFI are dealt with below. First we turn to the role of CFI before turning to the role of Jorge Etchebehere in promoting diffusion in this industry and examining the importance of the other two organizations

The Federal Council on Investments (CFI) is an organization born out of an agreement between the provinces of Argentina to work together to promote research and recommend measures for improving investment and development in the country. One of the goals of this council is to bring technology and knowledge to groups that normally do not have access to these sources of growth. The goal of this organization is the fostering of social networks to promote diffuse technology and knowledge. This organization has played a key role in diffusing knowledge about ways in which firms can upgrade their design capabilities. This organization tapped into the expertise of one of Mehring's designers, Elisabet

Arn and Jorge Etchebehere, to demonstrate to six groups of wooden furniture producers from five different provinces how they can adapt their furniture to the tastes of potential clients in the United States. Then they brought buyers from the United States to view these products and help them to develop prototypes. The success of this program inspired the CFI to support a trip by these groups to the international trade fair in High Point, North Carolina. CFI rented 300 square meters at this trade fair to demonstrate the products developed with the help of the U.S. designer. At this trade fairs some of these firms were able to actually sell some of the products they developed with the help of this organization.

The CFI is forbidden by its statute from repeating such programs over the long-term. Recognizing the value of this program, FAIMA decided to take it over. Now FAIMA is putting firms into contact with designers to help them adapt their products to foreign markets. These firms, working with FAIMA, develop designs with an expert in the area, develop prototypes on their own and then return to evaluate them with the designer. Like the plan developed by CFI, the idea of this project is to help firms go to the trade fair in High Point. There are about 15 companies participating in this program. Apparently, there are many companies in this sector that are looking for well-trained designers. FAIMA is also working closely with Elisabet Arn, Mehring's designer, to train Argentine designers in this industry how to adapt their designs to international markets. They are drawing on the skills that she learned in Italy.

In general those working for FAIMA believe that wooden furniture producers have to take advantage of the current economic situation in Argentina to undertake programs to develop the sector so that firms will be ready when economic conditions are not as favorable. In addition to helping firms gain access to designers and developing a program to train designers, FAIMA is also working to help firms update their machinery and form export consortiums. These export groups enable firms to join together to travel to trade fairs such as High Point. They are really only intended for such purposes and do not involve any type of formal interchange on other issues. FAIMA also has a program to help firms share consultants who address a range of common issues. This organization has made an agreement with two Italian companies to recondition numerically controlled machines in Italy that are no longer being used by Italian producers. According to the criteria set down by FAIMA, the machines have to have been made after the year 2000. The two Italian firms that sell these machines also provide firms training on how to use them.

While FAIMA seems to be primarily concerned with issues of design and production, ExportAR deals exclusively with the issue of commercialization. It is a semi-private organization that promotes exports for practically every industry in Argentina. It helps firms make the types of contacts that can help them learn the importance of adapting their products to the needs of international clients. ExportAR provides

firms with detailed reports on international markets and financial assistance for firms to travel to international trade shows, thereby not only diffusing knowledge about the sector but also help firms to build their commercial contacts. They also help firms to form export consortiums, for which they cover the full salary of a coordinator for the first six months. Their contribution to this person's salary declines by 25% every six months so that by the end of the first two years these groups are self-financing. Their export group for wooden furniture does not appear to be very active in this industry. The coordinator of this group actually believes that it is impossible for wooden furniture manufacturers in Argentina to sell their products in the United States. He concentrates on selling furniture directly to retailers in Chile, Ecuador, Guatemala, Panama and South Africa. This export group would seem to concentrate on smaller producers as none of top exporters participate in this group.

Etchebehere plays a critical role in diffusion knowledge and know-how in this industry. He has worked with the program sponsored by the CFI for designs and is currently working with the program that FAIMA created to continue this type of training. At the same time, he is actively trying to help Argentine designers learn how to adapt products to the styles and tastes of people in other countries. In the meetings that he has with firms and his sales representatives from the United States, he always tries to invite at least one designer so that they can learn how to adapt furniture for the styles and tastes of that country. He believes that one day these designers will be able to design furniture without this type of help. However, for this to occur first they have to learn how to do it. It would be easy for Argentine companies simply to take designs from U.S. designers but Etchebehere is interested in developing Argentine designers who are capable of making them.

Public policy

Public policy in this sector should be directed at diffusing the export business model. This would ensure that more manufacturers of wooden furniture would be able to export their products on a consistent basis and thereby provide these firms, and the economy as a whole, a steady source of revenue. The unwillingness of firms to dedicate time and resources to the development of a sustainable export business model causes them to rely primarily on sporadic sales that do not generate incentives to sufficiently upgrade their marketing techniques and products. In essence, firms need to change their approach to exporting and become aware that exports could be more sustainable if they were to adapt the emerging business export model described above. Hence, policy makers should demonstrate the benefits of this new export business model and show them how to implement it. Once firms are convinced of the benefits of this model, policy makers can help them to change the way in which they design and make products

while at the same time helping them to learn how to build long-term relationships with their potential clients.

The ability of those firms that adapt a new export business model is inherently linked to the behavior of other firms in this sector. Firms that seek to adapt the new business model by working closely with suppliers and fulfill the contracts that they make often run into difficulties with distributors who have had bad experiences with other Argentine companies. Those firms in this sector that obtain contracts to export to foreign countries and do not fulfill these contracts with furniture that meets the quality standards of that country can undermine the possibility that the distributors that work with these companies are likely to work with other Argentina firms in this sector. Some firms do not fulfill these contracts because they do not view exporting as a critical part of their business. Consequently, they look for export contracts when their sales on the internal market decline and then abandon the contracts in mid course when their sales on this market pick up. In general Argentine companies in this business are not known for fulfilling their contracts and for this reason many distributors simply refuse to work with them or they impose conditions, such as a firm establishing its own warehouse in the country to which a product is to be exported, as a means for dealing with this uncertainty. Such behavior undermines the possibility that distributors will see value in working with Argentine companies. Consequently, it hurts the country trade mark. Although the Argentine government is in the preliminary stages of trying to develop a country trade mark, such efforts would seem to prove in vein if companies do not live up to some basic standards. Hence, public policy at this time needs to be directly at actually changing the behavior of firms rather than at promoting a country trade mark.

In order to effectively deal with distributors in advanced industrialize countries firms also have to change the way in which they are accustomed to conducting transactions. As mentioned above, firms are accustomed to changing conditions of contracts, such as payment schedules and delivery dates, after a contract is signed. This is relatively and accepted practice in the domestic market but customarily proves problematic in contracts involving customers in the advanced industrialized world. Hence, policy makers need to make firms aware of this difference in customs and show them how they can change their operations so that they can fulfill their contract in the manner expected by their clients in this part of the world.

Clearly quality is also an important issue for international clients in advanced industrialized world. Hence, it is important for policy makers to work with firms to improve the quality of their products in the manner described above. Although quality would seem to be an issue only to be addressed at the level of

the individual firm, it is also an issue when governments seek to promote exports by subsidizing participation at international trade fairs such as the one at High Point in the United States. If policy makers choose to provide subsidies for any firm that wishes to participate in such trade fairs, they run the risk that low quality producers will display their products and thereby create the image that Argentina is a producer of low quality goods. This problem is particularly acute for countries like Argentina that tend to display products from different firms together at such trade fairs. Subsidizing the participation of low quality producers is also a rather expensive way for them to learn basic ways to improve the quality of their products. One small producer of furniture for televisions returned from High Point without selling anything. Nevertheless, they were happy that they learned that furniture for televisions is much bigger in the United States than in Argentina. They could have learned about this critical difference between their products and those in the United States in Argentina. They did not have to travel to the United States to learn about this basis difference. Hence, policy makers wishing to help such producers would be advised to do so by helping them realize how to upgrade their products in Argentina before actually providing them subsidies to participate in such trade fairs. Consequently, policy makers should evaluate the “quality” of a manufacturer’s furniture before providing them subsidies to participate in such trade fairs. If they see that the quality of a particular producer is lower than these standards, they could provide subsidies that would help them upgrade their quality.

Nevertheless, policy makers should not focus solely on how to improve the quality of goods produced by firms in this sector. They also have to be sure that firms are able to produce products that meet the tastes of consumers in advanced industrialized countries. If the quality is good but the design does not fit these standards, clients in these countries will not buy the furniture being offered. Consequently, policy makers should work to promote the diffusion of such knowledge while at the same time ensuring that there are enough designers with the appropriate skills to adapt products to such markets. Perhaps they could promote exchange programs with Italian universities as this country would seem to be the most adept at designing furniture to meet the needs of specific clients.

Even if the quality and the design of a product meet the demand of markets in an advanced industrialized world, distributors will not work with Argentine wooden furniture manufacturers over time if they do not change the manner of conducting business. As mentioned above, they have to change their orientation toward foreign markets while at the same time changing the way in which they are accustomed to doing business. Hence, policy makers should work to ensure that firms in this industry are aware of these differences.

Once firms in this industry make the type of product and marketing upgrade illustrated above, they can find that they will be unable to handle the potential demand for volume and diversity demanded by a particular distributor. Italian industrial districts successfully address this problem. Hence, policy makers should consider advocating the formation of such districts. They could work to promote the formation of other firms like ARG or industrial districts like the one constructed by Mehring. The former would provide relatively small firms with little knowledge about foreign markets an efficient mechanism to upgrade their designs and tap into these markets. The latter would enable firms to jointly meet the demand for volume while at the same time providing a forum in which firms could share a designer and knowledge about upgrading production techniques. Mehring is currently trying to have the national government pass a law which would enable him to formalize the industrial district he is creating. Companies that seek to operate such districts confront many bureaucratic and tax problems that could be resolved if such a law was passed. Mehring contends that the Italian law governing industrial district is a good model. This company is basically trying to get the national government to adapt the same law.

References

- Agrawal, J. and Kamakura, W. (1999), "Country of origin: A competitive advantage?", *International Journal of Research in Marketing*, 16, 255-267.
- Azpiazu, D. and Basualdo, E. (2003), "Componente: Industria Vitivinícola", *International Development Bank*, Study 1.EG.33.6.
- Barnatt, C., Starkey, K. and Tempest, S. (2000), "Beyond Networks and Hierarchies: Latent Organizations in the U.K. Television Industry", *Organization Science*, Vol. 11, No 3, May-June 2000, pp. 299 - 305.
- CEP (2005), "La Industria Naval en Argentina," Working paper, Centro de Estudios para la Producción.
- Coibion, O., L. Einav and J. Hallak (2006), "Equilibrium Demand Elasticities Across Quality Segments," *International Journal of Industrial Organization*, forthcoming.
- Diaz Hermelo, F. and Lopez, D. (2006), "Dominio del Plata", Case Study for the University of San Andrés.
- Fey, C., Schmitt, D. and Bisson, G. (2005), "The Global Trade in Television Formats", April. Screen Digest and FRAPA (Format Recognition and Protection Association).
- Gazo, R. and Quesada, H. J. (2005), "A Review of Competitive Strategies of Furniture Manufacturers", *Forest Products Journal*, October.
- Hausmann, R. and Rodrik, D. (2003), "Economic Development as Self-Discovery", *Journal of Development Economics*, 72, 603-633.
- Hausmann R., Rodríguez-Clare, A. and Rodrik, D. (2004), "Towards a Strategy for Economic Growth in Uruguay", *Inter-American Development Bank*.

Maslatón, C. G. (2005), “Potencial del Complejo Maderero Argentino: Propuestas para el desarrollo de la cadena madera-muebles y su inserción en el mercado mundial”, *Instituto Nacional de Tecnología Industrial*, Working Paper #2.

McDermott, G. (2005), “The Politics of Institucional Renovation and Economic Upgrading: Lessons from the Argentine Wine Industry”, *The Wharton School of Business*, Unpublished Paper.

Moran, A. and Malbon, J. (2006), “Understanding the Global TV Format”. Intellect L & D, London.

Nonaka, I. (1994), “A Dynamic Theory of Organizational Knowledge Creation,” *Organization Science*, 5, 14-37.

Rauch, J. (1999), “Networks Versus Markets in International Trade,” *Journal of International Economics*, 48, 7-35.

SICA (2006), Statistics from the web site of the Sindicato de la Industria Cinematográfica Argentina. www.sicacine.com.ar/estadisticas_ambossectores.php

Verlegh, P. and Steenkamp, J. (1999), “A review and meta-analysis of country-of-origin research”, *Journal of Economic Psychology*, 20, 521-546.

Vettas, N. (2000), “Investment Dynamics in Markets with Endogenous Demand,” *Journal of Industrial Economics*, XLVIII, 189-203.

Appendix

This appendix presents a brief statistical analysis of export performance in Argentina at the sectoral level. The objective of this analysis is to identify sectors that have been successful in exporting differentiated goods to developed economies.

We start with a database of Argentina's exports at the 6-digit level of the Harmonized System (HS). There are 5427 HS 6-digit categories. We then aggregate data at the 4-digit level and use this level of aggregation to conduct the statistical analysis of sectoral export growth. Aggregation at the 4-digit level reduces the number of sectors to 1328. In the majority of cases, we think that 4-digit categories best group sets of firms and products that share similar technologies, labor-skill needs, distribution channels and marketing requirements.

We consider export growth between the average of the periods 1991-1994 and 2002-2005. The Argentine economy underwent a period of drastic trade liberalization that was mostly complete by 1991. Therefore, the choice of base period attempts to minimize the identification of sectors with emerging export activity driven by sectoral reallocation in response to trade liberalization. Averaging over four years prevents exceptional peaks – sometimes driven by measurement error – from dominating the measure of export growth.

We impose the following quantitative filters on the database. First, we require exports in 2005 to be above the threshold value of US\$ 10 million to exclude sectors that have insufficient economic significance. This amount represents 0.025% of total Argentine exports and 0.091% of industrial manufacturing exports in that year. This criterion leaves 267 out of 1328 4-digit sectors in the database. Second, we rank the remaining 267 sectors according to export growth between 1991-1994 and 2002-2005, and select only those in the top 40 percentiles. This threshold is conservative, but it has the advantage that it keeps in the list non-outstanding 4-digit sectors that might include 6-digit categories with outstanding export performance. Applying this criterion narrows the list to 106 4-digit sectors. Finally, among the 106 sectors, we select only those sectors that shipped more than a third of their exports to OECD countries. The application of this last filter results in a list of 30 sectors.

The identified sectors were classified into differentiated and non-differentiated following Rauch (1999). Of these sectors, 13 can be classified as differentiated (listed in Table 1) and 17 as non-differentiated (listed in Table 2).

Export performance criteria narrow the number of 4-digit sectors considerably, from 1328 down to 30. Of the three sectors that are studied in this paper and for which customs data is available (customs data is not available for exports of TV programs), two appear in this list: Wines and Wooden Furniture.

Harmonized system classifications (at four or six digits) can only provide an approximate identification of relevant economic sectors: a given sector may be more closely identified at six or more digits, or may span more than one 4-digit category (as is the case for wooden furniture and chairs, in this study). A finer classification may still fail to identify a relevant sector, as classification may become more specific along a dimension that does not distinguish between sectors. This is the case for the Light Ship industry, since Argentina's 10-digit harmonized system classification does not discriminate by tonnage or length. Once properly classified, the Light Ship industry passes all the criteria established here. Classification into differentiated and non-differentiated products is also approximate and dependent on aggregation. All wine exports are grouped together and classified by Rauch – and therefore also here – as non-differentiated. As shown in the case study for that industry, however, all wines of quality above table wine are highly differentiated.

For a number of sectors listed in Tables 1 and 2, growth is primarily driven by the increasing exploitation of resource-based comparative advantage in response to trade liberalization and deregulation. For instance, this is the case of copper ores (HS 2603), leather (HS 4107) and wood boards (HS 4407, 4409 and 4421). A few are highly idiosyncratic: Nuclear reactors (HS 8401) are exported by only one government-owned agency, while “Reaction initiators and accelerators and catalyst preparations NESOI” (HS 3815), “Turbojets, turbo propellers and other gas turbines and parts” (HS 8411) and “Aircraft” (HS 8802) correspond to sales of used equipment, previously imported. Netting these sectors from the list and reclassifying wine as differentiated puts wines, seats and seat parts, and furniture at the top of an export-ranked list of differentiated products with high export growth and substantial orientation towards OECD markets.

Table 1. High growth, high value sectors with large exports to OECD. Differentiated

HS4	Exports 2005 (US\$ M)	To OECD (%)	Growth [†]	Description
9401	76.3	85	18	seats (except barber, dental, etc), and parts
4407	74.0	59	44.6	wood sawn or chipped length, sliced etc, over 6mm th
8802	49.5	58	7.2	aircraft, powered; spacecraft & launch vehicles
3815	41.0	36	13.1	reaction initiators & acceler & catalyt prep NESOI
9403	36.3	36	5.0	furniture NESOI and parts thereof
4409	30.4	93	49.3	wood, continuously shaped (tongued, grooved etc.)
6907	27.2	94	32.4	unglazed ceramic flags & paving, hearth tiles etc
8401	17.6	100	6.6	nuclear reactors; fuel elem (n-i); mach isotop sep
8455	17.5	51	5.7	metal-rolling mills and rolls therefor; parts
8516	12.5	35	4.6	elec water, space & soil heaters; hair etc dry, pt
4421	12.0	89	16.7	articles of wood, NESOI
8411	11.9	50	11.8	turbojets, turbopropellers & oth gas turbines, pts
6109	10.4	47	14.7	t-shirts, singlets, tank tops etc, knit or crochet
	39,876.0	69	2.4	Total exports

[†]Growth: ratio between the average for 2002-2005 and the average for 1991-1994.

Table 2. High growth, high value sectors with large exports to OECD. Non-differentiated

HS4	Exports 2005 (US\$ M)	To OECD (%)	Growth [†]	Description
2603	1026.9	42	318783.3	copper ores and concentrates
2204	303.7	67	6.8	wine of fresh grapes; grape must NESOI
4107	268.1	41	57.8	leather of animals NESOI, no hair NESOI
7210	166.6	51	6.3	fl-rl iron & na steel nun600mm wd, clad etc
7108	145.4	70	16.2	gold (incl plat plated), unwr, semimfr or powder
2008	130.5	70	5.4	fruit, nuts etc prepared or preserved NESOI
2905	110.0	65	5.3	acyclic alcohols & halogenat, sulfonatd etc derivs
0806	75.7	60	5.2	grapes, fresh or dried
7224	54.0	99	1144.5	alloy steel NESOI in ingots, oth pr frm & semif pr
2302	52.1	91	5.1	bran, sharps etc from working cereals & leg plants
7214	39.6	64	8.5	bars & rods, iron & na steel NESOI, h-r etc
2827	38.0	70	149.2	chlorides etc; bromides etc; iodides etc.
2901	30.1	60	27.1	acyclic hydrocarbons
0810	28.9	99	126.8	fruit NESOI, fresh
3913	24.9	34	166.4	natural (inc modified) polymers NESOI, primary forms
2836	19.4	62	21.6	carbonates; peroxocarbonates; comm amm carbonate
0811	11.1	72	434.6	fruit & nuts (raw or cooked by steam etc), frozen
	39,876.0	69	2.4	Total exports

[†]Growth: ratio between the average for 2002-2005 and the average for 1991-1994.



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THE EMERGENCE OF NEW SUCCESSFUL EXPORT ACTIVITIES IN ARGENTINA: SELF-DISCOVERY, KNOWLEDGE NICHEs, OR BARRIERS TO RICHES?

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Abstract¹

This paper examines the emergence of three new successful export activities in Argentina: biotechnology applied to human health, blueberries and chocolate confections. The main interest lies in ascertaining why these sectors/products were targeted, on which previously accumulated capabilities they were built upon, and what type of hurdles they faced and how they were overcome. In the absence of government support for discovery, these new exports emerged because the pioneers could introduce permanent or dynamic barriers to entry to compensate for the knowledge externalities they generated. When they could only introduce temporary barriers to entry, *laissez faire* investment in experimentation was sub-optimally small. These new exports emerged in sectors where there were entrepreneurs with superior planning and networking skills and/or there were larger firms that could self-provide the required public goods and solve coordination failures by themselves.

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1. Introduction

This paper studies the determinants of new successful export activities in Argentina in the past 25 years with the goal of shedding light on the roles played by information and coordination externalities that make uncertain the ex-ante profitability of the new export, and on how these hurdles were overcome. It also seeks to determine the roles played by previously accumulated capabilities, industry-specific public goods and public policies in the emergence of these activities.

Hausmann and Rodrik (2003, hereafter referred to as HR) show that developing new export activities may require sinking capital into experimentation to discover if the endeavor is profitable or not. Once such activities' profitability is revealed, however, free entry into the activity erodes profits, thus preventing the pioneering entrepreneur from recouping experimentation costs, which would lead to sub-optimal investment in these activities under *laissez faire*. Additionally, the new activity may fail to be discovered because of coordination failures such as the lack of industry-specific public goods, which are not available because the activity that would demand them still does not exist.

It is very important to learn how the coordination and information externalities were resolved and whether this resolution facilitated the growth of the new activities via an information revelation process and the development of industry-specific public goods for several reasons. First, insufficient investment due to information externalities may generate efficiency losses that are not visible because socially profitable activities fail to be developed. Second, Hausmann, Hwang and Rodrik (2006) have found that greater export sophistication is associated with higher growth, and in turn this sophistication is facilitated by greater experimentation in the development of new export activities. Third, insufficient experimentation may lead to export concentration, which in turn has a negative effect on growth (see De Ferranti et al., 2002). Finally, widespread experimentation is needed to discover those activities with greater scope for catching-up to the world quality frontier (Hwang, 2006).

Economic environments where experimentation is not facilitated (through targeted subsidies, carrots and sticks, direct government involvement, provision of industry-specific public goods and/or adequate export-facilitating policies and institutions) may lead to the emergence of new exports mostly in activities where the pioneer can introduce brand, technology or scale barriers to entry to compensate for the knowledge externality, which harm diffusion. In

sectors where the pioneer does not have this ability to subdue diffusion, a *laissez faire* scenario would lead to sub-optimal investment in learning about the new activities and/or to the complete absence of experimentation in some potentially profitable new activities.

In this vein, our main interest lies in analyzing to what extent the self-discovery of local profitability for the new export activities creates knowledge externalities that lead to a large diffusion of these activities, à la HR, or whether these discoveries result from the exploitation of proprietary knowledge and/or the ability to introduce barriers to entry, with negative impact on diffusion. We are also concerned with the effects of the different drivers of discoveries for the accumulation of capabilities for subsequent structural transformation.

While HR emphasize the need to discover local costs of production for new export activities, there may be other sources of uncertainty regarding the ex-ante profitability of these new activities. These uncertainties are related to discovering: a) position and slope of the foreign demand curve for differentiated goods, b) the costs of quality upgrading to meet technical and consumer requirements abroad, c) the best commercialization strategies and export product mix, d) how binding non-tariff barriers actually are, and e) whether the good can be locally produced at all through R&D activities. Even with adequate knowledge of local costs of production arising from long experience in producing the good under import substitution, newly exporting firms/sectors may face ex-ante substantial uncertainty regarding the profitability of exporting.

We are concerned with these different types of uncertainty because their resolution will lead to different degrees of information revelation and will have different implications for the diffusion of new exports. For instance, when uncertainty is related to commercialization and foreign demand, export knowledge may diffuse across borders. In this setup, a pioneer may block domestic diffusion, but not foreign diffusion, which could further reduce the scope for local diffusion of the new exports (as foreign diffusion lowers export prices). In the case of uncertainty regarding the ability to produce the good at all, its resolution via R&D will probably generate proprietary knowledge and no diffusion, unless researchers move from one firm to another.

We also seek to inquire into the possible presence of coordination failures (simultaneous development of upstream and downstream activities, simultaneous investment in production and in the required infrastructure, etc.) that may negatively affect the emergence and diffusion of new export activities, and how these failures are overcome.

The ultimate goal is to shed light on whether there is sub-optimal investment in discovering new export activities, and how efficient the emergence of new activities has been in the absence of government intervention. We are interested in understanding if fast and widespread diffusion is always desirable or if there are instances (especially in differentiated goods markets or in markets with scale economies and love for variety) where limited diffusion is advised. We also consider the relative importance of previously accumulated capabilities at the country, industry and firm levels in facilitating discovery and diffusion, as well as the capabilities created by new exports that may facilitate jumping to more sophisticated exports later on.

We first provide a background on the trading environment in which the emergence of new exports occurred, analyzing the aggregate and sectoral behavior of traditional and new exports. We also evaluate the contributions of new exports to overall and sectoral export growth and to changes in the patterns of revealed comparative advantage, and their characteristics (factor intensity and scope for catching up to the world quality and price frontier).

Next we develop a theoretical framework for analyzing the emergence of new export activities. The starting point for the theoretical thinking is HR's model of local cost discovery, adapted to encompass the other types of uncertainties mentioned above. We allow for competing (or at times complementary) explanations for investing in new activities that arise from industrial organization models based on: a) brand development and sunk costs, b) technological or knowledge barriers to entry, and c) R&D or foreign technology adoption with technological or R&D spillovers. This theoretical framework generates testable predictions regarding the determinants of emergence of new export activities and their diffusion, and describes the different possible inefficiencies under *laissez faire*.

Then we contrast the predictions arising from the theoretical framework with a case study analysis of the actual emergence of selected new exports in Argentina. The main tool for gathering the required information is conducting interviews with pioneers, imitators, industry associations and public officials involved in public policies that affected the new exports. We also use disaggregated secondary information on sectoral and firm-level trade data from the Customs Office. A key tool for accepting or rejecting hypotheses regarding the drivers of discovery and diffusion is the counterfactual analysis of sectors that shared some common

features with the new export activities and yet failed to take off and/or showed a different pattern of diffusion.

The choice of case studies was based on the following considerations: a) negligible exports 25 years ago, b) fast export growth, c) reversal of revealed comparative disadvantage, d) current large volume and value of exports, e) degree of diffusion, f) relatively little intensity in the use of natural resources, g) preliminary appraisal of the degree of uncertainty involved in the discovery of these new activities. Based on these considerations we chose to study the following new export activities: blueberries, chocolate confections, and biotechnology applied to human health. The chosen counterfactuals, respectively, are fresh raspberries, sugar confections and biotechnology in Brazil.

Section 2 and the Statistical Appendix provide an empirical evaluation of the trading environment for new exports, and of their contributions to structural transformation. Section 3 presents the theoretical framework. Section 4 discusses the methodology for the empirical appraisal, via case study analysis, of the theoretical predictions regarding the determinants and impacts of the emergence of new export activities, and the choice of sectors to be studied. Sections 5 through 7 present the case studies and their lessons. Sections 8 and 9, respectively, present the development and policy implications that arise from the case studies. Section 10 concludes.

2. Trading Environment For New Exports and Contribution to Structural Transformation

This section provides a background on the trading environment in which the emergence of new exports occurred, analyzing first the aggregate and sectoral behavior of volumes and values of traditional sectors. The section then evaluates the aggregate and sectoral performance of new exports, their contributions to overall and sectoral export growth and to changes in the patterns of revealed comparative advantage, and their characteristics (e.g., factor intensity and scope for catching up to the world quality and price frontier). The background statistical information and graphical and correlation analysis that support this appraisal are included in the Statistical Appendix.

2.1 Overall Export Behavior

Argentine exports largely stagnated during the 1980s, were very dynamic during the 1990s (until 1998), and have grown less than world trade since then. During 1993-2004 there was a significant increase in the share of natural resource based-exports in total exports, and these new external sales were largely associated with privatizations and deregulation.

There was a lackluster evolution in unit export prices during the past 20 years, which suggests that only a handful of sectors showed improvement in the quality of their exports. Finally, during this period Argentina showed a deepening of revealed comparative advantage in agricultural goods, mining and oil, and also a deepening in revealed comparative disadvantage in machinery and equipment and in chemical products.

Hence the overall trading environment was not very dynamic, especially regarding prices, and Argentina deepened its specialization in less modern activities.

2.2 New Exports

For the identification of new exports at the six-digit level of the Harmonized System (HS) between 1993-94 and 2003-04 we used the following criteria. Exports had to grow at least 300 percent during this period (so as to include sectors with greater than average—154.7 percent—and median—263 percent—export growth). They also had to register minimum average exports of US\$10 million during 2003-04 and maximum average exports of US\$1 million during 1993-94. These criteria leave us with only 87 products that meet all our requirements (out of 4,198 products at this level of disaggregation with positive exports in 2004).

New exports represented a relatively small number of products, but rapidly increased their shares in total exports, generating a significant structural change in the composition of Argentina's external sales. New exports represent 20.9 percent of the total value exported during 2003-04 vis-à-vis 0.1 percent in 1993-94. These new exports grew significantly faster than their world counterparts, allowing them to increase nine-fold their share of world trade. However, this increase in participation was based on the expansion of quantities, as the prices of new exports tended to fall relative to the prices of world exports and of traditional exports in Argentina.

The HS two-digit level sectors with the largest presence of newly exported products (5 percent or more of the total number of six-digit level exported goods within each two-digit level sector) include activities directly linked to the exploitation of mining resources, industries that

process agricultural resources, industrial manufactures that process natural resources, and motor vehicles (a relatively labor-intensive activity that received an initial boost from Mercosur). On the other hand, there were very few or no newly exported products in “modern” activities such as Medical, Precision and Optical Instruments, Electronics, Electrical Machinery, and Computing Equipment.

New exports contributed more than 20 percent of export growth in most two-digit level sectors, and 60 percent or more in five sectors. Sectoral export growth was greater in those activities where there emerged a larger number of newly exported products. However, most sectors experienced substantial intra-sectoral changes in the composition of their exports, even those where there were relatively few newly exported products. Nevertheless, in the sectors where new exports were more frequent, prices declined relative to those of traditional sectoral exports, while the opposite occurred in the sectors where discoveries were less frequent. This suggests that discoveries mostly did not target the most valuable opportunities.

The emergence of newly exported products was more frequent in industries that are less labor-intensive, which is consistent with the greater frequency of new exports in natural resource based activities, which tend to be more capital intensive, and with the fact that capital was relatively cheap vis-à-vis labor during the 1990s.

New exports did not appear to represent jumps between “trees” within sectors with revealed comparative advantage (RCA), but rather jumps to new sectors without RCA, as only 29 percent of the six-digit level new exports were in two-digit sectors with RCA in 1993.² Indeed, those two-digit level sectors that had a greater frequency of new exports ended up reversing revealed comparative disadvantages.

This analysis suggests that, despite a significant structural change in the composition of exports, the discovery of valuable new exports in modern sectors appears to have been an exception rather than a rule. Hence the case study analysis of successful new exports of modern

² Hidalgo et al. (2007) conceptualize the product space as a forest, goods as trees, and entrepreneurs as monkeys. Countries develop as monkeys jump from tree to tree. Trees further away are harder to jump to. Some parts of the forest are denser than others. Which trees monkeys are located on today determines where those monkeys will be tomorrow. With this analogy in mind, the process of growth involves moving from a poorer part of the forest, where trees have little fruit, to better parts of the forest. This implies that monkeys will have to jump distances, that is, redeploy (human, physical and institutional) capital towards goods that are different from those currently under production.

goods will be helpful in identifying the main obstacles to structural transformation and determining how to remove them.

3. Theoretical Framework for the Analysis of New Successful Export Activities

3.1 Self-Discovery

A good starting point for analyzing these phenomena is HR's model of self-discovery. In this model there is ex-ante uncertainty regarding local costs of production, and firms must sink capital into experimentation to find the actual costs. Once these costs are revealed, they become public knowledge. In such a set-up, no firm will experiment in discovery unless it expects it can enjoy at least temporary monopoly profits (or government subsidies). Otherwise, fast imitation will quickly lead to zero profits, making it unable to recoup the sunk costs of investment. If there are temporary "monopoly rights," there will be investment in discovery, and all profitable new activities are exploited. Once the monopoly rights become void, free entry leads to specialization in the ex-post most profitable activity. In this framework, there is too little ex-ante investment and entrepreneurship (due to information externalities) and too much production diversification ex-post (due to temporary monopoly rights).

3.1.1 Discovering Foreign Demand

Uncertainty about foreign demand and positive externalities from enhanced reputation or country brand name (demand shifting) can play a key role in the emergence of new exports in semi-industrialized economies. Demand uncertainty could involve learning about the right "price" (position and slope of demand curve) and commercialization strategies, and if it is profitable to meet this demand. Learning about the position of the demand curve can also entail learning about when the market is saturated.

Vettas (2000) captures these features nicely. In his set-up, the pioneer reveals information on the extent of foreign demand, thus updating beliefs about the market saturation point, and subsequent entrants further enhance this knowledge. In Vettas' set-up there is another externality as well: the current price depends positively on past sales (until the market saturation point is reached). In other words, enhanced reputation (or another demand-shifting effect) moves the demand curve to the right as exports grow.

Because of these two externalities, the competitive market equilibrium displays too little investment by the pioneer and overly slow diffusion at the beginning. Diffusion then speeds up because of the demand-shifting effect and eventually wanes as it approaches the revealed saturation point (representing an S-shaped or convex pattern of diffusion). In this competitive market equilibrium the pioneer would export only if it is profitable to do so, even with small initial demand. On the other hand, a social planner or a monopolist would internalize those externalities and invest even if initial sales were unprofitable, as long as the demand-shifting effect is large enough. What is more, they would want a very fast expansion of sales (a concave pattern of diffusion).

3.1.2 Other Potential Uncertainties in the Self-Discovery Process

Aside from local costs of production and foreign demand, developing new exports may also entail uncertainties regarding the following factors:

- Costs of quality upgrading to meet technical and consumer requirements abroad.³
- Costs of logistics.
- Best commercialization strategies and export product mix.
- The extent to which non-tariff barriers are actually binding (you may have to sink capital into specific export developments and ship them abroad in order to test how binding the restriction is).
- Finding out whether the good can be locally produced at all, via R&D activities.
- Best production techniques. Even if profits are known to be positive ex ante (because of very high export prices), it may pay to wait for others to sink capital in discovering the cheapest production technique. However, if the minimum expected profits are large enough, it may pay to start experimenting right away, raising the possibility that there may be more than one pioneer.

³ Case studies conducted in Sánchez and Butler (2005) reveal that there exist sizable uncertainties in the costs of complying with foreign standards and technical regulations.

3.1.3 Coordination Externalities

The resolution of coordination externalities may also matter for the discovery of new successful export activities. This discovery often requires a simultaneous emergence of different stages of the production and commercialization process (intermediate inputs, final good, etc.) and of required infrastructure, both traditional (transportation, logistics, etc.) and sanitary and technological (testing, calibration and clinical analysis laboratories, etc.). Potentially profitable activities may fail to take off because of failure to coordinate by the private sector and/or the lack of public investment (or promotion of private investment) in key stages of the production and commercialization chain or in industry-specific public goods (like eradication of fruit plagues, irrigation, introduction of a regulatory framework, etc.). In this case we may observe an emergence of new export activities only when some of the required phases of the production and commercialization processes and industry-specific infrastructure were already present and engaged in related activities.

The pioneer could be willing to overcome these coordination failures by herself, for instance through vertical integration, if the expected profits were large enough and she had enough resources to do so. However, this coordination failure is likely to affect the size of her initial investment. Additionally, the overcoming of coordination failures by the pioneer may at times introduce barriers to entry that hinder diffusion. On the other hand, there are instances where the pioneer may herself be “forced” to promote diffusion if she lacks the resources to attempt vertical integration (and there exist economies of scope and/or scale at different stages).

3.1.4 Conditions for the Emergence of New Successful Export Activities

The previous analysis suggests that in order to understand the actual process of emergence of successful new export activities we must allow the pioneer to capture monopoly rents through at least one of the following channels:

- Temporary monopoly rights, due to regulations or to the time it takes for the investments of imitators to mature (as in HR).
- Government subsidization of discovery (a corollary of HR).

- Learning economies that allow the pioneer to jump faster than imitators to new temporary monopolies in more sophisticated products on the technological ladder.
- Ex-ante productivity advantage of pioneer (from prior knowledge or scale in related activities) that will persist even after the new activity has been discovered to be profitable.
- The ability of the pioneer to become a monopolist in upstream, midstream or downstream activities in the new export sector.
- Proprietary knowledge (information externalities are not too great).
- Pioneer may introduce barriers to entry (brand development, sunk costs, scale economies, technological barriers).
- These channels will have very different implications for diffusion. The first four may only delay it, the fifth may constrain it, and the last two may actually preclude it.

3.1.5 Accumulated Capabilities and the Choice of New Export Activities

Hausmann and Klinger (2006) find that countries' abilities to jump to more sophisticated exports is largely conditioned by what these countries were previously exporting and the associated accumulated capabilities (human capital, industry-specific public goods, specialized input networks, commercialization channels). In our framework, greater cumulative capabilities would increase the expected profitability of some activities in comparison to others, making them a likelier target for experimentation and more natural candidates for success.

A related issue is whether the accumulation of capabilities for some new exports occurs at an economy level, industry level (as in the case of industry-specific public goods) or firm level (as in the case of tacit knowledge, and what the implications of each case may be for the discovery and diffusion of new goods. For instance, intra-firm accumulated capabilities could foster increased experimentation (by yielding monopoly power based on proprietary knowledge), yet on the other hand they could introduce permanent barriers to entry that hinder diffusion.

3.1.6 Revealed Information and the Process of Diffusion

The analysis made above also suggests that diffusion is more likely to occur when:

- Knowledge externalities are large and the pioneer cannot introduce barriers to entry.
- There exist agglomeration economies.
- Accumulation of capabilities occurs at an industry level.
- The pioneer has an incentive to promote diffusion at some stage of the production chain, in the expectation of capturing monopoly rents at other stages.
- Imitation is relatively easy (no patents, information flows via suppliers of capital goods, thick labor market externalities).

Additionally, the different types of uncertainty will lead to different degrees of information revelation, which will be transmitted through different channels and have different implications for the diffusion of new exports. For instance, when uncertainty is related to commercialization, foreign demand and product mix, export knowledge may diffuse across borders. In this set-up, a pioneer may be able to block domestic diffusion, but not foreign diffusion, which could further reduce the scope for local diffusion of new exports (as foreign diffusion lowers export prices). In the case of uncertainty regarding the ability to produce the good at all, its resolution via R&D will probably generate proprietary knowledge and no diffusion, unless researchers move from one firm to another.

Vettas (2000) suggests that subsidizing infant exporting industries may be optimal in the presence of demand-revealing externalities. However, if there are cross-border externalities (in the revelation of demand saturation), foreign competitors may enter the market, diminishing the case for subsidies to discover these activities. In any case, export promotion might then require some strategic subsidies to deter foreign competitors from entering, and the welfare implications of such policies are not immediately obvious.

3.1.7 Welfare Analysis

The inefficiencies that may be present in the actual process of emergence of new export activities will include those highlighted by HR (too little ex-ante investment, due to information externalities, and too much production diversification ex-post, due to temporary monopoly rights). Other possible inefficiencies suggested by our theoretical framework would be: a) biases in the choice of new exports towards activities that may not offer the highest social returns, but which may offer bigger possibilities of capturing rents by the pioneer (this is closely related to the second HR inefficiency), b) too little diffusion due to barriers to entry and to monopolistic behavior of the pioneer within the sectoral production and commercialization chain, c) too slow diffusion in the presence of demand revelation and demand shifting externalities, d) too much diffusion due to wrong expectations regarding the foreign demand saturation point.

We must also add other sources of inefficiency that may hinder discovery and diffusion, such as: a) financing constraints, b) coordination failures, c) failures in the functioning of the national innovation system that reduce the effectiveness of individual innovative efforts.

Finally, when appraising the social returns of the activities that are discovered we must also include the following considerations: a) accumulated capabilities in the new activities and the types of new exports that they will later allow to develop, b) rent shifting from foreign competitors.

4. Case Study Analysis of the Emergence of New Export Activities in Argentina

This section seeks to shed light on the drivers and the extent of the emergence of new export activities by analyzing a number of case studies for Argentina. The main goal is to identify the commonalities and differences in these processes, so as to help characterize the nature of the emergence of these new activities in Argentina. We also seek to identify the main inefficiencies that may be present in these processes.

4.1 Criteria for Sector Selection

We selected three new export activities to be analyzed:

- Chocolate confections
- Biotechnology applied to human health (BHH)

- Blueberries

All these cases present the following characteristics that make them attractive for the present study: a) negligible exports 20 years ago in the case of chocolates, and 15 years ago in the other cases; b) very fast export growth; c) reversal of revealed comparative disadvantage in the case of chocolate confections; d) currently large volume and value of exports; e) large degree of diffusion in the case of blueberries, and little diffusion in the other two cases; f) relative little intensity in the use of natural resources in the cases of biotechnology and chocolates; g) entirely new production activities in the cases of blueberries and biotechnology; h) preliminary appraisal of a relatively large degree of uncertainty involved in the discovery of costs and/or foreign demand for these new activities; i) location in the periphery of the densest part of the product space estimated by Hausmann and Klinger (2006), i.e., they are candidates to generate an accumulation of capabilities that allow Argentina to jump to modern (high productivity) trees in the forest. The three sectors meet all the statistical criteria used to define a new export in Section 2 and the Statistical Appendix.

The three cases offer very interesting insights on how pioneers deal with information and coordination externalities when there are no government policies or investments that facilitate discovery, i.e., how they manage to generate temporary or permanent monopoly rents (through the introduction of barriers to entry, product-specific proprietary knowledge, and/or technical features that prevent a quick diffusion).

In the case of chocolate confections there were several attractive features. The pioneer, and main exporter, has managed to become a global player in a world market that is dominated by large firms from rich countries. It is an interesting case of accumulation of capabilities at an intra-firm level (and also via the acquisition of other firms), of generation of information externalities regarding foreign demand and commercialization strategies, of demand shifting effects à la Vettas (2000), and of cross-border externalities. This case offers very interesting implications regarding when the discovery of new exports should be subsidized, and when diffusion is socially optimal or not (in this case there is the possibility that diffusion could be immiserizing). It is also a very interesting case because its monopoly position made the pioneer undertake socially optimal investments. This new export also helps shed light on the key role played by domestic firms in relation to branches of multinational corporations (MNCs) in the risky development of new exports. Finally, it is a very appealing case because the sector lacked a

natural comparative advantage (as it is intensive in the use of cocoa), and yet it managed to create a revealed comparative advantage through brand development and vertical product differentiation.

Biotechnology applied to human health is also a very attractive case for several reasons. First, because Argentina managed to become an important exporter at an early stage of the world product cycle, ahead of all the countries with similar incomes and even ahead of many rich countries. Second, because the emergence of this sector was based on the exploitation of previously untapped accumulated research capabilities in life sciences, which had had no commercial use before, and was developed by national pharmaceutical laboratories that completely lacked experience in BHH. Third, the development of this sector involved two types of uncertainties. There was one generalized uncertainty regarding the suitability of local human capital for undertaking the required R&D to develop the new products, and a product-specific uncertainty that had to be resolved via R&D. Despite the relatively large information externality regarding the adequacy of local human capital, the pioneer managed to compensate for it with the proprietary nature of product-specific knowledge. Fourth, this new activity offers very important potential technological spillovers and large learning economies in R&D. Finally, BHH is representative of successes where timing is everything as a result of downward-sloping demands and experimentation taking place in many different countries. It is also an interesting case in which the pioneer has provided many public goods that have favored the newcomers, and where national firms were crucial for the development of the sector.

The emergence of the blueberries export sector is also worth evaluating, as it is a case that fits very well the basic HR framework, although with some very interesting twists. The pioneer is an individual entrepreneur that faced ex-ante uncertainty regarding the profitability of the new activity, although less uncertainty than the industry average. He invested because of the expectation of temporary monopoly position until the investments of subsequent investors matured. However, he knew that newcomers would eventually erode his profits, which made him undertake a sub-optimal investment. It is very interesting that the pioneer nevertheless tried to gain a permanent monopoly position by specializing in the nursery and commercialization stages and promoting limited diffusion at the production stage. However, due to his sub-optimal level of experimentation (and limited financial resources) he promoted diffusion before the best production technologies were determined; this resulted in very low initial productivity levels

which were compensated by initially large prices. This poor technological transfer to farmers facilitated the entry of strong competitors at the nursery stage, which had started their research on plant cloning techniques at the same time that the pioneer started investing in production. The case is fascinating because the pioneer solved by himself coordination failures at different stages, even though his profits would be eroded by the competition. It is also very interesting because it appears to be a case of overshooting in diffusion, as prices remained high for too long due to the poor productivity of the original plantations, sending the wrong signal about long-run profitability. Finally, the case is attractive because Argentina succeeded in a market with downward-sloping demand, despite entering late. This was due to the fact that it managed, due to geographical traits, to become a monopolist in an underserved off-season market.

The three cases thus offer variety in terms of the information and coordination externalities involved, the ways the pioneers dealt with them, the degree of diffusion and its optimal level, the roles of previously accumulated capabilities, and the optimal policies to promote new exports.

4.2 Methodology for Case Study Analysis

First, we used data from secondary sources (official trade statistics, websites, and publications) and from preliminary interviews to preliminarily identify: a) pioneers and the dynamics of diffusion, b) uncertainties involved, c) possible information externalities, d) possible sources of inefficiency, e) possible market and coordination failures, and f) contribution or interference of public policies. Then the proper case study analyses were undertaken. A standard questionnaire was designed and employed in all the case study interviews, based on the predictions of our theoretical framework and on the preliminary background information available. We interviewed pioneers, imitators, business associations, and the government agencies and officials involved.

We then contrasted the predictions of our theoretical framework with the responses obtained in the interviews to determine, based on qualitative criteria, which of the predictions were more relevant for describing the actual processes of discovery and diffusion of new export activities and their welfare implications.

In order to strengthen our case study findings we also performed counterfactual analyses. To this end we appraised cases involving sectors that share some common features with the new successful exports that we consider and yet failed to take off. The comparison of the features that

are not shared among these sectors helped us identify more accurately the key determinants of success—or lack thereof—in discovery and diffusion.

In the case of blueberries, where there is discovery and sizable diffusion of its export as a fresh fruit, the counterfactual we chose is the production and exports of fresh raspberries, where the discovery was attempted but failed, despite sharing many market and technological characteristics with blueberries. This counterfactual analysis also involved a comparison with Chile’s success in discovering and diffusing exports of both types of berries.

In the case of chocolate confections, where there has been little diffusion, the counterfactual analysis was based on sugar confections, another successful exporting sector. This older export activity, where diffusion has been more widespread, shares with chocolate confections some product attributes from the consumer’s point of view and complementarities in commercialization. On the other hand, the sectors differ in that there exists a natural comparative advantage for sugar confections (though not for chocolates) and that product differentiation and brand barriers to entry are much less important in sugar confections.

In the case of biotechnology applied to human health, we chose Brazil as a counterfactual. Despite a substantial government promotion effort, this country has not been as successful as Argentina in developing these exports. Brazil differs in terms of a much less significant presence and trajectory of national pharmaceutical laboratories than in Argentina (which developed the BHH sector) and in terms of its initial endowment of life science researchers.

5. Case Study of Chocolate Confections

5.1 Background Information

Even though Argentina has a long tradition in the production of chocolates and chocolate confections under import substitution, exports are a relatively new activity.⁴

There are about 125 firms that manufacture chocolate products in Argentina, and production is moderately concentrated. Arcor, a family-owned Argentine firm, is the leading producer of chocolate confections in Argentina, followed by Georgalos, another family-owned

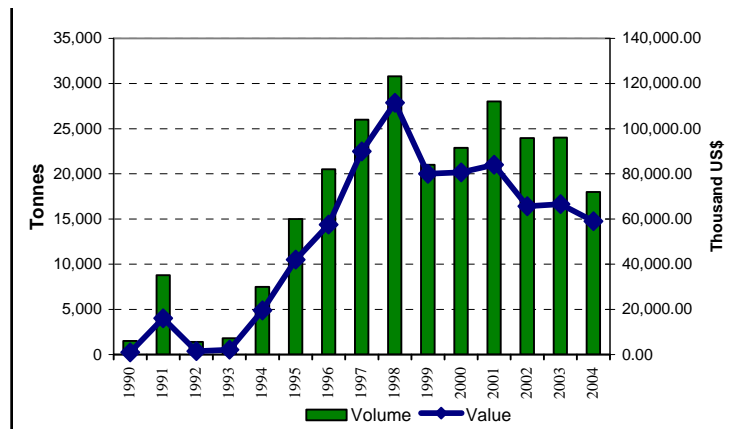
⁴ This product category encompasses all goods that have a minimum cocoa content. The products under analysis are those under the code 180690 of the MCM (HS-2002) classification, being described as “Other chocolates and other food products that contain cocoa,” which includes products with a chocolate covering.

Argentine company. Ferrero, an Italian-based multinational corporation, is the third producer and the largest exporter. Exports are more concentrated than production: Arcor and Ferrero represent 98 percent of Argentine external sales of these goods.

In the 1990s many multinational firms (Kraft-Suchard, Cadbury, Ferrero) located in Argentina, but most of them oriented their activities towards the domestic market, save for Ferrero, which was very export-oriented almost from the onset. Most multinationals entered through the purchase of domestic firms. There were also important Chilean investments in the sector.

Exports started in the early 1980s, mostly in the form of non-differentiated products, and became significant in terms of volume and product differentiation only in the 1990s. This rapid export expansion involved sizable investment in production capacity, technological upgrading and market diversification.

Figure 1. Exports of Chocolate Confections



Source: IERAL from Fundación Mediterránea based on figures compiled by Ministerio de Economía y Producción (MECON).

Exports grew very significantly between 1992 and 2005, from US\$9 million to US\$72 million (according to figures from national statistical agency INDEC), led by Arcor and Ferrero. In comparison, the value of world trade in chocolate confections doubled between 1990 and 1998 (according to FAO data). Going further back in time, we observe that, according to COMTRADE data, these exports grew from US\$456 thousand in 1980 to US\$79.9 million in

2000, switching from a significant revealed comparative disadvantage in 1980 to a strong revealed comparative advantage in 2000.

There are four large categories of products: chocolate tablets, chocolate confections, industrial chocolate, and bakery and chocolate fudge. All of them are locally produced despite the comparative disadvantage arising from the lack of local availability of cocoa, a result of tariff protection (Mercosur has a 23 percent common external tariff for these products) and the natural protection granted by logistics (mostly temperature management).

Sustained export success was achieved only after the development of differentiated products that were adapted to local preferences in different markets, together with competitive prices. Previous attempts to export non-differentiated products, such as chocolate tablets, had not been successful and/or sustainable due to the fact that these goods are cocoa-intensive commodities, dominated by world leaders (Kraft, Hershey's, Mars, Cadbury, Ferrero), which are usually vertically integrated (including the production of cocoa in African countries), have introduced brand barriers, dominate local preferences in different industrialized countries, and also frequently engage in dumping practices. Additionally, there is world excess capacity for the production of these goods.

While export destinations were relatively concentrated in 1998 (44 percent to the United Kingdom, 38 percent to Brazil, 9 percent to Uruguay and 4 percent to Chile), in 2004 these exports reached more than 100 countries, including Mexico (20 percent), Brazil (16 percent), Chile (15 percent), the United States (7 percent) and Canada (7 percent).

The export/output ratio for the whole chocolate confection sector in Argentina is currently around 10 percent. However, in the case of certain products made by the leading exporters this proportion can reach or even exceed 70 percent.

Argentina's exports of chocolate confections currently represent 1.2 percent of world exports of these goods (vis-à-vis Argentina's 0.39 percent share of world trade in all goods). Argentina's production of these goods represents 1.4 of world production.

5.2 Analysis of the Emergence of This Export Sector⁵

5.2.1 Who Was the Pioneer? Why Did It Target This New Activity?

Arcor was the pioneer for exporting chocolate confections (differentiated products) on a large scale and to multiple markets in the early 1990s. This firm was also the first significant exporter among Latin American firms. It is not, however, the pioneer for production in Argentina. Aguila-Saint had been the major manufacturer of chocolate products in Argentina since the 1880s but was acquired by Arcor in 1993.

This firm was founded in 1951 and has been traditionally focused on the production and export of sugar confections (it is currently the world's largest producer and exporter of these goods), in which Argentina enjoys a natural comparative advantage because of the relative abundance of sugar, milk and glucose. A global firm with several plants abroad (Brazil, Chile, Peru, Mexico), as well as commercial offices in many countries, Arcor exports to more than 100 countries, with exclusive distributors in many of them. This international distribution system replicates its nationwide distribution system in Argentina, which was established in the early 1980s.

Its two main chocolate confection exports are Bon-O-Bon (BOB) and Rocklets. The BOB is a chocolate bonbon that was developed in the early 1980s as an imitation of a product already developed by Garoto in Brazil. Rocklets are candy-coated chocolates, similar to Mars' M&Ms and Nestlé's Smarties. The export/output ratios for these two goods exceed 60 percent.

The key reason for targeting these exports arose from the need and opportunity to exploit scale economies in the commercialization of sugar confections through Arcor's distributors abroad. Chocolate confections are natural complements of sweets and candies, as they are sold in the same stores and can be distributed by the same person/firm. This commercial complementarity was first exploited at the local level in the 1980s, and it was the main factor that motivated the production of differentiated chocolate confections by Arcor.

⁵ The analysis is based on interviews with Arcor executives (Guillermo Storni, Gerente de Negocios, División Chocolates; Marcelo Salcedo, Gerente de Investigación y Desarrollo, División Chocolates; Mariano Tamborini, Gerente de Exportaciones, División Golosinas), a former executive of Ferrero Argentina, Georgalos executives (Juan Miguel Georgalos, President), Cadbury Stani executives (Manuel González Campa, R&D Manager), Nestlé executives (written questionnaire to commercial department), and former government officials (Antonio Assefh, Undersecretary of Industry of Argentina, 1991-1996).

The *choice* of this new export activity was *facilitated* by prior production knowledge, under import substitution, of both chocolate tablets and differentiated chocolate confections (Arcor started producing chocolate tablets for the domestic market in the 1970s).

Another factor that emerges as facilitating the *choice* of chocolate confections by Arcor is its ability to overcome, and in turn introduce, barriers to entry through brand development, scale and learning economies, sunk costs, bargaining power with suppliers and clients, and technological barriers. Arcor's previous scale in the production, commercialization and export of sugar confections certainly helped in this regard.

Hence commercial complementarity with sugar confections, coupled with Arcor's network of distributors (which introduce fixed costs and demands a constant flow of sales), was the ultimate reason for targeting chocolate confections.

It must also be highlighted that, in spite of being a pioneer in Argentina, Arcor has been an imitator at the world level. What Arcor does is to introduce some innovation to these products, particularly in terms of commercialization, distribution, and marketing.

5.2.2 What Were the Main Ex-Ante Uncertainties Regarding the Profitability of Exports? How Were They Solved? What Was Discovered? Were There Any Surprises?

Arcor's exports of differentiated products faced significant uncertainties on the demand side. The firm needed to invest time and resources to discover foreign demand, profitable export product mixes, prices and quality ranges where it could compete, and optimal product presentation and sales strategy. These efforts revealed considerable valuable information on this front to both local and foreign competitors. Arcor did not face any significant uncertainty regarding costs of production and of complying with technical barriers to trade, nor did it face significant uncertainty regarding non-tariff barriers (NTBs).

Production costs. Arcor's previous experience in producing tablets for the domestic market, together with its expertise in sugar processing technology and its experienced cost and product development departments, helped reduce cost uncertainty significantly. Arcor also benefited from its existing relationships with suppliers of capital goods. Although Arcor did have to master technologies for flour (for the wafers in BOB), for differentiated chocolate products, and for temperature management, this learning did not involve sizable uncertainties. Arcor's large bargaining power with suppliers, its vertical integration in many upstream activities (arising from

related activities in sweets and candies), its austerity, and its incorporation of the latest technologies also helped it to control costs.

Arcor acquired further production know-how through the purchase of Aguila-Saint. The company obtained additional production knowledge from contract manufacturing relationships with world leaders, whereby the latter transmit knowledge for production *a façon* by Arcor.

Demand and commercialization strategies. In order to be internationally competitive Argentine exporters of chocolate confections must offer differentiated goods that have a lower quality than the top world brands but higher quality than the rest, and that have a lower price than the world leaders. To this end Arcor had to make investments to determine which products worked in each market, as well as the right price, size and packaging. In some cases it even had to create the market for new exporting goods, i.e., learn the position and slope of the demand curves for its products.

Let us consider the case of BOB. The original product, created by Garoto in Brazil, was sold in boxes of assorted bonbons, together with other confections, and primarily targeted the Brazilian market. Arcor subsequently imitated this product and undertook innovations, replacing the Brazilian cashew nut paste filling with a peanut paste filling that is preferred elsewhere in Latin America. Other major commercial innovations further aided BOB sales in Latin America and the United States. Although BOB was first sold in a box of assorted bonbons, Arcor discovered that this confection sold especially well when packaged in a transparent plastic container including only BOB. Finally, Arcor learned that BOB could be sold very well as an individual product in a large number of countries, which allowed for mass production (Arcor currently manufactures 550 million units of BOB per year). Individual sales were particularly useful for capturing Latin American markets, where sweets, candies and chocolate confections are sold in small drugstores, as in Argentina.

In the case of exports to the United States (a large BOB market), part of the demand uncertainty was transferred to local players via contract manufacturing with local firms (e.g., Wal-Mart). Uncertainty was additionally resolved by experimentation on the part of Arcor's own distributors and commercial representatives.

It must also be highlighted that BOB was a new product for world markets, and Arcor had to create a market for it. To this end it followed several complementary strategies: a) the use

of commercial persuasion by its distributors abroad, which already had significant clout with local drugstores and supermarkets through sales of sweets and candies; b) diffusion through international fairs; and c) the use of marketing whenever the product had some initial success.

Another key issue is finding the “right” price for individual chocolate confections that are sold in drugstores (or similar venues). This price bears a relation to what is considered pocket change in each country (e.g., US\$0.25 in the United States), particularly because of the nature of the consumption of these goods. They provide immediate gratification and often constitute an impulse purchase linked to the visual impact of packaging and advertising, and to spending no more than pocket change on them; the latter is especially relevant for children, who have limited budgets. Finding this right price entails some experimentation, followed by determining whether that price is profitable. For instance, in South Korea the right price is 100 won (US\$ 0.10), a very low price that is pocket change in that country; a price of 150 won, however, is not pocket change. In Australia, on the other hand, the equivalent of US\$0.25 is pocket change, and there no other chocolate confections are sold at that price (or sweets and candies in general).

In order to discover successful export products, Arcor had to undergo a trial and error process in different markets and engage in market creation efforts. This process became more efficient in the mid-1990s when the company began to focus on a small set of products after its success in exporting BOB and Rocklets. Up to that point there had been disagreement between distributors, who pushed for shipments of assorted goods that allowed risk diversification, and the new chocolate management, incorporated via the acquisition of Aguila, who had long understood the importance of focusing on the chocolate market.

The selection of new products to experiment with usually arises from the following activities: a) participation in international fairs, which permits the discovery of new products developed elsewhere (and upon which an innovative imitation can be performed), along with exchanges with clients; b) exchanges with suppliers of capital goods, which suggest existing successful products that can be imitated, offering to convey the required equipment and production techniques; and c) the market knowledge of Arcor’s commercial representatives abroad.

There were also important uncertainties regarding the markets where products could be profitably sold, as Arcor had to discover the prevailing commercialization system in each country (and if it suited Arcor’s products), its ability to deal with local temperatures (as

chocolate consumption decreases with heat), local preferences, and existing non-tariff barriers. Much of the market selection process (both for sugar and chocolate confections) is driven by constant participation in the main international confectionary fair (ISM) in Köln, Germany; since the beginning of that fair in 1974 Arcor has been an exhibitor.

The geographical selection of markets was determined by a variety of factors. Factors such as climate, size, purchasing power and relatively low trade barriers created particular interest in the North American market (especially the states of California and Florida), where Arcor opened its first office in Miami in 1992. This market nonetheless presented important commercial uncertainties. For instance, Arcor experienced difficulties in finding an appropriate distribution channel, as there are only six or seven highly concentrated channels in North America (the company finally signed contracts with Wal-Mart). Arcor then gradually opened commercial offices in almost all of Latin America, which was closer in terms of language, preferences, packaging and freight costs. The company further explored and exploited a wide range of markets, as managers and directors spent substantial amounts of time in the Caribbean, Europe, and Africa, as well as in Israel and other countries, following up on contacts made at fairs and reinforcing initial sales. As overseas markets grew, Arcor opened a commercial office in Barcelona for Europe, Israel and Africa.

5.2.3 Were There Any Coordination Externalities? How Were They Solved?

Some of the required inputs were locally available as a result of their use in related food industries or because they could be directly sold in domestic and international markets (powdered milk, milk jelly, sugar, flour). Other inputs could be imported. Hence there were no potential coordination failures at the production stage that would have impeded the emergence of this sector.

However, major macroeconomic disruptions during the 1980s led to recurrent shortages of critical inputs (packaging, glucose, aluminum foil, etc.). In order to develop this new export activity (which requires a strong market cultivation effort), Arcor therefore had to ensure reliable access to these inputs. Vertical integration was critical to this end and was facilitated by Arcor's size and internal resources. Although local producers could have arisen for several of these inputs, they would not have been able to meet Arcor's needs on a consistent basis. Vertical integration in commercialization activities was also necessary, both in order to ensure larger

profit margins (thus permitting the absorption of macroeconomic shocks) and to learn about and cultivate foreign demand. Vertical integration in production and commercialization is typical of the largest world exporters of these goods.

5.2.4 Why Was Investment in New Exports Successful?

We can distinguish between the specific actions and strategies that the pioneer took to resolve the uncertainty and the characteristics of the pioneer that facilitated undertaking this risky investment.

Most of the actions and strategies undertaken were discussed in the previous section. Among these strategies, we must highlight the role of product focus, which increases the probability of success in experimentation, by concentrating the firm's efforts on discovering the demand and commercialization strategies for a relatively small number of products.

Another important strategy involved undertaking innovative imitations of products with large commercial potential at early stages of their product cycle. Arcor focused on introducing commercial (and sometimes technological) innovations to products that have been proven to work in some countries and/or some market segments, and on creating new markets (sometimes global) for them or discovering demand for these goods in other market (quality and price) segments. This significantly reduced commercial uncertainty and helped increase the chances of success. In the case of BOB, Arcor improved upon the original Brazilian product in terms of commercialization strategies, export focus, and adaptation to local preferences. In the case of Rocklets, Arcor developed a product of good, but not premium, quality that could be sold more cheaply than M&Ms or Smarties.

Arcor was additionally able to cross-subsidize experimentation in chocolate confections with established profitable activities (sugar confections). The external economies from being able to export chocolate confections together with sugar confections (exploiting the already established distribution network in many markets) also helped by reducing some of the certain costs of commercialization and by helping amortize the fixed costs involved in their trial and error process. Accumulated capabilities in the commercialization of sugar confections were a key factor. Indeed, the product space analysis of Hausmann and Klinger (2006) places these two goods next to one another.

Arcor's commitment to exporting, even if uncertain of the final profits, was also a major facilitating factor which sets it apart from local branches of multinational companies and from other local firms. Finally, all the traits of Arcor that helped reduce the costs of production (discussed in a previous section) also facilitated experimentation by moving the probability distribution of profits to the right.

5.2.5 What Was Done to Consolidate the New Export Success and Preserve Monopoly Rents?

Two types of actions for consolidating export success must be considered. First, those related to product attributes and choice of production technologies that affect the ability to sustain exports and to cultivate markets over time. Second, those related to preserving, and capturing, market shares from local and foreign competitors that target the same market and product segments.

The ability to sustain exports and to cultivate markets over time is very important for chocolate confections. This helps to: a) build a reputation for reliability among clients, b) establish brand names, c) exploit learning economies in production (that allow for quality improvements and/or facilitate new developments), d) develop long-term relationships with suppliers of specialized inputs, and e) be better prepared to comply with product and process norms and technical regulations, and to adapt products and packaging to local preferences. In the case of Arcor, sustaining exports has helped to amortize the fixed costs associated with having its own network of commercial offices and distributors. In the case of chocolate confections, this ability can be negatively affected by macroeconomic shocks that have a sizable negative impact on unit costs of production and on profitability, as it is not possible to pass through these cost changes to foreign consumers (exports of these differentiated products involve pricing-to-market), and that introduce large uncertainty regarding the availability of critical inputs.

Arcor dealt with these threats by adding value through product differentiation, quality development, marketing and branding, which helped reduce the impact of labor costs on prices (the average export price of chocolate products is US\$5 per kilo, while the average price of exports of sugar confections, where there is much less product differentiation and branding, is lower than US\$1 per kilo). The company also opted for upstream and downstream vertical integration, which allows it to increase profit margins and to better absorb negative cost shocks. Investment in the most advanced technology, which substantially increased productivity and quality, and reduced production costs, also helped in this regard. According to the Arcor

executives interviewed for this study, a true export success involves brand development and installation, and significant marketing activities, i.e., minimizing the random component of market penetration.

All these actions and strategies also introduce barriers to entry to competitors in the form of brand barriers, sunk costs, scale economies and technological barriers.

5.2.6 What Impact (Actual and Potential) Did the New Exports Have on the Pioneer and on the Sector (Knowledge and Other Spillovers)?

This discovery generated knowledge externalities about the profitability of exporting chocolate confections from Argentina. It also produced public goods (reputation for Argentine exports). Finally, it generated production learning and demanded product and process certifications that are then passed on to input suppliers and to other producers. Other Argentine firms in the sector were not be able to benefit significantly from these impacts for reasons related directly to the pioneer's actions, to market imperfections and to those firms' current productivities/scales of productions.

Information revelation. Arcor revealed important information, especially about demand (products and markets) and commercialization strategies that work best. Let us recall, for instance, that the company discovered the (ex-ante uncertain) advantages of selling bonbons on a per unit basis, or that it created a regional and global market for BOB. It also revealed the advantages of undertaking innovative imitation. Other local producers did not take advantage of this useful information. Instead there are foreign producers, some in South America and others in China, that have used this revealed information to try to compete with Arcor in some of its products and markets, though with only partial success.

Arcor did not reveal much technical information about production or product and quality development. This firm usually designs its own production lines, so as to avoid the transmission of technological knowledge to others via suppliers of capital goods, and there has not been a flow of technical personnel from Arcor to other firms. Nevertheless, revealing such information would not represent a significant knowledge externality, as much of this knowledge is available from suppliers of capital goods, multinational clients (via contract manufacturing) and the access to technical training of European experts.

Arcor's learning-by-doing and productivity improvements and their spillovers. Exports of chocolate confections resulted in significant productivity gains for Arcor. The demands of certification (ISO 9001, HACCP and GMP) of products and processes and of quality improvements from foreign customers (from the United States, Europe and the Middle East) forced the company to introduce significant improvements in products and processes in all of its plants, leading to great productivity improvements. Additionally, all the new investments geared to expanding production capacity involved equipment with the latest technology, consistent with the foreign demand for quality. The demands of certifications and compliance with norms for contract manufacturing with large firms (Wal-Mart, Nestlé in Brazil, and Brach in the United States for sugar confections) are usually more stringent, as the latter face stringent demands of quality, in accordance with their brands and prestige in the market. Some of these productivity and quality gains spilled over to Arcor's suppliers of specialized inputs, but lack of export diffusion has allowed Arcor to capture most of these rents.

There were also internal spillovers from successful chocolate confections to the development of new sugar confections within Arcor, which appear not to have spilled over to other producers/exporters of sweets and candies in Argentina. For instance, inspired by BOB, Arcor has developed a bubble gum with juicy filling, which is an imitation of the Bubbalo made by Cadbury-Adams. Arcor innovated on the original product by changing the coating and the shape. This product, which is an export success for Arcor-Brazil, required three years of development, and the company is still experimenting with new markets.

Development of specialized network of suppliers. Arcor relies on external suppliers for milk, milk jelly, cocoa, peanuts and aluminum and flexible wrappings. The demands for Arcor's certifications by foreign customers have a cascade effect on Arcor's suppliers, as they have to accommodate their processes and products to the same quality standards that are demanded of Arcor, complying with the same norms and technical regulations. Arcor is deeply involved in the development of suppliers, demanding certifications, evaluating and providing technical assistance to suppliers, and taking advantage of the expertise obtained from auditors sent by clients from the US and Europe. This interaction has generated an implicit long-term contract between Arcor and its suppliers, who tend to work exclusively with this firm. Hence the quality improvements in this area do not spill over to other chocolate producers. Indeed there appears to

be an important idiosyncratic component in the relations of chocolate producers with suppliers of specialized inputs (lack of export diffusion does not contribute, either). For instance, Ferrero Argentina (the other largest exporter) had to undergo a prolonged process of search and negotiations with large local producers until they could secure continuous and reliable access to some inputs, such as milk, of the required quality. Georgalos has also stressed the importance of persistence of exports so as to develop long-term relations with suppliers, paying for the latter's investment in the development and production of specific ingredients.

There are additional spillovers, although not always to local producers, in the area of peanuts. Arcor is devoting substantial effort to the development of peanut suppliers; many of them already are very advanced in terms of certifications and are exporting a great deal. One producer, for instance, supplies peanuts of similar characteristics to Mars for M&Ms and to Arcor for Rocklets.

Reputation. The development of these new exports of good and reliable quality by the pioneer, and their persistence over time have helped build a good reputation for Argentine producers of chocolate confections as being able to reliably supply differentiated goods with an adequate combination of price and quality. In the past Argentine producers were viewed mostly as an alternate source of low prices for products with little differentiation. This is a public good generated by Arcor which has been taken advantage of by other Argentine exporters only to a very small extent.

5.2.7 Was There Diffusion of this Export Activity? What Were the Key Drivers of this Diffusion (or Lack Thereof)?

Extent of diffusion among firms located in Argentina. There has been almost no diffusion of the discovery of exports of differentiated chocolate confections among Argentine firms (see Table 1). The only other Argentine firms included among the top ten exporters are Georgalos and Felfort, which export very little. There emerged only one other major exporter, Ferrero Argentina, the local branch of Ferrero International (a global firm with headquarters in Italy). The other local branches of multinational firms are very minor exporters. This last group includes Cadbury-Stani and Kraft Foods (Nestlé does not produce chocolates in Argentina). As a result, Arcor (which owns Estirenos as well) and Ferrero represent 97 percent of all exports.

Table 1. Other Chocolate and Other Food Preparations Containing Cocoa, Code 180690, Share (percentage)

Enterprises	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Arcor S.A.I.C.	78.15	75.47	77.78	49.39	49.74	35.39	28.90	34.54	42.75	40.20	39.42	37.58
Cadbury Stani SAIC.	0.00	0.13	1.38	1.29	0.70	3.07	0.82	1.76	1.34	1.18	1.75	1.52
Chocolates Bariloche S.A.I.C.	0.47	0.44	0.11	0.53	0.06	0.03	0.05	0.00	0.00	0.00	0.00	0.00
Estirenos S.A.	2.10	4.95	3.08	1.72	4.81	8.55	15.73	14.32	6.73	8.73	9.23	9.00
Ferrero Arg. S.A.	3.07	0.21	8.48	43.37	42.19	50.42	52.57	47.34	47.99	47.55	47.90	49.73
Georgalos Hnos.S.A.I.C.A.	1.81	1.96	0.97	1.25	0.91	0.96	0.79	0.02	0.04	0.18	0.14	0.24
Kraft Foods Arg. S.A.	0.80	0.00	0.00	0.00	0.00	0.27	0.11	0.13	0.01	0.12	0.11	0.07
La Delicia Felipe Fort S.A.I.C.Y.F	0.08	0.00	0.36	0.45	0.22	0.19	0.13	0.16	0.22	1.20	0.35	0.16
Vealfe S.A.	9.61	12.55	2.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nestle Arg. S.A.	0.03	0.03	0.01	0.01	0.40	0.02	0.02	0.01	0.01	0.01	0.01	0.01
Others	3.88	4.25	4.92	1.99	0.96	1.10	0.87	1.72	0.90	0.85	1.09	1.69
Total exported (US\$)	14,365,962	32,673,966	40,800,223	67,062,129	85,737,650	63,421,344	67,779,246	65,713,571	52,703,665	50,998,644	64,988,924	72,772,767

Total firms: 197. Selected firms: 10 largest exporters.

Source: IERAL from Fundación Mediterránea based on Aduana Argentina.

Production geared towards import substitution is more diffused among local firms, under the umbrella of Mercosur's common external tariff (23 percent) and the logistical complications of chocolate exports. Georgalos is the second largest manufacturer of chocolate tablets, industrial chocolates, and chocolate confections in Argentina, and Felfort is another important player in the local market. These firms have been either unable or unwilling to take advantage of any knowledge spillovers and public goods generated by Arcor.

Ferrero set up a new plant (greenfield investment) in 1996, which specialized in the production and export of hollow chocolate eggs with toys inside (the Kinder Sorpresa) that was intended both for the local and the global markets from the onset. Other multinationals invested in Argentina mostly with import substitution in mind.

While there has not been a diffusion process of exports towards local competitors, it can be argued that diffusion occurred in the form of Arcor purchasing its potential competitors before they replicated its scale and strategies. For instance, Arcor acquired Aguila-Saint, the local leader in the production of chocolates, and Dos En Uno, the Chilean leader.

Regional and global diffusion. Brazilian firms, which benefit from the local availability of cocoa, traditionally emphasized their large domestic market, where they sold chocolate tablets and bonbons in assorted boxes. This did not change initially after the big acquisitions by multinational firms (Kraft purchased Lacta; Nestlé also has a strong presence in Brazil, both with its own brand and with its purchase of Garoto). However, Kraft-Lacta and Nestlé-Garoto in Brazil are currently taking advantage of Arcor's insufficient production capacity for BOB to supply part of the growing demand for this type of product in Latin America, using similar sales strategies (sold in units as individual products) and flavor adaptations as Arcor. Kraft-Lacta is

exporting a product very similar to BOB under the “Gallito” brand (a leading brand in Central America) and Nestlé is exporting the Garoto original version of BOB. These firms are certainly trying to take advantage of Arcor’s revealed information. The Chilean firm Dos En Uno, before being acquired by Arcor in 1997, was considered to be a small replica of Arcor, with a significant commitment to exporting, a strong presence in Latin American markets, somewhat similar commercialization strategies, and focus on a lower quality and price segment, although with brand development (like the Nicolo, a value-for-price product that was, and continues to be, highly successful in markets like Mexico). Other regional producers such as Chile’s Costa-Carozzi and Colombia’s Compañía General de Chocolates are trying to compete with Arcor in Latin American markets with similar commercial strategies, but with little success so far. It must again be stressed that Arcor was a pioneer in exporting to (and designing specific products for) Latin America on a large scale. Chinese firms are currently trying to imitate BOB and to compete on the basis of price.

There thus appears to occur an interesting global export diffusion process from world leaders to Arcor (which performs innovative imitation upon their products), and limited regional diffusion from Arcor to firms (either local or subsidiaries of multinationals) in neighboring countries, with essentially no diffusion to Argentina.

Determinants of extent of diffusion among locals. International markets for the chocolate confections discussed above are characterized by major sunk costs and technological, scale, capacity, and brand barriers, introduced both by international firms and by Arcor. Hence the lack of export diffusion among locals appears to reflect the fact that the knowledge externalities and public goods (reputation) provided by Arcor were not large enough to surmount the barriers to entry.

Arcor introduced several of these barriers in the 1980s, anticipating possible diffusion. To give one example, Arcor executives explicitly stated: “In the 1980s the need to generate differentiated products that involve an investment with scale and technology barriers was recognized. This led to the development of BOB and Butter Toffee [a filled candy], which could not be easily reproduced.” Arcor additionally made major investments in the latest technology

and in vertical integration during the 1980s.⁶ This was tremendously costly during crises such as the 1989 hyper-inflation. In the 1990s, however, Arcor was 10 to 5 years ahead of its competition. The company permanently reinvests profits in order to maintain these barriers, and Arcor's distribution system presents another important barrier.

These factors make it extremely difficult for small local firms lacking a minimum scale to make use of Arcor's commercial spillovers. For instance, while Arcor has 300 people devoted to international commercialization *alone*, Georgalos, the second largest producer, has a total number of 600 employees. Credit constraints do not help, either. Faced with such barriers, local firms prefer to focus on the domestic market, operate less modern technologies on a smaller scale, and make marginal exports to neighboring countries (and sometimes to more distant countries such as South Africa and Mexico); they do not make any significant investment in products specifically developed for foreign markets. Some of them, like Georgalos and Felfort, are experimenting with niches not targeted by the sectoral leaders, like sugarless chocolates, which are expensive to develop and to produce (because of the need to find palatable artificially sweetened chocolates and the high cost of artificial sweeteners), but they do not face brand barriers. Not only did barriers to entry matter, but also the fact that only Arcor appeared to have accumulated capabilities for commercialization in international markets through its experience in the sugar confections industry, and that these capabilities did not spill over to other firms.

The case of lack of diffusion among multinationals operating in Argentina (except for Ferrero) is interesting, because they would not be as constrained by barriers to entry as local producers. Interviews with executives from some of these companies revealed that local branches are usually constrained to export only products that are *currently* profitable, i.e., they cannot decide by themselves to invest in market cultivation. They also consider it very difficult to achieve cost competitiveness in exporting from Argentina, due to the lack of cocoa and to logistical difficulties. As such, they concentrate on import substitution and intra-firm trade whenever they can be cost-competitive vis-à-vis other branches in different countries. The two biggest foreign investments in the chocolate sector were made by Cadbury and by Ferrero.

⁶ Arcor set top-of-the-line production facilities for chocolate confections, particularly the BOB, in 1982, and then new top-of-the-line production facilities and technologies in 1995. Both plants and production lines were the most advanced technology for Latin America at both times, and less labor-intensive than the major competitor in Brazil (Garoto), which helped Arcor to significantly reduce costs as long as it produced on a large scale.

Cadbury entered Argentina through the purchase of Stani, a local manufacturer of chewing gum, and then decided to invest in a top-of-the-line technology for chocolates (with the same quality as in England) in 1995, both because that is their core business and because there was at the time a willingness and capacity to pay for expensive chocolate tablets in Argentina. However, company officials now believe that they should have invested in a less advanced and more versatile technology aimed at producing less expensive chocolates more suitable for the domestic and regional market. Cadbury currently exports only to Chile and Uruguay, and makes sporadic intra-firm exports.

Ferrero discovered the Argentine market through a distribution contract in 1993-94 with Terrabusi, a local producer of confectionary products, for the import of Ferrero products. Under this scheme Ferrero's sales jumped from US\$4 million to US\$70 million in a short period of time, which prompted the company to set up a plant in 1996 to produce for the domestic and world markets. This plant specializes in the production of Kinder Surprise (KS). The decision to set up this plant in Argentina rather than in Brazil was based on the favorable regulatory environment at the time, as well as local ability and willingness to pay for those high-end chocolate confections, Mercosur's high common external tariff, and Ferrero's need to install an additional KS plant from which to serve global markets (the other KS plants are located in Germany, Belgium, Poland and Italy). An additional key factor was Ferrero's expectation of benefiting from the "Ley de Especialización Industrial," which favored specialization in the export of a narrow range of goods by giving extra export drawbacks and allowing firms to import other products, in a certain proportion to the increase in exports, at very low tariffs (2 percent). Arcor successfully lobbied against the granting of these benefits to Ferrero on the grounds that the latter did not have a previous production and export history in Argentina and hence did not have *incremental* exports. Ferrero's investments made it the only other major exporter from Argentina, especially after the domestic market significantly contracted after 1998. However, company officials believe that this is not a sustainable endeavor and that they should have aimed for a multi-product plant of smaller scale, oriented to the domestic market and Mercosur.

Determinants of the extent of regional diffusion. As mentioned above, some Brazilian branches of multinationals are trying to imitate BOB and compete with this type of product in Latin American markets. This differs from the behavior of MNCs operating in Argentina and appears

to reflect their greater economies of scale and accumulated capabilities (from operating in the large Brazilian market), which make it easier to try to overcome the entry barriers imposed by Arcor. The local availability of cocoa probably helps as well. The knowledge externality generated by Arcor very likely made these exports profitable enough to be approved by those companies' headquarters.

However, the evidence collected here suggests that these attempts have been made possible only because of Arcor's temporary capacity constraints, which relaxed one very important barrier to entry. Arcor's reaction has been to make substantial new top-of-the-line-technology capacity investments to defend the BOB brand. Another strategy used to block regional diffusion has been to target marketing to children through the purchase of international licenses for stickers of characters like Superman or Pokemon that are attached to the packaging. Arcor does so because it considers that other firms can commit only to exporting to regional markets and, lacking Arcor's scale, cannot compete on price and cost at a global level.

Counterfactual analysis of lack of diffusion. A counterfactual comparison with the exports of sugar confections helps shed further light on the determinants of the lack of diffusion of chocolate confection exports. Arcor first targeted sugar confections because Argentina had a natural comparative advantage for its production and because there were no significant brand barriers to entry, i.e., there was less need to differentiate products and to invest in demand discovery. Sugar and chocolate confections are horizontally related both through sharing similar consumer targets, commercialization venues and several inputs, which makes them natural complements. However, the latter compete in a market with more brand barriers and product differentiation, and Argentina does not enjoy a natural comparative advantage in their production.

Table 2. Exports of Sugar Confections by Percentage Share

Enterprises	2004	2005	2006
ARCOR S.A.I.C.	75.5	73.0	68.1
ESTIRENOS S.A.	10.1	9.7	10.0
CANDY SOCIEDAD ANONIMA	0.1	2.5	5.9
CADBURY STANI SAIC.	3.3	4.7	5.5
ALICA SOCIEDAD ANONIMA	3.5	2.5	2.7
PRODUCTOS LIPO SOCIEDAD ANONIMA	2.9	2.6	2.4
BONAFIDE GOLOSINAS S.A.	1.6	1.4	1.6
LHERITIER ARGENTINA S.A.	1.1	1.0	1.1
CHOCOLATES LACASA ARGENTINA S.A.	0.3	0.4	0.5
FERRERO ARGENTINA S.A.	0.2	0.2	0.4
OTHERS	1.4	2.0	1.8
Total exported (US\$)	75,739,983	76,402,290	60,246,607

Total firms: 75. Selected firms: 10.

Source: IERAL from Fundación Mediterránea based on Aduana Argentina.

As expected, there is greater diffusion in exports of sugar confections. While Arcor represents 78 percent of foreign sales in this category, there are six other firms (five domestic and one multinational) with exports that exceed US\$1 million and which represent 19.25 percent of sales (see Table 2). In contrast, there are only three firms that export more than US\$1 million in the chocolate confection sector, and two of them are multinationals that are engaged mostly in intra-firm trade. A comparison of the export history of the sugar and chocolate confections sectors would suggest that the lack of natural comparative advantage and the existence of important brand barriers and product differentiation in the chocolate confection industry have prevented diffusion the most.

5.2.8 Roles of Previously Accumulated Capabilities, Industry-Specific Public Goods and Public Policies

The discovery of chocolate confections was built upon the capabilities accumulated in the production and commercialization of chocolate tablets and confections for the local market under import substitution and the capabilities accumulated in the commercialization of sugar confections, and on the cost advantages granted by economies of scale in the latter activity. Arcor further benefited strongly from the capabilities for the production of chocolate tablets and confections accumulated by Aguila-Saint upon acquiring this firm.

Looking at HK's product space, we can observe that the probability of exporting chocolate confections is also positively associated with the exports of products where Argentina

has a natural comparative advantage, such as margarine, bakery products, cheese and curd and oil seeds, and in which Argentina had accumulated production and export capabilities.

It is interesting to note that all the accumulated capabilities coalesced into a single firm (both through Arcor's own accumulated capabilities and through the acquisition of other firms). This is consistent with a world market structure where there exists one or at most two major producers and exporters per country (Mars and Hershey's in the US, Ferrero in Italy, Lindt in Switzerland, Cadbury in Germany, etc.), and where branding, scale and sunk costs are barriers to entry to most markets.

Some of the industry-specific public goods (food safety agency, basic logistics for food industry, skilled personnel) were already in place because of Argentina's tradition in the production and export of related foodstuffs. Other industry-specific public goods (laboratories, access to reliable packaging supply) were internally provided by Arcor, which fully internalized the benefits of having access to them.

There was no significant government intervention in the emergence of this new export activity. Industrial promotion regimes influenced the location of some production plants but were not necessary for their success. Arcor avers that one distinctive feature of Argentina is that it does not grant special support for international competition to large global firms such as itself, the opposite of Brazil's policy.

5.3 Welfare Analysis

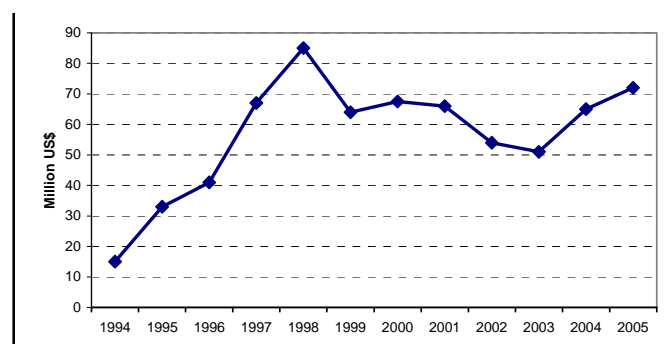
In this case it does not appear that ex-ante investment in discovery was too small due to information externalities. Instead, Arcor's ability to introduce barriers to entry allowed it to capture discovery rents.

It is hard to argue that too little diffusion is inefficient in this case. First because these are differentiated products with downward-sloping demands, and it is not clear if Argentine newcomers that sank capital into brand development and other activities would be stealing profits from foreign competitors or from Arcor. The fact that Arcor's future export growth appears to be tied to the opening of new markets rather than expanding sales in its current markets (stealing demand from foreign competitors) suggests that diffusion could even be "immiserizing" by duplicating sunk costs and splitting demand among a larger number of Argentinean exporters. We must add that export expansion does not appear to generate

technological spillovers and other spillovers in the form of the development of specialized input markets. In this vein, Arcor's could be introducing "barriers to the poor" rather than "barriers to riches."

This case study fits nicely into the Vettas (2000) framework for analyzing discovery and diffusion of new exports when there are demand-related information externalities and demand-shifting effects. Arcor acted as a monopolist replicating the investment of a social planner, speeding up export growth at the beginning (to take advantage of demand-shifting reputation effects) and then slowing down as it learned that the saturation points became near (see Figure 2). Indeed, Arcor claims that their markets are currently saturated and that the only way for their exports to grow is by opening new markets or by developing new export products.

Figure 2. Chocolate Confections, Total Exports



Source: IERAL from Fundación Mediterránea based on INDEC.

This is also a case where the pioneer appears to face unusually small demand uncertainty (because of its commercialization capabilities accumulated in sugar confections) and an unusually high ability to overcome coordination failures by itself. These traits make initial sales more profitable in expected terms (and less uncertain) than for other local competitors, prompting it to make big investments. As a result there would potentially be large information and coordination externalities, which fail to materialize because of the introduction of barriers to entry.

It is interesting to note that in this case monopoly substitutes for the need to subsidize infant export industries to fully exploit the information and demand-shifting externalities in competitive market equilibrium, as proposed by Vettas. However, two qualifications must be stated. First, demand information externalities have a cross-border nature in the case of chocolate

confections, in which case it is not clear that one would want to subsidize this activity in competitive market equilibrium. Second, a monopolist such as Arcor can deal with these cross-border externalities by introducing brand and technology barriers to entry. Subsidization of small firms in a competitive equilibrium would probably require the introduction of strategic trade policies to deter the entry of foreign competitors, making the final welfare effect uncertain.

Minimal technological spillovers and scant development of an open-to-all network of specialized inputs suppliers may suggest that this activity did not have the potential for high social return. However, there are several arguments that counter this assertion. First, the presence of a monopolist led to an optimal path of investment and export growth in the presence of demand information and demand-shifting externalities and made it possible to offset cross-border externalities. Second, this monopoly power in the new export has allowed substantial profit-shifting from foreign competitors. Third, this new activity is allowing the accumulation of capabilities for jumping to more sophisticated products both within this industry and in other areas. Arcor's learning-by-doing and learning-by-exporting are allowing it to focus now on R&D to develop original products (instead of just doing innovative imitation) with which to target markets usually served by developed country firms.

Additionally, HK's product space shows that the discovery of exports of chocolate confections helped to move Argentina's export closer to the densest part of this space. For instance, chocolate confections lie close to a variety of products related to packing goods, which might probably require some of the same capabilities demanded by chocolate confections.⁷

The fact that the accumulation of capabilities occurs within a firm reflects the industrial organization of this product's world markets and should not demean its contribution to economic development. Hence we should not be concerned about the fact that there was no diffusion in this particular new industry. We should be more concerned about the possibility that most new successful export activities in Argentina are discovered only when the pioneer can introduce barriers to entry resulting from inadequate public policies, investments and institutions.

⁷ These goods include "paper and paperboard, corrugated, creped, crinkled, etc.," "articles for the conveyance of packing of goods," "articles of paper pulp, paper, paperboard, cellular wadding," "aluminum and aluminum alloys, worked," "reservoirs, tanks, vats and similar containers," "casks, drums, boxes of iron/steel for packing goods," and "structures and parts of structures, iron/steel plates."

6. Case Study of Biotechnology Applied to Human Health (BHH)

6.1 Background Information

6.1.1 BHH around the World

Biotechnological advances in human health have been revolutionary. While in 1995 there were only 15 biotechnological drugs on world markets, this number has since grown to 80. Prominent examples include human insulin, hepatitis B vaccine, EPO, G-CSF, and human growth hormone.⁸

This technology makes it possible to obtain large quantities of therapeutic proteins that in the past could only be extracted in small amounts. Processes for obtaining these proteins include fermentation, extraction, purification and formulation. In human health care, biotechnology products include diagnostic tests, antibiotics, therapies and vaccines.

The importance of biotechnology in the pharmaceutical sector is becoming very significant: in 2003, seven of the top 50 pharmaceutical products sold around the world were biotechnological. The combined sales of these seven products reached US\$15 billion, more than 10 percent of total sales (US\$129 billion) of the 50 main medicines. An additional 370 medicines, intended to fight more than 200 illnesses including Alzheimer's disease, AIDS, arthritis and several kinds of cancer, are currently being tested in clinical trials.

The main hurdles for participating in BHH targeted to rich country markets are high research, development and commercialization costs, which on average represent around US\$800 million per new product. Furthermore, the R&D success rates for innovative projects are normally less than one in a thousand.

Although an important part of the research in rich countries is undertaken by small new biotechnological labs, the discoveries end up being adopted by big corporations (by license agreements), because these new firms cannot face the high costs that these developments entail.

In biotechnology there is no possibility of copying. Even if a product already exists and is not protected by patents in certain markets, a laboratory that wants to produce it has to develop it completely from scratch through costly R&D, as only the final product is known and not the process whereby it was obtained. The success rate for this kind of development, however, is

⁸ Biotechnology is a collection of technologies that entail the use of cellular and biomolecular processes to solve problems or make useful products. To these ends it takes advantage of the fact that the DNA information manual of one cell can be read and implemented by cells from other living things and the genetic instructions to make a certain protein are understood by many different types of cells.

much higher than for innovative BHH products: about one third of bio-generic projects succeed if the right research team is assembled.

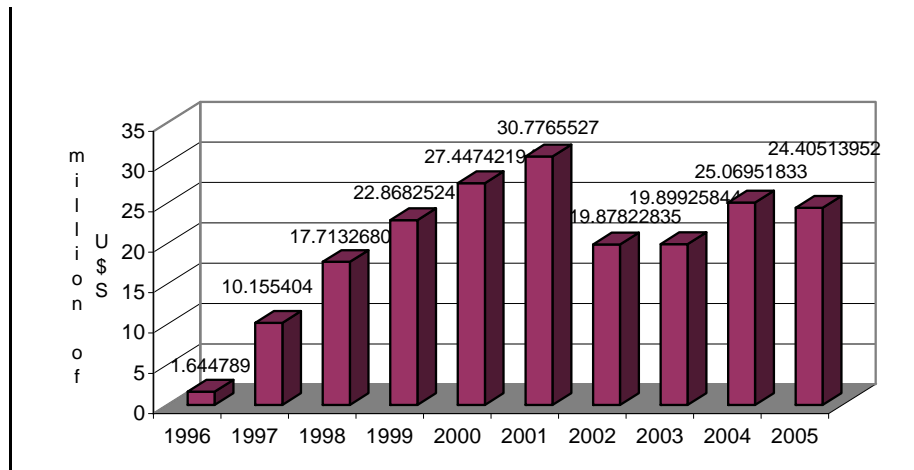
6.1.2 BHH in Argentina

The application of biotechnology to human health in Argentina is focused on two principal areas: biopharmaceuticals and diagnostic reactivities. The main biopharmaceuticals produced in Argentina are human erythropoietin, human interferons, G-CSF and growth hormones. These products are sold both domestically and abroad.

Since diagnostic reactivities are sold mostly in the domestic market, we will focus on biopharmaceuticals. This segment was targeted by the national pharmaceutical industry in the 1980s through biotechnology developments that became mature a decade later. These laboratories self-financed these research investments and made use of local researchers in the area of life sciences.

Argentine biopharmaceuticals rapidly gained world market shares during the mid-1990s. In just 10 years international sales of these types of BHH products rose from US\$1.6 million to approximately US\$25 million (see Figure 3).

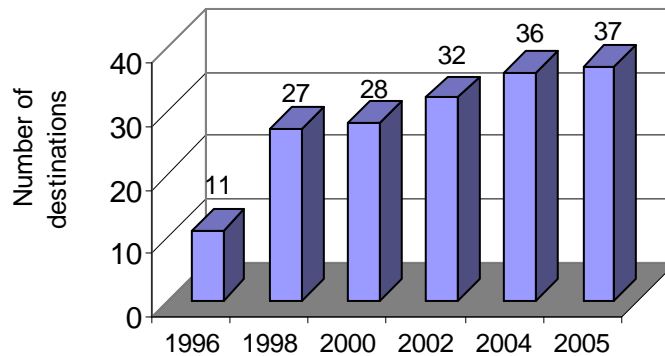
Figure 3. Biopharmaceutical Exports



Source: IERAL from Fundación Mediterránea based on INDEC.

Argentina's exports of biopharmaceuticals not only grew very rapidly, but also showed a remarkable geographic diversification. The number of destinations for these exports jumped from only 11 countries in 1996 to 40 countries at the time of writing (see Figure 4).

Figure 4. Geographic Diversification of Argentinean Biopharmaceutical Exports

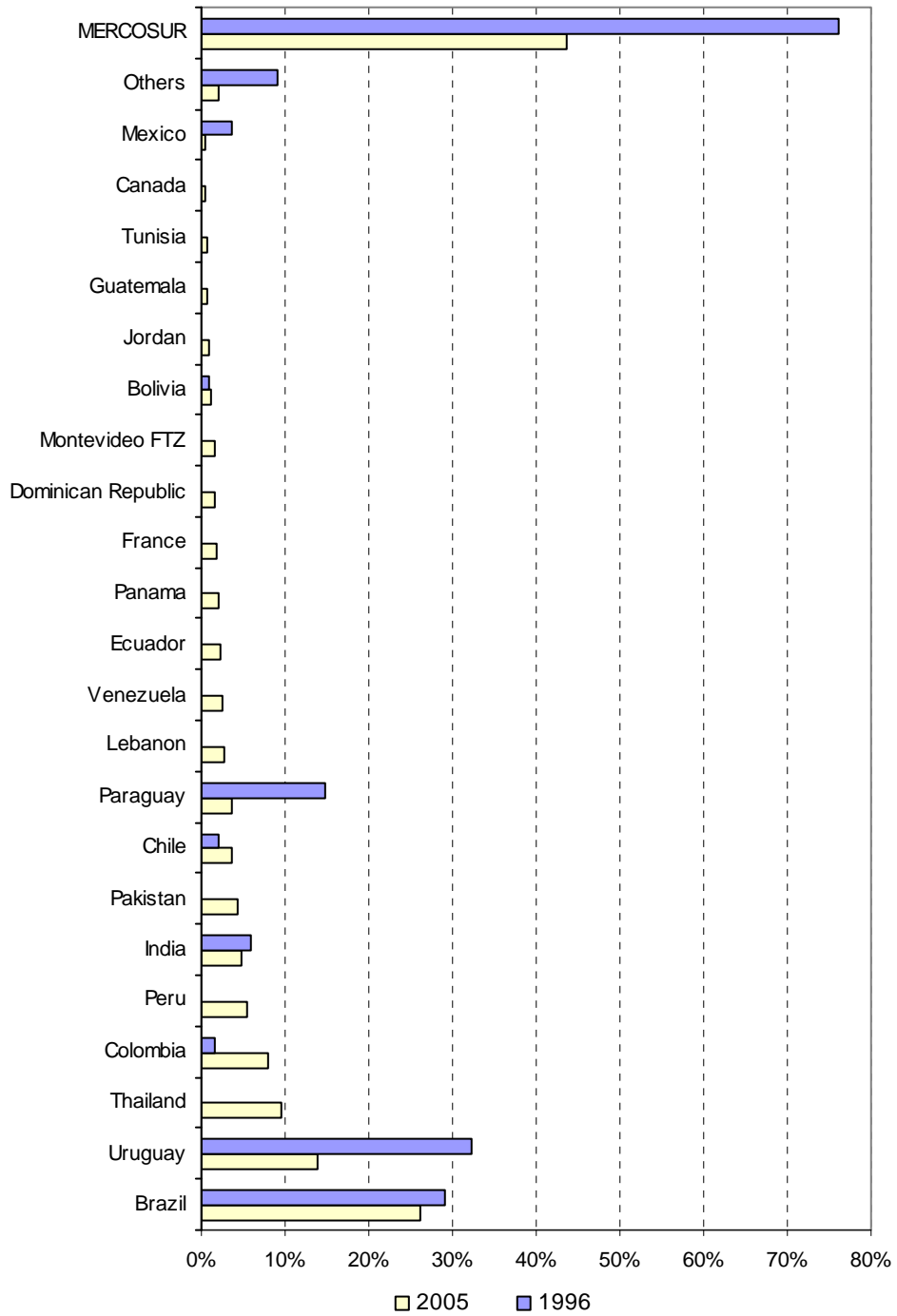


Source: IERAL from Fundación Mediterránea based on INDEC.

This diversification also helped reduce the geographic concentration of exports, reducing the share of exports to Brazil from 65 percent in 1998 to less than 25 percent at present.

The main export destinations are South American countries (66 percent of total sales in 2005), East Asian countries (around 20 percent) and the Middle East, regions composed of intermediate development countries, which compare very favorably to rich countries in terms of less stringent barriers to entry (patents, registry requirements and costs of clinical approval tests).

Figure 5. Exports by Main Destinations



Source: IERAL from Fundación Mediterránea based on INDEC.

Brazil and the rest of MERCOSUR played an important role at the onset due to the knowledge of regional diseases that Argentine labs had developed and to the fact that the Brazilian BHH sector still had not fully developed.

Exports grew very fast until 2001, favored both by Argentina's initial advantage within Mercosur and by the domestic recession between 1999 and 2001. The recovery of the domestic market after 2002, together with the expansion of the Brazilian BHH sector, reduced exports, which nevertheless quickly resumed their growing trend.

6.2 Analysis of the Emergence of This Export Sector⁹

6.2.1 Who Was the Pioneer? Why Did it Target This New Activity?

The pioneer for producing and exporting BHH products in Argentina is Bio Sidus, a spin-off of Sidus, a relatively large domestic pharmaceutical laboratory with a long tradition of producing traditional human health products (mostly generic drugs) for local and regional markets with less restrictive intellectual property rights regimes. Sidus is also involved in horizontally related biotechnological activities, applied to plants and to animals, through spin-offs in those areas.

The firm's initial developments and exports included interferon-alpha, its first product, and erythropoietin (EPO), the firm's main export product. The first developments took place shortly after this activity emerged in industrialized countries in the late 1980s and preceded by several years those of other Argentine firms that managed to develop similar saleable BHH products. Indeed, Bio Sidus managed to develop these products earlier than in most other developing countries, and even before several more developed countries. For instance, the commercialization of EPO in rich countries started in 1989, and Bio Sidus was already an active exporter in the mid-1990s. As a result Argentina is currently the world's seventeenth-largest exporter of EPO, lagging only very rich countries and selling 66 percent more than South Korea and Mexico (its two closest followers) and almost three times as much as Brazil.

Exports took off at the same time as domestic production. Although the firm's research and development initially targeted the domestic market, it soon became clear that Bio Sidus

⁹ The analysis is based on interviews with Bio Sidus executives (Carlos Melo, R&D Manager), Laboratorio Pablo Cassará executives (Jorge Cassará), Foro Argentino de Biotecnología executives (Juan Dellacha, Science Director; María Marta de McCarthy, Manager), Biocientífica (Diagnosis biotechnology) executives (Daniel Villamayor), Elea executives (Dr. Hector Ostrowski, R&D Manager Director), Massone executives (Raúl Massone), and Foro de Biotecnología (J.Carlos Villalpando).

could compete successfully in developing countries that were not targeted by rich country firms. As a result, Bio Sidus currently exports approximately US\$17 million a year (68 percent of its total sales).

The key reason for targeting these new goods and exports was the need to find new profitable activities that help overcome the profit reduction in traditional pharmaceutical activities caused by increasingly stringent patent protection. This is akin to an exogenous shock that “shook the tree” and forced the monkeys to jump to other trees. The resources sunk into traditional pharmaceutical activities generated incentives to consider this new activity.¹⁰

Bio Sidus’ experience in the traditional pharmaceutical industry additionally allowed it to identify BHH in developing countries as an export market that was underserved by rich country labs. There are several reasons why rich country labs were not serving less developed country markets. The relatively laxer IPRs in the latter would not prevent the entry of competing labs from less developed countries that could sell at a lower price. As BHH markets appear not to be segmented, the price reduction required from rich country labs to serve less developed country markets would erode the monopoly profits in rich country markets more than it would contribute to greater profits through the capture of new markets. In this regard, it should be noted that rich country labs face much larger fixed and variable costs than their counterparts in less developed countries for the following reasons: a) the high cost of clinical approval of new products (US\$500,000); b) more stringent quality management standards in rich country labs, which must employ three times more personnel in traceability during the internal processes than labs in poorer countries; c) higher R&D and commercialization costs in developing original goods and cultivating markets for these goods (US\$800 million per new product, on average). For a typical rich country BHH lab production costs represent 5 percent of gross revenues, marketing costs 15 percent and R&D amortization 30 percent, yielding a 50 percent profit margin (over gross revenues) that makes it possible to amortize the investment in 3-4 months. A good example of the difference in costs between rich and LDC labs is given by the cost of applying for patents in the US or the EU (about US\$500,000) and in Brazil (US\$8,000).

The combination of lower costs for LDC labs and monopoly power in rich countries for developed country labs give the former a competitive edge in poorer country markets. Bio Sidus was able to exploit this edge, which may cease to exist in the future as rich country labs are

¹⁰ See Hidalgo et al. (2007) and footnote 2 above.

shifting their strategies and starting to patent their new developments everywhere (as in the case of monoclonal antibodies for treating cancer).

Another window of opportunity for targeting this activity was given by the fact that even though requirements in terms of fixed investment in physical capital for production are more important than those prevalent in the traditional pharmaceutical sector, developing BHH products demands a relatively lower investment in R&D. The R&D process in traditional pharmaceutical activity may last seven years and in the end yield no useful result. On the other hand, R&D in BHH is more similar to a reverse engineering process: it is known that the body produces a certain product (leukocytes, for instance), and what the research does is to try to identify this bodily production process and to replicate it outside the body. This relatively smaller barrier to entry facilitated the investment of a national laboratory like Sidus.

6.2.2 What Were the Main Uncertainties Regarding the Profitability of Exports? How Were They Resolved? What Was Discovered?

Two types of uncertainties had to be resolved before there could be a breakthrough in the BHH business in the *market segments targeted* by the pioneer. First, Bio Sidus had to resolve a country-wide, systemic type of uncertainty, which is whether the human capital in Argentina was adequate for developing BHH products of the desired technological sophistication. Second, it had to resolve an idiosyncratic technological uncertainty: whether their research effort would yield the development of the desired product. Bio Sidus avoided clinical and foreign demand uncertainties at the beginning by focusing on “imitating” products that were already clinically approved and well established in world markets.

Ability to develop the good. When Bio Sidus targeted BHH it was not clear if the human capital available in Argentina would have the ability to develop the new goods. Thus, the firm had to search for capable researchers and “experiment” to see if they could succeed. To this end Bio Sidus initially established contacts with CONICET scientists (who had no previous experience in developing commercially viable products), conducting a trial-and-error process until finding found the right researchers who, under the supervision and training of repatriated Argentine pharmaceutical researchers, managed to successfully develop interferon alpha. The discovery of this untapped accumulated capability by Bio Sidus was an externality that is recognized by Argentine newcomers as a key determinant of their entering this sector.

Then there was the idiosyncratic uncertainty as to whether the R&D effort would succeed. The research success of Bio Sidus (as high as 70 percent) was based on focusing its R&D effort on a narrow set of goods (i.e., applying a linear model of innovation). This knowledge is fully proprietary (a “knowledge niche”), at least in principle.

It must be highlighted that the firm’s prior history in pharmaceutical activities did not provide it with any special knowledge on conducting R&D in this BHH. It was necessary to start from the scratch, because pharmaceutical laboratories in Argentina did not develop original products, but instead engaged only in reverse engineering in generic drugs, a relatively easy task using information contained in patents. Bio Sidus hence lacked a specific research protocol and an *a priori* identification of qualified researchers that could successfully develop these new goods.

Production costs. Production costs were neither uncertain nor crucial for Bio Sidus’ acquisition of competitiveness. All that it needed was to be able to supply sophisticated products to countries with relatively lax IPRs at a lower price than its rich country counterparts.

Clinical and demand uncertainties. Original new developments involve three layers of uncertainty: a) technological (the development itself); b) clinical (the new product must be approved by health authorities); and c) commercial (there has to be a market for the good).

The initial strategy of Bio Sidus was to focus on the development of a product (the interferon-alpha) already existing in the global market, clinically and commercially proved, and to produce it at a cheaper price and with similar quality.

Their focus on “non-IP” country markets (which was not a choice, but rather their only possibility) also reduced uncertainty, because in order to enter these countries they only have to demonstrate chemical equivalence of the new products (which is relatively cheap and offers no uncertainties). Developed countries still maintain, and in many cases are extending, patents on these goods. When the patent period expires they are likely to introduce the further requirement of testing for clinical efficiency (on the scientific grounds that chemical equivalence does not apply to BHH because each BHH product is “different”). These extra requirements would not only sizably increase the costs of entry, but also introduce idiosyncratic uncertainty regarding clinical efficiency.

Commercialization strategies. There is little (if any) uncertainty involved in the commercialization strategies in “non-IP” countries, where Bio Sidus exports goods that are only vertically differentiated (and where there were no initial competitors) and hence need no special commercialization strategies.

6.2.3 Were There Any Coordination Externalities? How Were They Resolved?

When Bio Sidus began research on BHH there was neither a specific regulatory framework for this activity in Argentina, nor specific public policy instruments to support this type of investment. The lack of public sector knowledge on how to deal with these new activities made matters such as sanitary or product quality approvals more difficult. Although there was arguably a coordination failure (no regulatory framework and specific support policies because the sector does not exist and vice-versa), it was obviously not large enough to prevent Bio Sidus from making investments. Being a large firm, it could use its own resources to finance investments before the regulatory framework and domestic basic infrastructure were in place.

As the pioneer made progress with its research, it started to collaborate with (or “instruct”) the involved public agencies in the construction of the sectoral regulatory framework, on how to evaluate BHH projects and on how to design specific promotion mechanisms. In so doing, it provided a public good to followers. However, this was only partially a public good, as the new regulations initially reflected the particular needs and experience of Bio Sidus and did not provide a general framework. In some cases these tailor-made regulations may have operated as a barrier to entry.

Most of the specialized inputs for this industry can be imported, eliminating this possible source of coordination failure. Access to adequate technological infrastructure (accredited clinical analysis labs, etc.) was not an overwhelming issue for the large national laboratories (Bio Sidus, Cassará), which either already had them as a result of their activity in the pharmaceutical sector or could finance them.

6.2.4 Why Was the Investment in New Exports Successful?

The keys for the success were the combination of entrepreneurial vision, selecting the right R&D team, and lots of luck, according to Bio Sidus executives. We can distinguish between the specific actions and strategies that the pioneer took to resolve the uncertainty and the characteristics of the pioneer that facilitated undertaking this risky investment.

The specific actions have been discussed above: locating workers with the appropriate human capital, focusing on a narrow range of products already in existence that were clinically and commercially approved), and targeting the underserved market for relatively inexpensive equivalents to BHH products produced in rich countries with a similar level of quality.

This success was facilitated by Sidus' previous experience in the pharmaceutical sector, targeting similar product and market ranges and successfully adapting products to the characteristics, pathologies and requirements of developing country markets. This experience is common to most national pharmaceutical firms in Argentina, but Bio Sidus was the first to exploit it successfully in BHH.

The company's scale in traditional pharmaceuticals also gave it access to resources for the internal financing of the required substantial investment in R&D and in obtaining clinical and/or commercial approval for new products. (The importance of this process can hardly be overstated, as technological development generally requires at least six years, and obtaining regulatory approval usually requires about four years). Bio Sidus' decision to invest its own revenues from traditional pharmaceutical activities in highly uncertain new developments in biotechnology set it apart for a good number of years from the other domestic laboratories.

Prior knowledge in the pharmaceutical sector allowed Bio Sidus to choose BHH products where it would take longer for competitors from other developing countries to emerge, i.e., that had greater technological barriers to entry in the relevant market segments. These products had to be such that they demanded an R&D effort that was beyond the scope of pharmaceutical firms in most developing countries at that time but not beyond Bio Sidus' possibilities. The targeted products also had to offer learning economies in R&D activities that would later allow the company to jump to develop more sophisticated products. Competition had to be avoided not only until the initial investment could be amortized with the monopoly benefits of the initial development but also until the firm had developed its next product.

The company's family ownership structure was also an asset, as it allowed for rapid decision-making and changing strategies. Large laboratories in developed countries do not have the flexibility to start these new projects (even though where barriers to entry are smaller because BHH does not involve large fixed physical capital requirements). Hence technological developments are usually undertaken by small and medium labs and then sold to the big laboratories. In Argentina, however, the pioneer firm carries out almost 100 percent of its product development "in house," which demands a great deal of flexibility.

6.2.5 What Was Done to Consolidate the New Export Success?

The pioneer initially was a temporary monopolist in products that lacked horizontal differentiation and where the only barriers to entry were scale economies in R&D. The company exploited this monopoly position while it lasted by trying to sell its products in as many "non-IP" countries as possible and by applying part of these profits to developing its own versions of already-existing products (interferon beta, G-CSF, etc.) that would provide it with new temporary monopoly profits

6.2.6 What Impact (Actual and Potential) Did the New Exports Have on the Pioneer and on the Sector (Knowledge and Other Spillovers)?

Information revelation. The pioneer revealed the important information that the human capital available in Argentina was suitable for R&D in BHH developments. This knowledge externality was not, however, sufficiently large to induce a massive diffusion of this activity, given that the specific knowledge of how to produce the good remains proprietary. Newcomers know that there are researchers that can carry out this type of R&D, but they still have to commit their own capital and engage in the process independently.

Even the revelation that human capital was suitable was for R&D in BHH was not that large of a knowledge externality, as Cassará, the most important follower of Bio Sidus, could undertake successful R&D only after hiring former Bio Sidus researchers. Another big domestic laboratory (Roemmers) sank significant capital into R&D and yet failed because of hiring researchers who lacked "commercial vision."

Pioneer's learning and productivity improvement and its static and dynamic spillovers. Bio Sidus initially targeted developments that allowed it to acquire resources and increased learning on general R&D skills, which facilitate new developments farther up the technological ladder.

These previous developments provided improved research know-how that can reduce by 25 percent the time needed for R&D activities, with substantial financial savings. Nonetheless, there do not exist major specific technological spillovers between one particular development and the next, i.e., previous developments do not provide any increased knowledge as to whether a new molecule is going to “work.”

The pioneer is now preparing to access the high-income markets of the European Union, the United States, Japan and Australia, which represent 90 percent of the world market, in the events that patents on BHH products such as EPO cease to apply and bio-generic rules are approved for BHH. The firm is also applying its profits and acquired learning in BHH R&D to developing original highly sophisticated processes and/or products, some of which have already been developed and patented and are awaiting clinical approval. This new BHH R&D phase, that has yet to bear fruit in the technological, clinical or commercial aspects of this business, may have important implications for the pioneer in terms of allowing it to engage in product differentiation and brand development, and of giving it access to higher prices and to bigger and more prolonged monopoly profits. One of these new developments is the “pharmaceutical milk farm” (“tambo farmacéutico”) that produces human growth hormone, an already existing product, through an innovative process that allows the direct extraction of this hormone from cows’ milk, followed by purification. This is a much more productive technology than the traditional (biotechnological) methods of obtaining this hormone through the fermentation of biotechnologically modified cells, bacteria or yeasts.

Bio Sidus is also engaged in the development of on the development of a new product, known as gene therapy (instead of modifying bacteria, yeast or other non-human cells, genetic modification is carried out upon cells of the human body). If the company successfully develops this product it will probably have to find a partner for clinical trials, which are estimated to cost US\$300 million.

Improvement of the functioning of the national innovation system. A traditional criticism of Argentina’s national innovation system is that there exists a wide gap between the research agenda of public agencies and the needs of the business sector, and very little spillover between the public and private sectors, leading to sub-optimal investment in R&D by Argentine firms (see FIDES, 2006). This situation, however, has been changing in recent years. For instance,

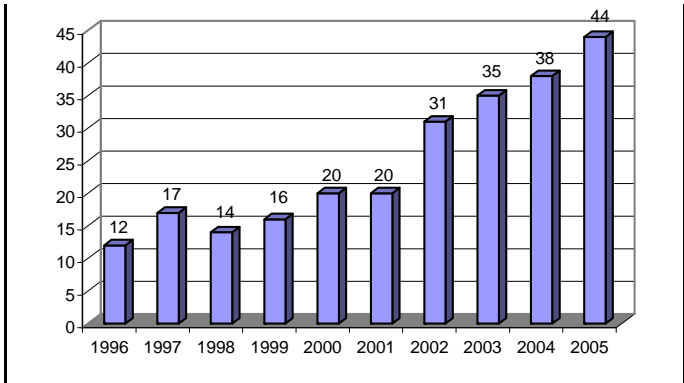
there is now a mechanism that allows public sector researchers to undertake internships in private firms. Bio Sidus was one of the main promoters of these changes, albeit not the only one. The government’s recent interest in promoting R&D, possibly fostered by the demonstration effect of Bio Sidus and others, was also very important in this regard.

Intersectoral spillovers. In addition to BHH, Bio Sidus is also very active in plant and animal biotechnology. For instance, it is one of the leaders in the application of biotechnology to plant propagation, which allowed it to become one of the main producers and exporters of blueberries, another successful new export activity in Argentina. Similarly, one of Bio Sidus’ most promising new developments in BHH, the “pharmaceutical milk farm,” combines animal and human biotechnology.

6.2.7 Was There Diffusion of this Export Activity? What were the Key Drivers of this Diffusion (or lack of)?

Extent of diffusion among firms located in Argentina. Although Bio Sidus is still the leader among BHH exporters, a large number of Argentinean firms have started exporting in recent years. While in 1996 only 12 firms realized exports greater than US\$10,000, that number reached 44 in 2005 (see Figure 6). This diffusion made the share of Bio Sidus in total sectoral exports fall from approximately 80 percent during the second half of the 1990s to an average or 65 percent in recent years (see Table 3).

Figure 6. Number of Exporting Firms



Source: IERAL from Fundación Mediterránea based on INDEC.

The main exporting firm after Bio Sidus is Laboratory Cassará, and only these two firms have recorded exports exceeding US\$1 million in recent years. The list of exporters of BHH products includes firms of different relative sizes that encompass international labs, universities and small innovative firms. While some of these small and medium firms produce and export their own developments, other firms, mainly international labs, produce with licenses or merely commercialize.

Table 3. Main Exporting Biopharmaceutical Firms*
(in dollars)

Name	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
BIO SIDUS S.A.	26.16	77.43	83.09	78.32	76.12	80.66	70.14	71.47	69.91	58.08
LABORATORIO PABLO CASSARA	5.22	0.69	2.45	6.28	11.57	6.04	4.17	8.56	5.42	9.05
INSTITUTO MASSONE S.A.	7.20	3.12	2.27	1.55	0.85	0.92	1.96	2.43	2.21	2.90
UNIVERSIDAD NAC.DE CORDOBA	0.00	0.02	0.00	0.00	0.16	0.27	1.17	0.67	1.65	2.89
FERRING SA.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.89	1.09	2.31
BAXTER IMMUNO S.A.	2.88	1.25	0.02	0.25	0.20	0.47	0.02	0.32	0.34	2.30
BIOPROFARMA SA	0.00	0.00	0.00	0.00	0.10	0.02	0.03	0.51	0.77	1.97
SANDOZ SA.	1.64	0.16	0.00	0.00	0.00	0.00	0.00	0.77	2.24	1.88
PC GEN S.A.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	4.38	1.88
SCHERING-PLOUGH S.A.	15.96	5.42	2.56	2.76	2.14	0.88	3.82	1.78	1.30	2.66
LABORATORIOS POEN S.A.C.I.F.I.	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.82	1.44	1.75
PURISSIMUS S.A.	0.00	0.01	0.04	0.97	0.82	0.23	0.51	1.44	0.71	1.62
MONTE VERDE S.A.	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.46	0.39	1.49
LABORATORIO ELEA SACIFA.	0.01	0.08	0.03	1.43	0.93	0.58	0.81	1.26	0.98	1.43
PRODUCTOS ROCHE S.A.Q.E.I.	11.47	3.21	2.27	2.71	1.85	2.41	6.18	2.42	1.17	0.99
AGROINSUMOS S.A	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.69	1.04	0.87
SERVYCAL S.A.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.12	0.84
BIOGENESIS S.A.	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.02	0.23	0.48
GRIFOLS ARGENTINA S.A.	2.25	0.24	0.04	0.16	0.15	0.04	0.19	0.42	0.31	0.45
M.R. PHARMA S.A.	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.28	1.27	0.42
Subtotal	72.78	91.62	92.76	94.43	94.91	92.51	90.04	96.16	96.98	96.24
Others	27.22	8.38	7.24	5.57	5.09	7.49	9.96	3.84	3.02	3.76
TOTAL	1,644,789	10,155,404	17,713,268	22,868,252	27,447,422	30,776,553	19,878,228	19,899,258	25,069,518	24,405,140

* Firms with annual sales of more than US\$10,000.

Source: IERAL from Fundación Mediterránea based on Aduana Argentina.

The number of exporting firms and of exported products may become more significant if several ongoing R&D efforts (which take 10 years to mature) bear the expected fruits.

Regional and global competitors. There have emerged a significant large number of competitors in Asian countries and several developing nations that target the same products and market segments as those initially targeted by Bio Sidus. For instance, in 2004 Argentina was in the same club (defined by export value) for the exports of BHH products as South Korea, the Czech Republic and Singapore; other upcoming exporters are India, China and Russia. In the case of EPO, Argentina's exports ranked immediately after those of Singapore and before those of South Korea. India is one of the upcoming exporters for this good.

Asian countries are able to export lower priced BHH products because of lower traceability requirements and lower demands of clinical security before putting their products on the market. For instance, in China there are about 30 BHH labs (a large number) that produce

EPO. More than half of their developments, however, are of poor quality, while three or four are fair and only and only two or three may be considered good. Firms realize major savings in R&D and financial costs by going to market before their products are thoroughly tested. They continue learning as they test their products in the market (by seeing their effects on actual patients), and their products eventually improve, but with considerable health risks. There have been cases of exports of vaccines through WHO price-based bidding processes that were won by suppliers that lacked clinical approval in the recipient country.

6.2.8 Determinants of Extent of Diffusion

Newcomers in this sector in Argentina may benefit from some partial knowledge externalities produced by the pioneer, but they must sink capital into R&D to resolve their own idiosyncratic uncertainty about the ability to produce the good. Entering later than the pioneer means that targeting the same goods and market segments involves competing with exporters from other countries that are already targeting those markets.

The newcomers have not hurt the pioneer's profits because of the time lag between the pioneer's developments and those of its followers and because of the relatively small size of the latter vis-à-vis the Asian competitors. Likewise, diffusion has not yet led to an increase in the costs of research. Additionally, followers in Argentina, while initially targeting the same goods as the pioneer, are now focusing on different varieties for their subsequent developments.

The most prominent of those followers, Laboratorio Pablo Cassará, entered BHH business as a result of its association with former Bio Sidus researchers. This allowed it to "develop" the same initial goods as the pioneer (e.g., interferon alpha, G-CSF), without having to face the uncertainty and fixed costs associated with product development and without concern for relatively low prices at the time of entry. This association also provided the firm with general knowledge on how to perform successful R&D in BHH. Like the pioneer, Cassará was a relatively large domestic and traditional pharmaceutical lab that decided to invest in and finance its own biotechnological research, taking advantage of the high profits obtained in its traditional activity. While starting later than Bio Sidus, Cassará shared its motivation and several other facilitating factors. Cassará had also observed the pioneer's success in finding workers with the appropriate human capital. Their search for projects and adequate research personnel coincided

with the departure of some of the original researchers of Bio Sidus, an association that proved highly advantageous.

Two interesting features emerge from Cassará's experience. First, following its initial "success" in developing products similar to those of the pioneer, Cassará decided to specialize in different products, such as vaccines, in subsequent developments (although both firms are still very active in "traditional" BHH products, such as EPO, interferon-alpha and G-CSF). To pursue these new projects Cassará is associating with large international laboratories (e.g., Aventis Pasteur), which will deal with financing clinical approval in rich country markets. For instance, Cassará has created a new hepatitis vaccine that requires one less dose than existing version—an important advance in the prevention of this illness because less than 20 percent of those vaccinated actually complete the third dose. This vaccine is going to be produced and commercialized at an international level by an international lab in cooperation with Cassará. Therefore, if the vaccine enters the world market as an Argentinean product and is distributed through the global network by a transnational lab, the country's BHH exports will sizably increase in the years ahead. At the same time, the lab is already working on a vaccine of just one dose that has already been approved in animals and is beginning to be studied in humans.

The second interesting feature of Cassará is that it did not hire former Bio Sidus researchers but instead associated with them. This form of partnership probably arose from the bargaining power of the latter, who could "sell" their knowledge to any firm. These researchers formed an SME (named PCGen) that received financing from Cassará and developed products for it. Although PCGen was located in the same building as Cassará, it was free to pursue its own projects. It is also associating with other SMEs to pool financial and research resources for more ambitious projects. More generally, Cassará is outsourcing specific processes (such as protein purification to PCGen) or particular products (such as hepatitis vaccines, where they were partners with the local branch of Sanofi Pasteur). This organization of research activity facilitates technological spillovers.

Up to now diffusion has been restricted mostly to pharmaceutical firms that have enough resources to invest in new developments. The absence of wide capital markets in Argentina restricts the development of small laboratories, whereas in developed countries with wide capital markets there is a proliferation of small biotechnological laboratories that invest in a single project and sell the enterprise ("project") when they have achieved technological success.

There are also important deficiencies in the industry-specific public good area that may hamper adequate diffusion of biotechnology to SMEs. One such deficiency is the lack of a mass spectrometer, which is very costly; Bio Sidus has these analyses carried out in the United Kingdom because investment in this equipment cannot be amortized by an individual firm's sales.

6.2.9 Roles of Previously Accumulated Capabilities, Industry-Specific Public Goods and Public Policies

The presence of pre-existing national pharmaceutical laboratories that had the resources and flexible decision-making to finance medium and long term R&D activities, together with their accumulated capabilities for dealing with the characteristics and needs of developing countries' markets, greatly facilitated the takeoff of BHH in Argentina.

Argentina also benefited from its relatively large endowment of scientifically skilled biological and medical researchers, including several Nobel laureates in those areas, and from the quality of the available lab technicians. Argentina nonetheless suffered from a scarcity of local researchers in the pharmaceutical industry, since national labs were engaged in reverse engineering of existing drugs, an activity that does not require an original research effort. However, accumulated research capabilities in life sciences, especially in public universities and public research institutions such as CONICET, provided the "general" skills for conducting applied research with a commercial orientation in BHH, and local researchers have worked under the supervision of experienced pharmaceutical researchers brought from abroad. This endowment of scientists allowed the sector to emerge in Argentina ahead of countries such as Brazil and Chile, which in the early 1980s lacked those resources. (It should be noted, though, that they have recently reversed this drawback and are currently better endowed than Argentina).

Although public sector support has not always proven adequate, it has improved over time. For instance, the most suitable innovation promotion mechanisms at that time, like Banco Provincia de Buenos Aires Argentech credits and subsidies, had a three year-year time horizon, much shorter than the span of up to 10 years needed to develop new BHH products. After the Argentech credit, Bio Sidus managed to obtain credits from the Secretaría de Ciencia y Tecnología (SECyT) and some subsidies (fiscal credits). Cassará and other smaller laboratories also benefited from SECyT credits and subsidies from SECyT.

In the last 10 years the design of innovation support policies has undergone extensive changes, making them more compatible with the requirements of BHH enterprises. Support allocation rules became more flexible, and specific rules for specific uses were designed (for instance, adapting the time span of credits to biotechnology development). The creation of the Agencia Nacional de Promoción Científica y Tecnológica, and its two main instruments, the Fondo para la Investigación Científica y Tecnológica (FONCyT) and the Fondo Tecnológico Argentino (FONTAR), have contributed significantly to the financing of different projects by BHH firms. The lack of adequate public knowledge about the BHH sector was an obstacle at the beginning, but the agency went through a learning process, facilitated by joint efforts with the project sector, that improved its functioning and the adequacy of its instruments to the sector's needs. The firms interviewed for this study highly valued highly the role of the Agency and its instruments (non-reimbursable subsidies and long-term credits).

The large number of SMEs currently conducting research in BHH in Argentina at the same time as such research is being undertaken in rich countries raises the question of whether their future expansion will be associated mostly with selling their projects to large traditional laboratories or whether public support will suffice to give small labs a chance to commercialize their own developments.

6.3 Counterfactual Analysis

The case of Brazil, which lags significantly in the development of its BHH sector, offers a good counterfactual for understanding the key features behind the successful emergence of this sector in Argentina. This is an interesting case because the Brazilian government is providing important support to this sector, significant BHH research is undertaken in universities and public agencies and there currently is a greater availability of life science researchers than Argentina had at the onset.

The Brazilian BHH sector's lack of development is puzzling given the fact that the country is one of world's 10 largest pharmaceutical markets. The national pharmaceutical industry, however, is poorly developed and the domestic market is dominated by foreign or multinational firms. Only one of the 10 most important laboratories (the Grupo Aché) in Brazil is domestically owned (Magalhaes, 2003). This feature to some explains low levels of investment

in pharmaceutical R&D, which is also one of the biggest hurdles to the development of Brazil's BHH sector.

In the 1980s Brazil was self-sufficient in medicines, but during the 1990s multinational laboratories changed their strategy, closing some plants and production lines. Pharmaceutical imports became increasingly important, and in 2003 were 15 times higher than in 1989, whereas overall imports increased only twofold during that time. Accordingly, the net exports of this industry deteriorated markedly, its import/export ratio rose from 2.6 in 1989 to 6 in 2003. Conversely, in Argentina the domestic market is mainly supplied by national laboratories (approximately 15 percent of domestic sales are imports, and the import/export ratio has remained at 2 since 1990). Brazil's shrinking national pharmaceutical sector and a growing trend towards importing medicines thus prevented it from accumulating capabilities to develop the BHH sector.

The increasing number of mergers and acquisitions in the pharmaceutical industry at a world level during the 1990s made it additionally difficult to overcome this "negative" feature of the sector's industrial organization in Brazil. Not only was there increasing concentration among firms, but several national laboratories that had undertaken R&D in new biopharmaceuticals were also bought by international firms that subsequently discontinued this line of business. Such was the case of Biobras, a producer of insulin that was making important innovations in BHH.

Equally important, the initial endowment of human capital in Brazil was far from adequate. Professionals in life science were scarce 20 years ago, and this disadvantage impeded the BHH industry's growth. This situation is changing, however, and the supply of human resources more closely meets the needs of the nascent BHH industry. The lack of national laboratories is still a hindrance, however, as Brazil's BHH research and production infrastructure is well-developed only in immunological products, an area exclusively run by the public sector.

The dearth of skilled personnel in some specific areas of production of equipment and inputs and the poor technological infrastructure of many public research-related institutions further limit the development of the sector (Da Silveira et al, 2004). However, Argentina suffered (and still suffers) similar restrictions and yet managed to succeed in the development of the sector.

Last but not least, the timing of development proved crucial. Benefits at the beginning were extremely high, but the present surge in global competitors, mainly from Asian countries, has substantially reduced profit margins.

The determinants of the Brazilian BHH sector's failure to take off suggest that the key drivers of success in Argentina were: a) the presence of national pharmaceutical laboratories, with the resources, flexibility and willingness to undertake risky R&D investments and with accumulated industry-specific capabilities; and b) the availability of life science researchers. These factors were especially important for entering world markets before Asian labs started bringing prices down.

6.4 Welfare Analysis

In this case the pioneer appears to have faced a somewhat smaller degree of uncertainty than the industry average regarding the suitability of local human capital, because of its history of contacts with public sector scientists. However, this advantage should not be overstated, as the pioneer did not really know beforehand if local researchers would be up to the challenge. Hence, while uncertainty was shared by everyone in the sector, the information externality was relatively large.

Despite this large information externality, there does not appear to be an insufficient level of ex ante investment in discovery. This was due to the technological and scale barriers arising from the proprietary nature of the knowledge resulting in R&D in this activity. Additionally, initial rents were very large, and the Argentine competitors who eventually entered the sector were too small to reduce the pioneer's profits. The circumvention of credit constraints through self-financing and the relative abundance of skilled scientists also facilitated the endeavor. Finally, focusing on a narrow range of goods facilitated targeting R&D resources to ensure success.

There are obvious trade-offs between concentration and diffusion in the presence of limited financial and research resources. All firms understand the importance of focusing on a narrow range of products in the presence of large fixed costs of R&D, with the probability of success increasing with the size of the investment. Hence a concentrated sector will probably specialize in a relatively narrow range of goods, although possibly exploiting dynamic learning economies in R&D that allow them to jump up to more sophisticated products and markets. On

the other hand, more diffusion could lead to experimentation in a larger variety of BHH goods (so as to avoid splitting demand) and to the discovery of more “knowledge niches” for Argentina, although with a smaller probability of success in each of them. This is the usual trade-off between scale and variety. Our appraisal is that there should be more diffusion than the one currently observed at the export level. In this vein, there are many ongoing research projects undertaken both by large and small labs, which may bear fruit in the near future and lead to a substantial diffusion of exports.

More diffusion is also required to increase the number of technological spillovers through the movement of R&D personnel among firms and through the revolving associations between BHH SMEs and the large pharmaceutical firms. Greater diffusion is also likely to increase the attractiveness of enrolling in biotechnological careers and conducting business-oriented research. Infinite diffusion is undesirable, however, as jumping to too many neighboring trees can prevent jumping to higher branches.

This statement is also conditioned by the current size of the export market for Argentine BHH firms. As long as the target is the relatively small “non-IP group” of developing countries, the scope for diffusion will be more limited. The optimal extent of diffusion is also determined by the ability of Argentine firms to shift profits from foreign competitors. More firms that target different varieties will probably steal profits from foreign competitors (along vertical or horizontal dimensions, depending on the degree of sophistication of the product) rather than from Argentine firms.

In this vein, government policies should be aimed at improving access to financing and the availability of business-oriented researchers. Support policies should carefully weigh the true commercial potential of new endeavors, as many firms may target research in products that could face stiff competition from Asian and other LDC labs when the markets for them mature.

The choice of this sector appears to offer positive social returns for three reasons. First, Argentina had an untapped accumulated capability for this activity (national pharmaceutical firms and adequate human capital) that needed to be discovered and exploited. Second, there are substantial learning economies in this activity. Hence developing it ahead of other comparable countries may generate prolonged and even widening competitive advantages, especially if Argentina manages to develop first bio-generics and original products and processes that can be sold in rich countries. Third, these sophisticated exports may allow Argentina to jump to more

sophisticated trees and branches. HK's product space shows that BHH exports help the Argentinean export basket move closer to the densest part of the forest. These new exports probably share some of the capabilities that are required for yet undeveloped exports of goods such as "organic chemicals" and "other pharmaceutical products" which are in the same Leamer group as BHH products. All these products are of approximately the same high level of productivity as BHH.

7. Case Study of Blueberries

7.1 Background Information

Before 1992 the production of blueberries was scarce and disperse, and lacked any commercial value. Starting that year some varieties of the plant were imported and planted, the first harvest took place and the first exports were undertaken by a pioneering entrepreneur. Exports started growing fast after 1998, when diffusion became more widespread, and in 2005 total exports reached US\$28 million, making blueberries Argentina's seventh-largest largest fruit export.

Three stages of the value chain had to be developed to support this dynamism: nurseries, production and commercialization. Some of the most important exporters are vertically integrated, but most of the growth of this sector is explained by newcomers that specialize in a specific stage.

The main consumption markets are in the Northern Hemisphere (the European Union, the United States and Japan. Argentina competes with Chile, South Africa and New Zealand in the off-season market, which commands more attractive prices than the seasonal market.

7.2 Analysis of the Emergence of this New Sector¹¹

7.2.1 Who was the Pioneer? Why Did it Target this New Activity?

The pioneer was Vergel, a firm established in the early 1990s by entrepreneur Francisco Caffarena, an individual pioneer in the nursery, production and commercialization stages. Caffarena had been working as an executive for an important MNC in the automobile industry

¹¹ This analysis is based on interviews with the following individuals: CAPAB (Cámara Argentina de Productores de Arándanos y otros Berries): Jorge Pazos, President; Cuinex (nursery and farmer): Agr. Eng. Marta Arriola and Agr. Eng. Manuel Parra; Vergel (nursery, production and commercialization): Francisco Caffarena, President; Tecnoplant/Tecnovital (nursery, production and Commercialization): Federico Bayá, Manager, and Federico Bonsini, Operational Chief; SRI (commercialization): Andrea Dopazzo; Jugos del Sur: Francisco Prado, President; RIGEL Berries: Javier Formichelli, owner.

and wanted to apply his savings to develop his own business. To this end he used a project evaluation methodology to search for innovative investment alternatives with highly profitable niche export markets in the agricultural sector. He considered a wide variety of products that faced a low degree of competition in world markets, including iguanas, capers, asparagus, raspberries, chestnuts, artichokes, kiwi fruit and goat cheese.

The opportunity to cultivate blueberries came by chance, during a business trip to Italy, where Caffarena learned about the European off-season market for this fruit from local business contacts. A preliminary project evaluation yielded very high expected payoffs, given the high world prices in the Northern off-season, which are two to 10 times greater than seasonal prices. He thus decided to learn more about the product and to evaluate the feasibility of its production in Argentina. To this end he contacted a US nursery, from which he gathered information about production techniques and plant varieties. He also contacted UK importers who confirmed his initial promising estimations of FOB (free-on-board) prices and export volumes. He also discovered that commercialization could be easily handled. Costs of inputs and land in Argentina were known, and the expectation of a temporary monopoly period of two to four years before potential imitators' plants could mature, also facilitated his decision. Another contributing factor for his choice was the relatively low initial investment that was required.

However, Caffarena faced a technological uncertainty that threatened to undermine these potentially high returns, given that no previous production knowledge was available in Argentina. He hence had to pay an initial cost and to invest in experimentation in production alternatives. Given that these initial pre-competitive experiments were successful and that the expected payoff was so attractive, he decided to invest in production.

7.2.2 What were the Main Ex Ante Uncertainties Regarding the Profitability of Exports? How were they Resolved? What was Discovered? Were there Any Surprises?

“Everything was uncertain.”. This phrase from Caffarena sums up to what extent the product was new in Argentina. The lack of local experience in the production process was the main uncertainty that Caffarena had to face. Cost-benefit analysis and commercialization aspects were far less uncertain.

Production process. There were several uncertainties at the production stage. First of all, there was no previous knowledge among agronomic engineers regarding several important aspects of blueberry production, such as climate requirements, soil characteristics, harvest season and diseases. The pioneer was able to partly overcome these problems by contracting a US consultant to assist him in dealing with different problems regarding production and sanitation, but there still remained a high level of uncertainty, which called for experimentation. In fact, a significant proportion of plants in the first field died in spite of technical assistance. Second, there was no previous knowledge about which varieties of plants imported from the US were the most appropriate for Argentina, so Vergel had to import several varieties in order to test them. He also had to experiment with plants in his nursery activities, as the imported plants lacked the required phytosanitary quality. The pioneer chose to use macro-propagation techniques for increasing the rate of plant reproduction, which was cheaper, faster and less uncertain to implement than micro-propagation techniques (which are much more productive, but require costly and lengthy R&D). This decision allowed him to start producing earlier, albeit probably with less reliable plants and lower productivity.

These experiments improved the pioneer's knowledge of production techniques and helped determine the varieties most appropriate for Argentina. Caffarena admitted that in this process Vergel initially made "every mistake imaginable." Once production proved feasible, however, uncertainties were significantly reduced, providing useful information for new plantings. Significant uncertainties would nonetheless remain, resulting in low productivity in the first plantings.

Regulatory framework. During Caffarena's search process for the most attractive new activity, which lasted more than a year, he faced important regulatory uncertainties. For example, he tried to import seedlings to evaluate the viability of producing chestnuts. This experiment was finally discontinued because Caffarena was unable to fill out SENASA forms that required him to provide technical information that was impossible to know prior to production; for example, he had to provide the expected harvest date, which was impossible to determine since this variety was new in Argentina. In the case of blueberries it was also uncertain whether SENASA would allow Vergel to import new plants and varieties, but the firm managed to overcome these

bureaucratic barriers as a result of lessons learned in the previous attempt to import chestnut seedlings.

Location and returns. There was some uncertainty regarding investment returns. While input prices and labor costs for harvest were relatively well known, and the choice of macro-propagation techniques helped control costs, crop prices were more uncertain, as they vary depending on the date of harvest and the transportation method used. Initial contacts with UK importers gave Vergel some information on these issues, but final returns were not revealed until Vergel experimented with production.

In a first stage Caffarena planted two hectares that he owned in Zárate, in northern Buenos Aires, without knowing if this was the best location for production. This experiment failed, as many plants died, but it revealed crucial information on the best production location and on the actual prices that he could obtain. This location allowed Vergel to harvest in October, one month ahead of the harvest in Chile, its main potential competitor in the off-season. The Northern Hemisphere price for this month was around \$20-40 per kilo (depending on the week), and Vergel faced no competition, allowing it to become a (temporary) monopolist.¹² In contrast, the price that Chile and New Zealand received was up to ten times smaller (see Table 4). This price advantage made the business profitable even if the worst possible production techniques were used (Chilean prices did not permit profitability if poor production techniques were used).

Table 4. Initial Off-Season FOB Prices for Blueberries, US\$/Kilo

Year	Argentina	Chile	New Zealand
1994	20.11	1.29	4.22
1995	22.11	1.91	5.11

Source: IERAL from Fundación Mediterránea based on COMTRADE.

The pioneer was not aware at the beginning that he would be able to reach the Northern markets in the prime months of the off-season. However prices were high enough that the business would be profitable even if he did not harvest before Chilean producers, provided that the right production techniques and plant varieties were used. When undertaking its preliminary

¹² The information on this price range was provided by Caffarena and verified by comparing the volume and value of blueberries exports from Argentina during those years that were obtained from COMTRADE.

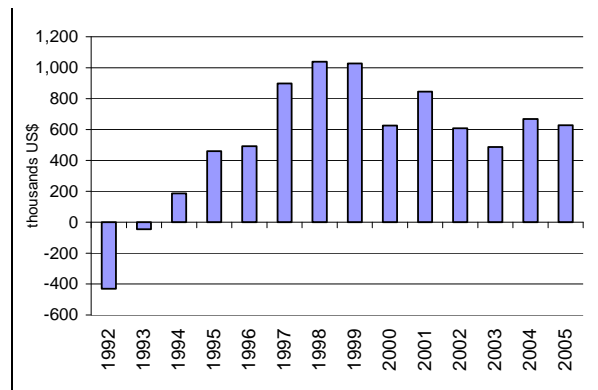
project evaluation, Vergel was looking at the whole set of possible prices and comparing them with the expected cost. Of crucial importance was that Vergel's per-hectare production costs were only US\$40,000, compared to \$80,000 in Chile, despite more extensive Chilean experience in berry production.

Having discovered the robustness of the profitability of this business in Argentina, Caffarena decided to expand production and to integrate the nursery business, which gave him the opportunity to generate a separate line of business. After this initial learning, Vergel invested in a five-hectare farm, propagating its own plants with local technical assistance. The first harvest was exported in 1994 to the United Kingdom, and this experimental shipment was so small that Caffarena transported it in his own car to the international airport for export.

This second plot in Entre Ríos, north of Buenos Aires, allowed Caffarena to experiment with locations and varieties in different latitudes and climates. This kind of information was so important that imitators followed him closely in these new locations, sometimes even locating in nearby fields.

One key issue for the project was to forecast future competition, since investment in plantings of blueberries should be evaluated over a 15 to 20-year period (a plant's yield reaches its potential only after eight years). Newcomers could lower Vergel's prices in this period, as they faced a downward-sloping demand in the prime months of the off-season. The pioneer's expectation, however, was that diffusion would be greater at the production stage and that he would be able to keep a relevant market share in nursery and commercialization activities that would compensate for this price effect. In any case, Vergel was at least two years ahead of any other competitor, which allowed it to break even and enjoy several years of monopoly. An ex-post calculation using 1994-2005 actual prices showed an internal rate of return of more than 60 percent at the onset of this activity (see Figure 7), suggesting that uncertainty over future prices mattered less than technological uncertainty. The internal rate of return (IRR) in 2005 was 25 percent, with a price that had gone down to US\$15-20 per kilo (from the initial US\$20-40) and with forecasts of lower prices in the future. More recent evidence shows that this profitability may have declined significantly for the newest plantings in 2006.

Figure 7. Cash Flow for One Hectare of Blueberry Production in Buenos Aires



Source: IERAL from Fundación Mediterránea.

Furthermore, besides its initial monopoly power, Vergel could be more profitable than its competitors due to its long learning period and vertical integration. Growing international demand and the opening of new markets were also expected to sustain Vergel's profitability.

Commercialization. Commercialization was not a relevant barrier or uncertainty during these first steps, as Vergel was the only supplier from Argentina and had sufficient commercialization contacts in Europe. As such, it was able to start exporting a modest volume of good quality production without any concern for commercialization strategies.

7.2.3 Were There Any Coordination Externalities at the Discovery Stage? How Were They Resolved?

The pioneer faced potential coordination failures, which he prevented through small-scale vertical integration at all stages: nursery, production and commercialization. This was possible because of the relatively low required investment at each stage, which was within his financial reach; the managerial requirements were also within his scope. This small-scale approach was facilitated by Vergel's obtaining access to a niche market where it was the only supplier.

7.2.4 What Impact (Actual and Potential) Did the New Exports Have on the Pioneer and on the Sector (Knowledge and Other Spillovers)?

The pioneer's investment generated a large knowledge externality regarding production techniques and profits. This signaling aspect was more important when Vergel exported significant amounts and when production obtained good results. It also showed the most

convenient production location and solved coordination failures that accelerated the emergence of the sector, providing basic technological assistance and commercial certainty to new farmers.

Public goods. At a later stage, when diffusion was already more widespread, Vergel provided a key public good by opening the US market and by investing in the development and approval of the infrastructure that was required to meet the phytosanitary standards imposed in this market.

Since at the beginning of the 1990s there was no protocol for blueberry exports from Argentina to the United States, Caffarena started negotiations to develop such a protocol. After two years of bureaucratic procedures a blueberry export protocol was approved, which required post-harvest fumigation with methyl bromide (to prevent the spread of Mediterranean fruit fly) before Argentinean blueberries could enter the United States. This protocol at first allowed only exports through one airport in New York, where the fruit was fumigated. This sizably increased costs and complicated logistics.

For this reason another alternative was explored, which demanded building up and approving a new fumigation infrastructure in Argentina. The USDA requirements were strict and demanded the construction of a fumigation chamber with the newest technology, not yet developed in Argentina, which required the use of specific software. Vergel invested \$200,000 in the development of this chamber without knowing if it was going to be finally approved by the USDA. It was a risky sunk cost because its profitability depended on the evaluation and approval of both the USDA and Chilean experts, while benefits could be eroded if competition appeared and used the same approved fumigation technology. Fortunately for Vergel, this chamber was approved after one year of operation.

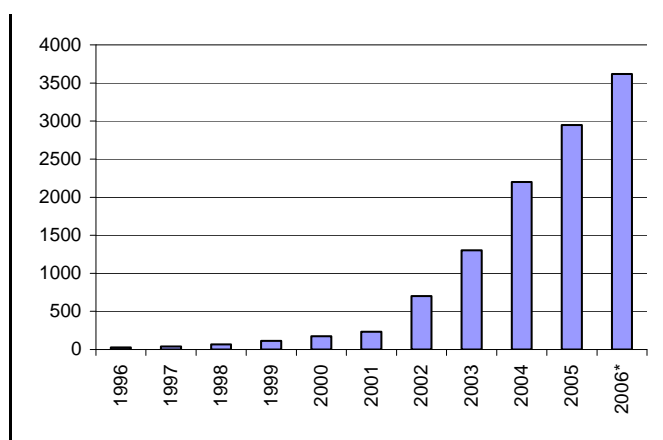
Most exporters now use this technology, and many similar chambers have been constructed. Vergel undertook this risky investment because at that time competition was not that widespread and the US market was very large and rich. Hence he expected to enjoy high prices and large sales for a time span that was long enough to recoup the investment. While the *approval* of the fumigation technology was a public good, the physical infrastructure developed by Vergel was a private good, which helped it sell a new service to its clients. It expected that this new service would consolidate and eventually help it enlarge its farm client base.

The importance of this openness can be appraised when considering that the US market currently represents 60 percent of total exports.

7.2.5 Was There Diffusion of This Export Activity? What Were the Key Drivers of This Diffusion (or Lack Thereof)?

Diffusion occurred in three stages. The first, which took place at the production level from 1994 to 1998, was promoted by the pioneer, was limited in scope and was concentrated mainly in northern Buenos Aires. During the second stage (from 1998 to 2002), diffusion took place at the production, nursery and commercialization levels, and clusters of producers emerged in several locations. Lastly, since 2002 there has been a boom in blueberry planting promoted both by the 2002 devaluation and by the opening of the US market by the pioneer (see Figure 8).

Figure 8. Hectares of Blueberries Planted



Source: Authors' estimation based on production quantities.

First wave: Limited diffusion (1994-1998). After his initial success under limited vertical integration, Caffarena's next natural step should have been to expand the three activities to the monopoly optimum. However, he faced financial and managerial scope constraints on doing so. The investment required to prevent newcomers from entering was beyond his possibilities, and was highly risky, given that continuous experimentation (in varieties, locations, etc) was still essential. He hence concentrated on the nursery and commercialization aspects of the business and promoted a limited diffusion of production. His choice of activities was based on the bigger economies of scale in the former two activities and in the fact that production was the activity where there remained the greatest uncertainty.

From the pioneer's point of view an additional hectare planted reduced his profits through a cut in FOB prices but increased its gains through sales in the nursery business and

commercialization fees. As marginal gains of an additional hectare can initially be higher than marginal costs, but the price effect would eventually be stronger, limited diffusion would have maximized Vergel's profits. At the same time, this bounded dissemination reduced the visibility of blueberries and helped to build a controlled competition, thus extending the firm's period of significant market power.

Given the lack of knowledge about blueberries production techniques, the relatively high initial investment (US\$200,000), the relatively long time needed to reach peak production capacity (eight years) and the (*a priori*) difficulty of selling the product (only export oriented), any farmer would have been reluctant to initiate this activity on her own. For that reason, the pioneer not only sold plants but also offered technical assistance for production and secured new firms' sales by signing contracts for buying future production. It also offered potential investors a calculation of blueberry IRR and opened its plantation for extension activities.

Since the pioneer still had not fully mastered the technological aspects of production, this initial diffusion coexisted with an experimental phase in which some techniques, soils and varieties continued being tested. The learning process was rather slow, and many of the first farms and plantations failed. These initial mistakes and unsuccessful experiences significantly slowed down diffusion in this first stage, as shown by export data. For example, with the right technology the nearly three tons exported in 1996 could have been produced on only one hectare planted in 1992, while at that time almost 20 hectares were planted, with a potential production of more than 15 tons.

Caffarena promoted diffusion only up to a scale that was smaller than the optimal monopoly level. He did this because he expected that competition would emerge at the nursery level and hence did not want to sink too much capital into a market that could be contested in the near future. According to many farmers interviewed, Vergel would have had a chance to remain a monopolist had he provided adequate technical knowledge to newcomers so as to reduce the latter's rate of failure and consolidate a long-term relationship with them. Nevertheless, the initiatives aimed at maintaining some type of monopoly would have been fruitless in any case, since all three stages of the value chain are highly competitive in other countries.

Second stage of diffusion: 1999-2001. This second stage was characterized by the entry of new and relatively large players at the nursery and commercialization levels, and by a continued

diffusion of production driven in good part by the initiatives of the new upstream players, the signaling effects of the pioneer's first investments and its limited diffusion of production, and the pioneer's opening of the US market.

Two nursery firms were attracted by the potential of blueberries in Argentina at the beginning of the 1990s, simultaneously with Vergel's initial investments, although none of them was aware of the others' endeavors. These new nurseries had different core businesses, but both can be considered as pioneers the development of micro-propagation techniques, which make possible exponential growth in plant reproduction and ensure the provision of healthy plants.¹³

One of these firms was Cuinex, which was set up by two agronomic engineers who had been working with asparagus producers and wanted to promote the expansion of other related agricultural activities to use their installed packing capacity in the off-season. Beginning a search process on non-traditional crops in 1989, they evaluated blueberry production, and its promising payoff (given high FOB prices) convinced them to invest in this activity. In 1990 they imported from the United States the first plants for testing purposes, and they learned through INTA laboratories that these plants had several diseases, some of them specific to the blueberry plant. The engineers thus realized that in order to promote the diffusion of this activity they had to develop healthy and high-quality plants. This led them to make a major investment in a two-year experimentation process in which they learned micro-propagation techniques. This endeavor entailed investing US\$200,000 in a laboratory, as well as making other large investments in necessary inputs and in developing the testing procedures. Overcoming large initial technological uncertainties, Cuinex began selling plants in 1995.

¹³ Blueberry plants can be propagated using two different techniques. The simpler of the two is macro-propagation, or propagation by stakes. On the other hand, micro-propagation involves *in vitro* processes. During the interviews conducted for this project we found some controversy about both methods. Macro-propagation offers a simple and virtual costless means of plant reproduction, as it can be undertaken either by the farmer or at a traditional nursery; this method is the common worldwide. Opponents of this technique argue that: i) as new plants come from a variety of existing plants, some diseases can be propagated if original plants are infected; and ii) the method damages the original plants, which limits plant reproduction and requires the nursery to use both "good" plants and "bad" plants; iii) the plant grows axially, which is inconvenient for the renewal phase. On the other hand, the micro-propagation technique requires specialized knowledge and significant investment in development, laboratory and inputs. The most important characteristic of this method is that it can multiply one plant into millions in less than two years without damaging the original. This allows one plant (the "best" plant) to be reproduced in a controlled environment free of diseases. One of the critical issues is the extent to which micro-propagation leads to mutation and does not permit accurate certification of varieties. On the other hand, supporters of micro-propagation say that the plants are clones and therefore genetically identical to the original plant.

Direct engagement in production never entered Cuinex's plans, as the founders expected production to emerge in response to high prices and that blueberry planting would boom in 1995 and 1996. Their estimates proved to be wrong, though, as blueberry production did not diffuse significantly until after 1998. They attributed this slow diffusion to Vergel's insufficient initial investment in learning about the most appropriate production technologies and plant varieties.

Meanwhile the pharmaceutical firm Sidus had developed a new firm devoted to plant biotechnology, which in 1992 became Tecnoplant, whose core activity was the micro-propagation of plants. Like Cuinex, Tecnoplant started investing in the nursery business ahead of the expected emergence of production in response to high prices. This firm focused on developing new early varieties that would be differentiated from the Chilean supply. Biotechnology techniques were adjusted and varieties were tested in different climates and soils over a two-year experimentation period. During this period the company imported varieties and purchased licenses from US universities without knowing potential yields in Argentina.

The limited diffusion promoted by Vergel forced Cuinex and Tecnoplant to be actively committed to this diffusion phase. For example, Tecnoplant provided project appraisal, technical assistance, financing of packaging plants, and commercialization contracts to farmers. It is worth noting that the initial investments in R&D and laboratories operated as barriers to entry to micro-propagation. Hence Cuinex and Tecnoplant emerged simultaneously probably because of the fortuitous fact that the two firms initiated their activities the same year without knowing about each other. The capacity for scaling their production was evidenced in the third stage of diffusion, as each firm boosted its yearly sales from 100 thousand to 1.5 million plants.

The emergence of producers during the first and second diffusion stages also attracted the entry of new players at the commercialization level who had core competencies in trading and logistics, as the product requires careful packaging, immediate cooling, cold storage throughout the supply chain, and air shipment for exports. Chilean exporters were the main competitors in this area, as Argentina's production is complementary to Chile's because of different harvest month; this allows Chilean exporters to maintain commercial contacts during the off-season.

Some newcomers implemented strategic alliances with Chilean or American firms whose core was commercialization of fine fruits. For example, Tecnoplant undertook a joint venture with Vitalberry, a Chilean firm, in order to commercialize production, while Chilean firms SRI and Hortifrut began to export from Argentina in 2000. Motivated by their knowledge of exports

of other food products to the US or EU markets, other local firms added blueberries to their offerings, most often doing so by initially buying from farmers and subsequently undertaking production on their own.

The boost to diffusion by Cuinex and Tecnoplant and the increased competition in commercialization allowed farmers to operate in a more competitive fringe in upstream and downstream activities; this gave them better prices, significantly reduced technological uncertainty, and improved plants quality and productivities. It also reduced the uncertainty that could have arisen if the feasibility of the project depended on only one client and supplier (Vergel).

Another factor that promoted this diffusion was the drop in the opportunity cost of land that had been allocated to traditional fruits. Near Greater Buenos Aires there is a wide surrounding area devoted to producing fruit in small plantations, and during the mid-1990s some of these plantations had become senescent and needed to be reconverted. New owners, mainly corporate managers and independent professionals from the city of Buenos Aires without technical knowledge, were seeking new investment opportunities, and blueberry production appeared to be a promising activity. For instance, in 1999 Jorge Pazos, a former executive from an important metal mechanical exporting firm, decided to convert to another crop his seven hectares of peaches and plums in Mercedes, 100 kilometers west of Buenos Aires. He contacted Vergel for information on blueberries, visiting its plantation and receiving advice on Vergel's production techniques. However, he finally decided to buy plants from Cuinex, which also offered specialized advice in production.

During this phase there were interesting examples of cooperation among farmers in solving coordination failures which could lower their profits significantly. For instance, Pazos assisted a small farmers' cooperation in improving commercialization and production techniques and in eventually cutting costs. Most of the members were located around the Route 41 near Mercedes, and had an administrative or professional background. When a packing plant was required the members invested jointly in its provision. The cooperative also connected with other producers in distant locations, which eventually led to the formation of a farmers' association that provides some common services (contacting the government, promoting research, increasing SENASA's commitment to the sector, etc.). This association, the CAPAB (Cámara de Productores de Arándanos y otros Berries) now has 600 members.

While in 1998 Vergel was the only significant exporter, in 2001 there were seven new exporters, and new producers diffused activity from Buenos Aires to other locations.

Third stage of diffusion. The last and largest diffusion wave started in 2002. During this phase there were many nurseries that supplied different varieties of blueberry plants and propagation systems, and numerous farmers and exporters, which signaled the feasibility and the profitability of production and exports. This increase generated public goods in the form of refined technological knowledge, attracting additional newcomers. In addition, the 2001-2002 financial crisis and devaluation lured many investors who had managed to maintain large liquidity in foreign currency but lacked financial alternatives for investing; the devaluation also reduced labor costs. The fact that Cuinex and TecnoPlant/TecnoVital Nurseries offered business packages that included plant supply, technical assistance, commercialization and an updated project appraisal of blueberry plantations was especially useful in this context.

Blueberry plantations have boomed since 2002-2003, when clusters of newcomers proliferated in small plantations and large firms or groups of investors started large plantations of 200 hectares or more. New locations were discovered, including Tucumán in the north, Entre Ríos in the east and San Luis in the west, which helped to widen the harvest season. Tecnovital and Cuinex decided to integrate vertically in this stage, investing in big plantations, and those firms were, along with Vergel, some of the largest investors in terms of hectares planted and locations covered.

The opening of the US market by the pioneer played a very important role during this stage. It was stated in an interview with one of the biggest players that its investment would have been 200 hectares—instead of 2,000—without access to the US market.

Overall appraisal of diffusion. Newcomers explain 98 percent of total growth in blueberry exports between the early 1990s and 2005, which increased from US\$1 million to US\$28 million (see Table 5). While Vergel increased its exports by 50 percent between 1998 and 2005, its share of the sector declined to only 4 percent in 2005. Exports in volume increased from 300 kilograms to almost 2,700 tons in 2005.

**Table 5. Blueberries, Code 081040,
Share (percentage)**

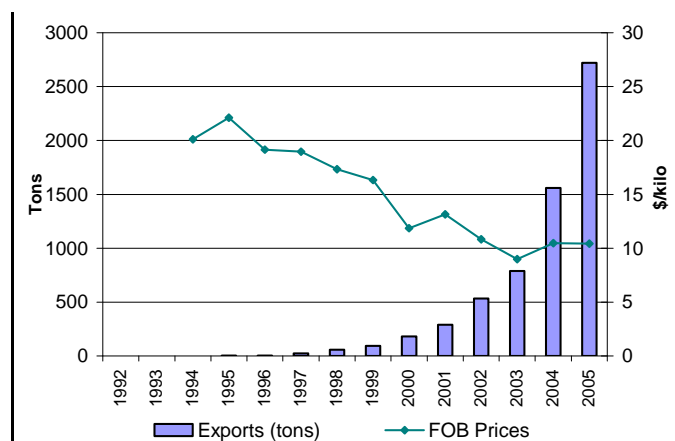
Firms	1998	1999	2000	2001	2002	2003	2004	2005
Tecnovital SA		14.21	31.89	8.73	25.82	16.67	32.78	23.36
North Bay Argentina SA				24.97	28.13	32.41	21.08	19.85
Berries del Plata SA		27.51	27.59	25.64	20.21	23.99	19.87	12.42
Blueberries SA						1.07	3.82	9.77
Vergel SA	79.32	57.45	6.85	23.33	14.93	11.05	6.98	4.13
Sri Argentina SA				10.54	8.32	9.74	6.70	3.67
Frutazul SA			1.34	1.98	1.16	1.15	1.32	1.72
Argesa Argentina exportadora SA				0.70	0.08	0.59	0.57	1.37
Hortifrut Argentina SA			0.20	0.12				0.92
Expofrut SA			6.02	3.92	1.33	1.03	0.49	0.16
Total share	79.32	99.16	73.89	99.92	99.98	97.70	93.61	77.37
Total exported (US\$)	1,007,109	1,506,358	2,287,740	3,824,716	6,015,668	7,085,889	16,366,342	28,371,183

Source: IERAL de Fundación Mediterránea based on Customs Agency.

The diffusion process is also reflected in the surface planted, which grew from an initial level around 50 hectares in a few locations to 3,000 hectares distributed in numerous locations at present. The number of players rose from around 15 farmers at the onset to a current total of 600 producers, and from one exporter to 22 exporters, nine of which exported more than \$1,000,000 in 2005.

This diffusion had a clear impact on prices. While in 1994-1995 the FOB price of exports was US\$22 per kilo (and Chile faced a price below US\$2), the increase in production lowered the price to US\$10 (see Figure 9). This average price includes production in new locations that command higher prices due to their early harvest season. In a more traditional zone such as Buenos Aires, where there has been greater diffusion, the export price has gone down more significantly.

Figure 9. Argentinean Blueberry Exports and FOB Prices



Source: IERAL of Fundación Mediterránea based on COMTRADE.

There currently exists fear that investment in the original zones may have overshoot its optimal level, probably because prices have remained too high for too long as a result of the initial plantations' poor productivity. This view is supported by CAPAB's recent successful initiative to block legislation that sought to introduce cheap credit lines for new plantations. Their arguments were that prices were already steadily declining and that a massive promotion of new plantations that would mature in seven years could lower the price even to below the break-even point.

Our interviews indicate that in 2006 prices for Argentinean blueberries were already quite low. Profitability is no longer guaranteed and depends instead on the scale and efficiency of each individual producer, as well as on when each business began. It appears that for many of the most recent investors it will take much longer than initially expected to recoup their investments. Nevertheless, the price signal is still not fully functioning, and plantations keep growing at a steady pace. Many are being financed with trust funds.

7.2.6 Role of Previously Accumulated Capabilities, Industry-Specific Public Goods and Public Policies

There were no previously accumulated product-specific capabilities upon which this sector could be built. However, Argentina's comparative advantage in agricultural activities had generated a set of general capabilities which could be quickly adapted to this new product's needs. This was the case of nurseries devoted to traditional crops and of agronomic engineers with research and entrepreneurial skills that assisted producers in alternative crops. The emergence of blueberries also benefited from the existence of an entrepreneurial class made up of former executives of large firms, plus biotechnological firms with vast reaching interests and capabilities. In a later stage the entry of other fruit exporters (with accumulated capabilities in apples, pears, and lemons) gave an extra boost to this sector, while some initial required capabilities were imported, such as the consulting and technical assistance of foreign experts. The accumulation of the required product-specific capabilities was undertaken entirely by the private sector and was motivated by the expectation of private profits.

These accumulated capabilities and Argentina's comparative advantage made it possible to overcome the presence of some industry-specific public "bads" that unduly raised the costs of experimentation and that hurt the competitiveness of local production. In particular, interviewees

stressed the deficiencies of local institutions in comparison to those of other countries. For example, they underscored that SENASA (the food safety agency) has been a constant barrier to importing the required plants or agrochemicals, and that it has been of little help in controlling the Mediterranean fruit fly or in helping producers to negotiate new protocols with the USDA. One of the latest collective actions of CAPAB has been to make formal complaints to the government because SENASA has not yet authorized the use of certain fertilizers which are extremely important in increase productivity and which are being used elsewhere. In the case of INTA (the agricultural technology institute), interviewees criticized its lengthy processes, its lack of knowledge of this particular fruit and its limited extension activities; they also complained about Argentinean embassies' lack of assistance in opening of new markets. Specific support programs were also criticized for different reasons. For example, we obtained evidence that the PREX program, a subsidy for contracting export consulting, never reimbursed funds to a producer who had access to its support. Even when the public sector has tried to provide assistance it has failed almost without exception, as illustrated by its attempt to promote diffusion at a late stage when there already appears to be overinvestment in the sector.

The private sector's current demands for public policies that support non-immiserizing growth in this activity focus primarily on the provision of industry specific public goods such as: a) support of research on developing new varieties in Patagonia, a region that would compete neither with present locations nor with Chilean production; b) credit support of R&D geared towards enhancing productivity of existing plantations; c) the development of a "cool treatment" protocol; d) agrochemical certification; and e) the provision of proper logistics in ports and airports.

7.3 Welfare Analysis

This is a case where the pioneer appears to have faced a smaller initial degree of uncertainty about all aspects of the business than the average player in the sector, generating a very large information externality. However, the lack of public policies to support the development of this sector, together with the presence of information and coordination externalities, led to unduly slow growth in this activity. Due to these externalities and to financial constraints, there was too little ex ante experimentation in production by the pioneer, which was much smaller than that of an optimal social planner.

While no demand-shifting effects were present, this case somehow fits into the Vettas (2000) framework, as the investments and exports of the pioneer and of subsequent entrants should have updated beliefs about the market saturation point. In this case, however, there was a gap between the respective growth levels of investment and exports because of the poor productivity of the initial plantations, caused by the pioneer's sub-optimal investment in experimentation. Demand revelation externalities may have failed here, as exports remained much more subdued than plantings for too long, leading to a diffusion of production beyond the market saturation point.

The pioneer's investment in solving coordination failures was also sub-optimal because of his aim to reach the monopoly optimum, which also contributed to overly slow diffusion. Government intervention via subsidization, direct provision of industry-specific public goods (hereafter ISPG) or coordination of private investments would have been called for.

This discovery appears to offer a positive social return, as it is based on the exploitation of an untapped natural comparative advantage and allows exploiting a monopoly position and capturing positive rents in foreign markets. These new exports also involved a large diffusion process that was widespread across different geographic areas and that involved the creation and accumulation of an important stock of new export capabilities at an industry level.

When looking at the Hausmann and Klinger product space we observe that blueberries are located in an area that is not too dense, halfway between the densest part of the forest and its outer edges. Moving in the direction towards the core of the forest, exports of blueberries appear to share some of the capabilities required for the exports of chilled vegetables, frozen vegetables and vegetable juices, which offer similar levels of productivity (in the sense of Hausmann, Hwang and Rodrik, 2005). Indeed, there are already exporters of pear and apple juice to the US that are seeking to produce and export blueberry juice but have so far failed to find a local supply because of the high price exporters receive for fresh fruit.

It should additionally be noted that the production of blueberry plants via micro-propagation techniques in Argentina is closely linked to R&D in plant cloning and in new varieties by firms that are involved in biotechnology applied to human health, animals and plants. Hence blueberries, at least at the nursery stage, could become part of a dynamic biotechnology cluster that generates technological spillovers across different activities.

Finally, this new export offers significant scalability in terms of future export growth through the most recent plantings and through the incorporation of new regions that allow earlier harvests. It is estimated that in another five years export volume will increase eightfold and the value of exports will reach US\$180 million (taking into account the decline in prices that would accompany this export expansion).¹⁴

7.4 Counterfactual Analysis¹⁵

We can isolate the most important factors permitting the emergence of blueberries as a new successful export activity by analyzing the lackluster experience of fresh raspberries, which share several basic traits with blueberries but also differ along some important dimensions.

We can also identify the factors that led to a sub-optimal initial investment in experimentation by the pioneer and to a slow initial diffusion by contrasting the emergences of this sector in Argentina and in Chile, which differ in terms of previously accumulated capabilities, the provision of ISPG and the government's promotion of discovery and diffusion.

7.4.1 Fresh Raspberries in Argentina

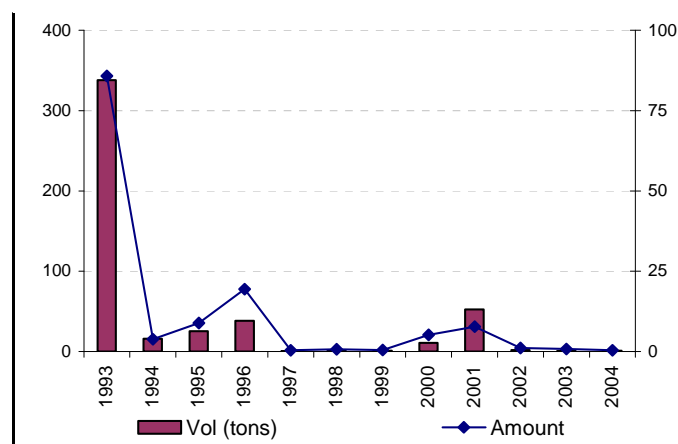
Raspberries are not a new product in Argentina, as they have been produced since the 1970s in the Patagonian region. This production was traditionally commercialized in the local market, either fresh or processed as jam. However, in 1993 exports of fresh raspberries jumped from

¹⁴ These forecasts are based on the estimations of the area currently planted, and on the assumptions that productivity does not decline and that the sector would not face bottlenecks and would be able to implement "cold treatment," among other factors.

¹⁵ The following case description is based on both interviews and bibliographic sources. Interviews: Cuinex (nursery; Mercedes, Argentina): Marta Arriola; Finca el Martillo (farm; San Juan, Argentina): Enrique Meiliolli; Mapuhue (farm; Necochea, Argentina): José Agustín López; Berries SA. (Production and commercialization; Neuquén, Argentina): Edmundo Grifoi; Vivero Humus (nursery, farm and exporter; El Bolsón, Argentina): Luis González; Hortifrut (commercialization; Chile): Carlos Vial; Tecnoplant/Tecnovital (nursery, production and commercialization): Federico Bayá, Manager, and Federico Bonsini, Operational Chief; INTA (Esquel, Argentina): Agr. Eng. Raúl Copa and Agr. Eng. Esteban Guitart; INTA (El Bolsón, Argentina): Agr. Eng. Eduardo Martínez. Bibliographical sources: INTA (Estación Experimental Agropecuaria Balcarce): "La Frambuesa," July 2002; INTA (Estación Experimental Agroforestal Esquel): "Evaluación de variedades de frambuesas," August 2003; Ministerio de Economía y Producción (Secretaría de Agricultura, Ganadería y Alimentos, Alimentos Argentinos, Cadena Alimentaria): "Frambuesa;" Universidad Nacional de Cuyo: "Frutas finas," 2004; Universidad Católica de Chile, Facultad de Agronomía e Ingeniería Forestal, José Ruiz-Tagle, "Análisis de mercado y Rentabilidad de la frambuesa," June 2003; Chilealimentos, Cristian Stewart L., "Visión general de los Berries Congelados;" *La Voz del Pueblo* (newspaper): "Fiesta de la frambuesa;" *Clarín* (newspaper): "Agronegocios: Producción y comercialización de frambuesas y otros berries," September 2004; *Diario de Cuyo* (newspaper): "El cultivo de frambuesas crece en Argentina;" *Chacra* (sectoral magazine): "Breve panorama del Mercado de la frambuesa," December 2003; Agrobot.com.

negligible amounts to almost US\$350,000. Nevertheless, these exports went down to insignificant levels in the years that followed (see Figure 10).

Figure 10. Export of Raspberries, Argentina



Source: IERAL of Fundación Mediterránea based on COMTRADE.

The production of these berries is traditional in the South and expanded northward to Buenos Aires and Santa Fe around 1989. Plantations in those areas boomed in 1993 but were limited in size from 1/2 to 5 hectares. This boom was driven by growing world demand and the perception that it was feasible for Argentina to become a competitive supplier of the Northern Hemisphere in the off-season. There was not an identifiable first mover, as local raspberry farmers' attempt to export fresh production was based on successful Chilean exports and on information gathered from specialized publications.

The initial experimentation quickly revealed the following insurmountable hurdles for discovering these new exports in Argentina: lack of comparative advantage and poor timing, low profits caused by low prices and high logistics costs, very large coordination externalities and lack of public support. We next consider each of these hurdles.

Lack of comparative advantage and poor timing. Unlike the case of blueberries, Argentina has to compete with Chile, which has extended its production season from October to May. (Argentina's harvest season goes from December to March.) In addition, recent competition from producers in Mexico and Spain has lowered prices in the crucial months of October and May, which is negatively affecting Chilean exports.

The raspberries sector in Chile expanded in the 1980s, with large plantations of about 50 hectares, which validated government-coordinated infrastructure investment in cooling facilities. Exporters commercialize jointly and also share a packing plant near their farms, which generates important scale economies. But the key advantage is that Chile entered the market first, when prices were higher, allowing it to finance logistics costs and experimentation phases. Argentina's "late" attempt to export at an initial low scale, with high unit costs of logistics and commercialization, was not profitable.

Low export profits. Exports had to compete with strong domestic demand for frozen raspberries. During the early 1990s the local market demanded more raspberries than local production capacity, leading to yearly imports of 260 tons of frozen raspberries.

Local prices of fresh raspberries are around AR\$12/kg (US\$4), while export prices (in Chile) vary from US\$1.75/kg to US\$4.5/kg, and exports from Argentina have a price of around US\$4. In fact, Argentina had been importing an important proportion of its consumption from Chile. Apart from the relatively low profits, exporting also entailed significant risks in logistics and commercialization. The devaluation of 2002 promoted a production of raspberries that was oriented to import substitution rather than to exports. The competition with the domestic market is also reflected in the fact that the most popular and widely distributed variety in Argentina (Autumn Bliss) does not have the required consistency for export.

Profits were significantly higher for blueberries, which have a yield of 8-10 tons per hectare and currently fetch a minimum FOB price of US\$8/kg FOB (compared to US\$20 when production began). Raspberries have a (riskier) yield of 5-10 tons per hectare and a FOB price of US\$4/kg. Additionally, raspberry costs of harvest are almost three times those of blueberries. Low initial yields were inconvenient for blueberries but did not jeopardize their profitability. Similar problems with raspberries, however, meant definite failure for several farmers.

High perishability and logistics costs. High perishability significantly increases the costs of logistics, and the post-harvest period for commercialization of raspberries is particularly short. While blueberries can be consumed up to 30 days after harvest, raspberries must be consumed within three to six days. This means that the latter must be shipped to their export destination in only one day, which requires excellent logistics and commercialization procedures. The process includes delicate harvesting by hand (with 15-25 workers per hectare), immediate cooling and

packing (including fumigation), transportation by truck to the international airport, and by air to the Northern Hemisphere for immediate distribution. Unfortunately, producers never reached the necessary level of logistical coordination in ground and air transport. The product's perishability also prevented potential exporters producers from growing raspberries in the optimal soils and climates of areas such Patagonia, which are far from international airports. Finally, perishability disallowed exports to the US, as the fumigation required to eliminate the Mediterranean fruit fly would ripen the plant before it could reach its foreign consumption market.

Large coordination externalities. A farm has to target several markets, given that fruit quality varies (only around 35 percent goes to the fresh market, while the rest has to be frozen or processed). One hectare during harvest season produces approximately 100 kg per day. Hence in order to export a relevant quantity (e.g., 1,000 kg) that covers the fixed costs of logistics and commercialization, at least 30 hectares planted are required. Thus all new farmers (which were exploiting small farms of 1 or 2 hectares) should have been in strict coordination. This coordination in production appears to have fleetingly occurred in 1993, but it lapsed as exports proved unprofitable and the commercialization channel did not emerge instantaneously. The difference between blueberries and raspberries in terms of production coordination requirements is quite remarkable. Blueberries require planting ½ hectare to obtain 1 ton of exportable fresh fruit, while raspberries require 30 hectares. This difference arises because raspberries must be shipped every day, while blueberries can be stored for several days.

Lack of public support. Public policies and institutions did not offer any support. For example, INTA's research activity and extension assistance lagged behind private investment. Additionally, logistics and infrastructure for exporting fresh fruit were not adequately facilitated, particularly for handling fruit in airports. Nevertheless, given the revealed lack of profitability it is hard to argue that support policies should have been in place for this sector.

Lessons for the success of blueberries. It could appear that raspberries would have stood a chance of success if the large coordination problems had been solved. However, our analysis reveals that, even if coordination had been achieved, the combination of low export prices (stemming from late entry into the export market), competition with the domestic market, high costs of harvest, and high perishability, together with the Mediterranean fruit fly and poor

transportation logistics for the best planting areas (Patagonia) would have doomed this experiment from the onset.

The comparison with blueberries reveals that the key reason why the latter succeeded was its unique comparative advantage: geographical advantages allowed Argentina to export blueberries to the Northern Hemisphere during a time of year when there was no competition from other Southern Hemisphere producers, thus obtaining very large profits. This advantage and the lower perishability of blueberries allowed Argentinean producers to overcome other obstacles involving knowledge and coordination externalities and lack of public support.

7.4.2 Blueberries in Chile

The comparison with Chile (see Agosín and Bravo-Ortega, 2007) confirms that the lack of government involvement in facilitating experimentation, compensating for knowledge and coordination externalities, and promoting the accumulation of industry-specific capabilities and public goods led to a sub-optimal investment by the pioneer and to slow initial diffusion, which may have led to current overinvestment.

The discovery and diffusion of blueberries in Chile was promoted by Fundación Chile, which participated in Berries La Unión, a public-private joint venture that engaged in socially optimal experimentation. This endeavor built upon the government program to develop the berry sector in this country. This program had generated an important cluster of producers and exporters of other berries and local agronomic experts and nurseries with berry-specific knowledge that was adjusted to Chilean conditions, and which were ready to take advantage of the technological and price information (harvest period) revealed by Berries La Unión. This was very important because Chilean blueberry exporters faced significantly lower world prices from the onset than the Argentine pioneer, as well as higher production costs. Hence their investment in this new activity could not afford to face the same period of experimentation with high failure rates endured by the Argentine pioneer and the first newcomers in production.

Additionally, and in contrast with Argentina, Chile was free of the Mediterranean fruit fly, and the investments of blueberry exporters were always of a relatively large magnitude, consistent with their access to the US market. This access was also facilitated by the Chilean trade negotiations with the US, whereas in Argentina this access had to be negotiated by the pioneer at a late stage, which greatly slowed diffusion.

8. Development Implications

Hausmann, Hwang and Rodrik (2005) show that increasing the sophistication of a country's exports contributes significantly to economic growth and argue that this increase in sophistication requires that entrepreneurs invest in the discovery and diffusion of new export activities that provide information and coordination externalities. Hence the most important development implication is what the new exports analyzed here tell us about the drivers of discovery in Argentina and the social returns to investment and their appropriability.

The discoveries analyzed here are associated with pioneers that manage to capture (temporary or permanent) monopoly rents to compensate for the knowledge externality through the introduction of barriers to entry and that have the scale to self-provide the required ISPG. We did not find any case where there was government support or intervention in the discovery and diffusion processes. In the case (blueberries) where the pioneer could not introduce barriers to entry, there was sub-optimal investment in discovery but diffusion eventually emerged, albeit more slowly and with lower productivity than was socially optimal. In the other two cases, where the pioneer could introduce more prolonged barriers to entry, investment in discovery was not sub-optimal.

This suggests that, if these cases are representative of new exports in Argentina, discovery may be failing to occur in more atomized activities where the pioneer may not enjoy temporary monopoly power, because of the lack of subsidization of discovery or because of inability to coordinate the provision of ISPG. This tells us that there may thus be low appropriability of the social returns to investment in self-discovery, which is detrimental to development in Argentina.

The fact that some new exports have succeeded despite the absence of government intervention suggests that there are profitable opportunities which, when exploited, lead to learning about new opportunities, thus sustaining investment. It also suggests that, given the availability of good opportunities (with a vast range of accumulated capabilities in different sectors arising from import substitution, university education, more traditional exports, etc.), policies and public investments that promote discovery and that facilitate experimentation could have a major impact on development.

The cases analyzed here also reveal interesting information about the roles of accumulated capabilities and their implications for development. For instance, biotechnology applied to human health (a highly sophisticated activity) could emerge only because Argentina had accumulated a relatively large stock of researchers in the area of life sciences that were conducting basic research in public universities and research agencies, and which could be re-oriented towards commercially oriented R&D in BHH. This is a case of large payoffs to public investment in basic science that could not be foreseen when this investment decision was made. This discovery was also made possible by the presence of large national pharmaceutical laboratories, which previously had not conducted any research but had the resources and the need to invest in these new activities—and which also could identify the most interesting niches in BHH for a country like Argentina. This was an unexpected payoff from having a regulatory framework that facilitated the existence and operation of these laboratories. This activity also leads to the accumulation of capabilities (in the form of general learning about R&D in BHH) that facilitate targeting more sophisticated BHH products and richer markets, and also possibly discovering new exports in other sophisticated related activities such as organic chemicals and other pharmaceutical products. BHH additionally generated technological spillovers that led to the creation of a dynamic cluster of BHH firms of different sizes, and to an accumulation of industry-specific knowledge that is likely to deepen over time as local BHH firms accumulate greater R&D capabilities and as more sector-specific human capital is accumulated.

The case of blueberries was based on the accumulation of general agronomic skills that Argentina had, which could be adjusted to the new product-specific needs after adequate training, acquisition of foreign production knowledge and local experimentation. It also benefited from having access to a sophisticated entrepreneurial class that was actively seeking new niche agricultural activities. This case displays an increased accumulation of skills and capabilities (in production, logistics and commercialization) for precision agriculture activities in general, which may be useful for jumping to new agricultural activities of higher sophistication and value (such as exporting chilled vegetables and fruits, new fruit juices, or finding new niches). This case also offers the possibility of accumulating increased R&D capabilities in biotechnology applied to plants, which may have cross-sector externalities, as much of this R&D is being performed by firms that are involved in biotechnology applied to human capital and to

animals as well. The accumulation of capabilities in this case occurred at a widely diffused industry level.

The case of chocolate confections is interesting in that there is a reversal of a revealed comparative disadvantage. This is an industry which at a world level is dominated by a few vertically integrated firms from rich countries that also have a large degree of monopoly power in their home countries via brand, technological and scale barriers to entry. Hence it is remarkable that a firm from a developing country could become an active worldwide exporter, overcoming others' barriers to entry and introducing barriers to entry of its own. The industrial organization of this good's market required the accumulation of capabilities and diffusion of production to occur at an intra-firm level. These capabilities could result in future exports of original new chocolate and sugar confections developed through R&D activities, which compete in rich country markets. Chocolate confections are in the periphery of the densest part of HK's product space and hence could facilitate further structural transformation towards more sophisticated exports.

Our case studies provide interesting insights on the links between diffusion and contribution to development by the new exports. A common view is that the contribution to development will increase in proportion to diffusion. The validity of this view, however, will be conditioned by factors such as the industrial organization of new goods markets (ability to compete in oligopolistic markets), the roles of financial resource constraints, and the ability to overcome coordination failures through collective action. In the case of chocolate confections, greater diffusion would probably result in duplicated sunk costs and a split of foreign demand by local exporters, leading to a possible immiserizing growth. In the case of BHH there is a trade-off between scale and variety that sets a ceiling (not yet reached) on the optimal level of diffusion.

The initial investments made by the pioneer to solve the involved uncertainties and coordination failures were relatively large in the cases of chocolate confections and BHH and relatively small in the cases of blueberries. These differences in the required initial investments are naturally going to lead to different market structures in the newly discovered activities, as the former two required the presence of relatively large firms with access to internal financing. Hence when we look at which activities should be promoted we should look at their

sophistication and the expected accumulation of capabilities for subsequent discoveries, regardless of whether this accumulation occurs at a firm or industry level.

The case of chocolate confections is also typical of many activities in a semi-industrialized economy like Argentina in that the most important uncertainty will usually be related to foreign demand and commercialization strategies rather than to local costs or the ability to produce the good. In this sense, a good development strategy should include policies and initiatives geared towards supporting the acquisition of foreign commercialization capabilities, especially in those activities populated mostly by SMEs.

An important feature of demand and commercialization uncertainties is that their resolutions may generate cross-border externalities (as in the case of chocolate confections), which lead to a regional or international profit-eroding diffusion rather than to a local diffusion. When we look at the contribution of these new activities to development we should thus define if we are concerned with local or regional development. If we are concern with local development, then these activities would probably not be the most attractive, unless local firms were able to introduce barriers to entry that offset the cross-border externalities or the government implemented strategic trade policies.

The cases of chocolate confections and BHH also highlight that it is important to enter world markets at an early stage of the product cycle for new exports to succeed and to contribute positively to development in markets where there is some degree of vertical or horizontal differentiation. It is also important to accumulate capabilities for jumping early to new products when international competition in the original goods markets intensifies.

In all our case studies national firms played a key role in the process of discovery of new export activities, whereas local subsidiaries of multinationals were not involved in any discovery, although in some cases they became involved in the diffusion stage. The lack of involvement in discovery by foreign-owned firms is due to the fact that they are usually constrained by headquarters to engage only in activities that offer a positive return with as little uncertainty as possible. Multinationals can be active participants of the diffusion process once the new activity has proved to be profitable and to have bounded risks, as in the case of Chilean fruit traders in the blueberry sector in Argentina, or of the foreign-owned Brazilian imitators of Arcor. As such, foreign direct investment can contribute to the diffusion process and possibly bring spillovers in the form of improved commercialization and production techniques and technology transfers

once the activity has been discovered. However, discovery appears to require giving support to experimentation by domestic firms.

A final consideration that arises from our case studies refers to how open the world markets are to the discovery of new sophisticated export activities from LDCs. This is the case for BHH, where there exist huge barriers to entry to rich country markets, and for chocolate confections, which face large tariff and non-tariff barriers in EU markets. More generally, new exports that are based on an increasing sophistication of agriculture-based goods (a natural area for discovery in many LDCs) face stringent protectionist measures in rich country markets, and the same applies to pharmaceutical and BHH goods, and possibly many exports of services. Additionally, while many industrial manufactures may face low tariff barriers, they still have to deal with growing and more opaque technical barriers to trade in rich countries. In the face of these protectionist measures, the scope for relying on the emergence of new and more sophisticated exports as a passageway to development may be constrained.

9. Policy Implications

We must distinguish among policies according to the particular aspect of the emergence of new export activities they seek to foster or to facilitate, and to the nature of the information and coordination externalities involved.

The first policy implication of our case studies is that greater government support to discovery appears to be needed in Argentina. In cases where the pioneer cannot secure permanent monopoly power there has been sub-optimal investment in experimentation and diffusion has taken place too slowly.

In this vein, we find that there is ample room in Argentina to promote discovery via improvements in the functioning of public institutions that are involved with technical assistance and regulation of different activities such as SENASA (the food safety agency), INTI (the National Industrial Technology Institute) and INTA (the National Agricultural Technology Institute).

The blueberry case raises the issue of whether the government should be involved in supporting pre-competitive experimentation, or if it should design and implement mechanisms that support discovery after the pre-competitive experimentation by the pioneer has revealed the new activity to have a potentially high social return but the pioneer still has not sunk significant

capital into production. The same applies to the solution of coordination failures, as it probably would not have made sense to promote coordination in nursery, production and commercialization before the pioneer revealed this to be a profitable activity, but it certainly would have been socially optimal to do so after the pre-competitive experimentation.

Our case studies also reveal that the implementation of policies that promote diffusion does not always offer a positive social return, as in the case of chocolate confections. The timing of promoting diffusion also matters, as in the case of blueberries, which should have been promoted earlier and not when there was a risk of overinvestment.

When diffusion is advisable, the best policies could entail the provision of ISPG such as improved technological assistance or the opening of the US market, as in the case of blueberries. In the case of BHH, the best policies include providing access to long term financing to R&D through credit channels like FONTAR. Other policies include those geared towards accumulating human capital in sector-specific skills, for instance by giving grants to study and undertake research in life sciences, by allowing public sector scientists to engage in internships in private BHH firms (as was recently done), and by interacting with private BHH labs in the defining the curriculum of the relevant fields of study. s of the involved careers. More generally, the cases of blueberries and BHH suggest that the government need not be involved directly in the provision of many ISPG, but rather that it could help by promoting the coordination among private agents.

Another interesting issue is whether sector-specific capabilities and ISPGs should be accumulated prior to discovery. The cases analyzed here suggest that general accumulated capabilities were extremely important for the discoveries and that the required sector-specific capabilities and ISPGs could be developed afterwards. However, the direct provision of ISPGs by the private sector was usually smaller and slower than optimal (the exception being chocolate confections). Hence there is need for the public sector to become engaged in providing a quick response in the areas of capabilities and ISPGs.

We also obtained important lessons regarding the links between the nature of the externalities involved and the desirability of policy support to the new exports. For instance, the cross-border externalities in the case of chocolate confections attenuate the case for the subsidization of discovery. Furthermore, this is an activity where a private monopolist undertakes the same investment that a social planner would. Instead, promoting the discovery of

activities where there are cross-border externalities and where the pioneer cannot introduce barriers to entry would call for a combination of support to discovery together with strategic trade policies.

Improving market access through trade negotiations, mutual recognition agreements in the area of technical regulations and sanitary and phytosanitary standards, technological assistance to comply with technical regulations and product standards, and so on, would increase the attractiveness of investing in new export activities. Several of these issues were present in the blueberry case.

The cases analyzed here emerged during the 1990s, when the currency was not depreciated. The 2002 devaluation only had a sizable impact on the production and exports of blueberries, partly because of reduced labor costs and partly because the devaluation attracted many local investors with a large liquidity in foreign currency who lacked alternative financial investments. Instead, in the cases of chocolate confections and BHH, which are much more capital intensive, the devaluation had a neutral effect. Indeed, currency appreciations in some cases favor discovery by lowering the costs of importing capital goods with incorporated technological knowledge and the costs of acquiring technical consulting services from abroad. Hence our case studies offer no general lesson regarding the role of devaluation on discovery and diffusion. At most we can conjecture that devaluation may favor the discovery of labor-intensive activities but may have a negative effect on the discovery of capital-intensive sectors. Indeed our statistical analysis shows a greater frequency of discoveries in capital-intensive industries during the 1990s, a period of real exchange rate appreciation.

10. Conclusions of Case Study Analysis

The successful new exports analyzed here reflect self-discovery of comparative advantage (blueberries), the exploitation of knowledge niches (BHH), and the introduction of barriers to riches (chocolates) which in these differentiated product markets actually were barriers to the poor.

In the absence of government support for discovery, these new exports emerged because the pioneers could introduce permanent or dynamic barriers to entry. When they could only introduce temporary barriers to entry, *laissez faire* investment in experimentation was sub-optimally small. These findings point to the possibility that we may see relatively little

investment in discovery in activities with more competitive fringes. These new exports emerged in sectors where there were entrepreneurs with superior international networking and business planning skills and/or there were larger firms that can self-provide the required ISPG and solve coordination failures by themselves.

The availability of accumulated capabilities and ISPG in related activities was a key ingredient in all the new exports analyzed here. These accumulated capabilities and financial resources helped finance the new developments, reduce some of the involved uncertainties and focus on the projects with the greatest chances of success. This means that not all the potential new export activities are alike and that there may be path dependence in the choice of these activities.

The pioneer's commitment to exporting and/or assuming risks was very important. The pioneers were all national firms/entrepreneurs that were willing and able to take chances in risky investments in the discovery of new activities. This set them apart from the local branches of multinational corporations. The emergence of these new exports involved resolving uncertainties surrounding local costs, production technologies and/or foreign demand and commercialization strategies. Each type of uncertainty had different implications for the optimal diffusion process and the optimal policies.

Success in the discovery of new activities, particularly those that involve differentiated goods, was facilitated when the pioneer focused on a relatively narrow range of goods and targeted products that already existed somewhere else so as to eliminate uncertainty regarding whether there is a market for these goods (in the case of BHH this strategy also eliminated clinical approval uncertainty). The chances of success were further enhanced when the pioneers focused on market segments that are not targeted by rich country competitors.

Some of the cases analyzed here displayed demand-shifting effects (chocolates) and demand revelation externalities (chocolates and blueberries). In the case of chocolate confections, a monopolist internalized the social returns and undertook the socially optimal investments. In the case of blueberries, the *laissez faire* promotion of diffusion by the pioneer was sub-optimal.

Our findings suggest that there is no unique policy recipe for promoting the emergence of new successful export activities, which will depend on the types of uncertainties and coordination failures involved and the previously accumulated capabilities. The cases analyzed

here reveal that the set of policies required for promoting the emergence of new export activities will go beyond the targeted support of catalyst firms and must be expanded to include support to R&D, technology adoption and foreign market cultivation. The case of BHH also offers the controversial possibility that laxness in IPRs leading to the emergence of national pharmaceutical laboratories may have facilitated investment in this new activity. An institutional and regulatory framework that reduces the costs of experimentation is highly recommended.

The cases we analyze show that the new exports trigger the accumulation of new capabilities that may allow jumping to higher branches (more sophisticated chocolate confections and BHH products) or to other more sophisticated products that lie nearby in the product space (these cases are in the periphery of the densest part of the forest). This dynamic accumulation of capabilities results from the learning economies in production, commercialization and R&D that are intrinsic to some of these activities. In some cases it also is the result of a deliberate choice of activities, like biopharmaceuticals, that entail a level of capacity building that allows local exporters to stay one step ahead of foreign competitors. This is very important as for many products it is becoming increasingly difficult to capture rents in the initial market segments due to rising competition from other developing countries. Indeed, new exports of goods with horizontal or vertical product differentiation and downward-sloping demand are likelier to succeed when they are targeted at an early stage of the world product cycle. In this vein, the emergence of BHH exemplifies the payoffs of public agencies' investment in research, as the resulting availability of qualified biologists was a *sine qua non* for being able to target this activity as soon as it emerged.

We conclude by comparing our findings to the original HR model. In the HR world there is perfect competition and the country is a price-taker, which makes ex post specialization (large diffusion) a desirable outcome. In the real world, foreign demand may be inelastic, there may be strategic interaction among domestic and foreign firms, and there may be dynamic and scale economies, which limit the scope for diffusion and for extreme specialization. In some cases diffusion may even be welfare-worsening. What remains true is that when knowledge externalities are relatively large, ex-ante investment in the activities chosen by the pioneers will be relatively low under *laissez faire*. Additionally, in a world where the government does not implement policies that compensate pioneers for information externalities, there may be a preference for activities that offer bigger possibilities to capture temporary or permanent

monopoly rents, leading to the lack of discovery of many potentially attractive new activities in more competitive fringes.

Statistical Appendix

1. Aggregate and Sectoral Export Growth

Argentina's aggregate exports have not been very dynamic during the past 25 years. From 1980 to 2005, Argentine export growth was slightly below the rate of growth of world trade (see Table A1). As a result, Argentina's share in total world exports was 0.43 percent in 1980 and 0.4 percent in 2004. In contrast, Chile almost doubled its share of world trade during this period (from 0.25 percent in 1980 to 0.4 percent in 2005), whereas Brazil's share of world trade rose from 1.07 percent in 1980 to 1.17 percent in 2005, following a dip to 0.91 percent in 1990.

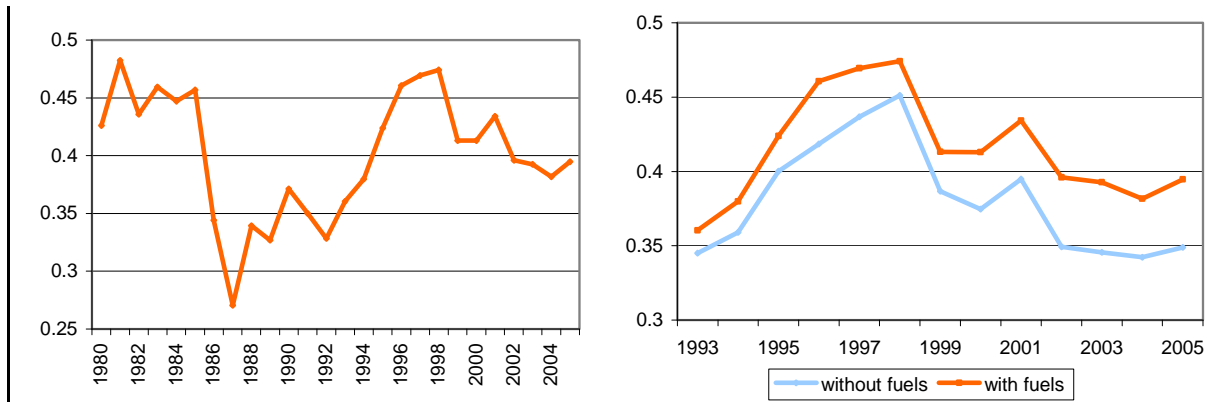
Table A1. Export Dynamics

<i>Annual growth rate</i>	1980-1989	1990-1999	2000-2005	1980-2005
World	5.04	6.05	9.72	6.97
Argentina	1.99	7.31	8.73	6.64

Source: IERAL from Fundación Mediterránea based on IFS and INDEC.

Argentina's aggregate export growth was very poor from 1980 to 1989, when it significantly underperformed world exports. This decade was characterized by major macroeconomic volatility, capital flight, very high and recurrent inflation ending in hyperinflation in 1989, negative per capita GDP growth, and a high but volatile real exchange rate. During this period the country's share of world exports fell to 0.27 percent in 1987 (see Figure A1). Argentina recovered its world trade share during the 1990s, a period associated with macroeconomic stabilization, trade liberalization, deregulation, large capital inflows, real exchange rate appreciation, and fast GDP and productivity growth until 1998. Argentina's share in world trade started to decline again with the devaluations in Brazil and other emerging countries after 1998. Despite the large devaluation of the peso in 2002, exports have failed to grow faster than world trade. Between 1998 and 2005 Argentina's exports grew 52 percent, while world trade expanded by 60 percent and Brazil's exports rose 119 percent (allowing it to jump from 0.9 percent of world exports in 1998 to 1.2 percent in 2005).

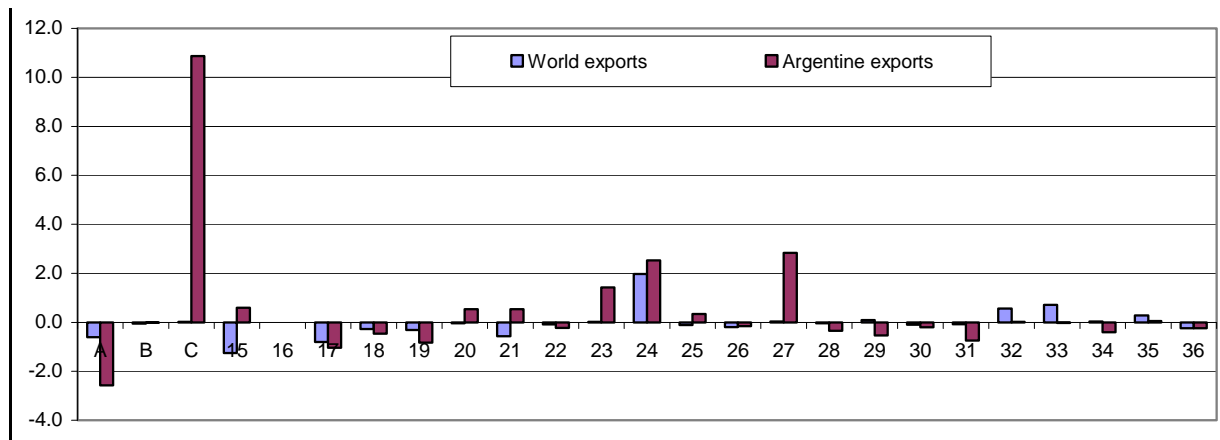
Figure A1. Argentina's Share of World Exports



Source: IERAL from Fundación Mediterránea based on IFS and INDEC.

The exports of manufactures of chemicals and chemical products were the most dynamic both for the world and for Argentina. The importance of this sector in world trade grew from 8.44% in 1995 to 10.42% in 2004, whereas in Argentina this share grew from 5.8% of total Argentine's exports in 1993-94 to 8.3% in 2003-04 (see sector 27 in Figure A2). However it was the Mining and Quarrying (sector C) which showed the biggest increase in its share of Argentina's exports (this share rose 10.87 percentage points between 1993-94 and 2003-04).

Figure A2. Share Growth by Sectors, 1994 vs 2004



Source: IERAL from Fundación Mediterránea based on INDEC and IFS.

Table A2 shows that relative unit export prices vis-à-vis world prices (which may proxy for quality) rose for 10 sectors out of 25 at the 2-digit level, suggesting mediocre quality growth.

Table A2. Annual Growth Rate in Prices, 2004-2003 vs. 1994-1993 for Argentina and 2004 vs. 1995 for World

ISIC2d	Sectors description	Argentina (%)	World (%)
35	Other transp. equip.	16,32	9,08
C	Mining and quarrying	11,54	3,70
23	Coke, refined petr. prod. and nuclear fuel	9,01	3,98
15	Food prod. and bev.	5,54	-1,25
21	Paper and paper prod.	4,15	-4,51
A	Agric., hunting and forestry	2,82	-0,26
17	Textiles	1,53	-11,42
B	Fishing	0,81	0,46
20	Wood and prod. of wood and cork	-0,60	-19,82
27	Basic metals	-0,89	-1,21
19	Tann. and dress. of leather; manuf. of lugg. and footw.	-1,50	2,23
34	Motor veh., trailers and semi-trailers	-2,41	1,80
29	Mach. and equip. n.e.c.	-4,05	0,26
24	Chem. and chem. prod.	-4,32	1,09
26	Other non-metallic min. prod.	-4,50	1,66
32	Radio, telev. and comm. equip.	-4,52	-1,51
25	Rubber and plastics prod.	-4,63	-0,15
16	Tob. prod.	-5,59	2,44
28	Fabr. metal prod.	-5,71	-9,29
33	Med., precision and optical instr.	-5,79	3,36
22	Publ., printing and repr. of recorded media	-6,20	-0,90
18	Wearing app.; dressing and dyeing of fur	-6,67	-2,03
30	Office, accounting and comp. mach.	-7,91	-4,16
36	Furn.; manufact. n.e.c.	-10,64	-1,23
31	Electr. mach. and app. n.e.c.	-11,31	1,32

Source: IERAL from Fundación Mediterránea based on INDEC and COMTRADE.

Between 1993 and 2005 there has been a deepening in the revealed comparative advantage (positive net exports in Leamer's commodity clusters) pattern of Argentina (see Table A3). Mining and Agriculture Products have improved their net external balance. In 2005 64.5% of overall exports were exports of products with revealed comparative advantage. Revealed comparative disadvantage has also deepened, especially in Machinery and in Chemical Goods, which respectively account for 49.8 percent and 19 percent of all imports.

Table A3. Revealed Comparative Advantage, Argentina's Net Exports in Leamer's 10 Commodity Clusters in Millions of Dollars

	1993	2005
Petroleum	833	5.157
Raw materials	-242	437
Forest products	-488	-130
Tropical agriculture	267	2.162
Animal products	1.003	2.874
Cereals, etc.	5.172	12.904
Labor intensive	-440	-250
Capital intensive	-8	343
Machinery	-7.549	-9.611
Chemical	-1.751	-2.220

Source: IERAL from Fundación Mediterránea based on COMTRADE.

2. New Exports

To identify new exports we first analyze trade data at the six-digit level of the Harmonized System (HS), as provided by the National Institute of Statistics and Census (INDEC), for the period between 1993-94 and 2003-04, finding 4,198 products with positive exports in 2004. The choice of the period of reference reflects both the availability of data and to the need to control for the possible effects that unilateral trade liberalization (which occurred mostly between 1987 and 1991) may have had on the structure of exports. For the identification of new exports we first imposed the condition that exports should have grown at least 300 percent between 1993-94 and 2003-04, so as to include sectors with above average export growth (154.7 percent) and median export growth (263 percent). There are 1,797 sectors (42.8 percent of all export products) that meet this first condition. In order to concentrate only on those activities that have sufficient economic significance, we next imposed the requirement of an average minimum export value of US\$10 million 2003-04 and an average maximum export value of US\$1 million in 1993-94, so as to choose sectors pertaining only to the first decile in 2004. This criterion leaves us with only 90 products (5 percent) out of 1,797 products previously selected. From these 90 products we further excluded codes 999801, 999802 and 999804.¹⁶ As a result, we have 87 products that meet all our requirements.

Table A4.

A. New Exports' Share (%) of Argentina's Total Exports

	1994-1993	2004-2003	Change
New exports	0.10	20.90	20.80
New exports without fuels	0.09	13.35	13.25
Fuels	0.00	7.55	7.55

Note: Table includes 90 new products.

Source: IERAL from Fundación Mediterránea based on INDEC and COMTRADE.

B. New Exports Value Sales in US\$

	Number of products	Exported value (US\$)	
		1993	2004
New exports	90	11,646,297	7,377,016,530
New exports without fuels	85	11,337,058	4,720,637,077
Fuels	5	309,239	2,656,379,453
Fuels / New exports (%)	11.11	2.66	36.01

Source: IERAL from Fundación Mediterránea based on INDEC and COMTRADE.

¹⁶ They are exports reserved for the particular use of the contracting parties and have no significance in our analysis.

While representing a relatively small number of products, new exports rapidly increased their shares in total exports (see Tables A4A and A4B.). The emergence of new exports since the early 1990s has generated a dramatic structural change in the composition of Argentine external sales, as these new exports represent 20.9 percent of the total value exported during 2003-04 vis-à-vis 0.1 percent in 1993-94. Nevertheless, a significant portion of these new exports are fuels, which in 2004 represented 7.5 percent of total exports. New exports displayed more dynamic behavior than overall exports and represented more than one third of overall export growth (see Table A5).

Table A5. New Exports Dynamics, 1993-2004

	Annual growth rate	Contribution to total exports growth
Total	9.2	
New exports	79.76	34.4
New exports without fuels	73.04	22.0
Fuels	127.84	12.4

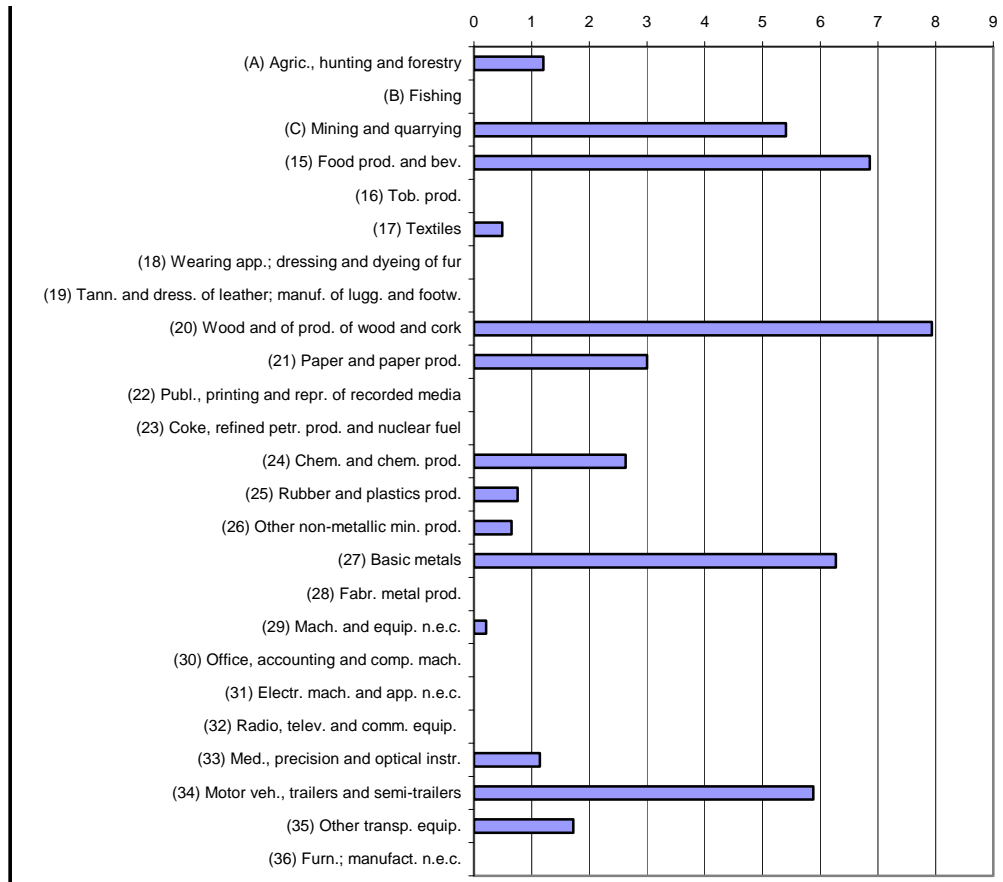
Source: IERAL from Fundación Mediterránea based on INDEC and COMTRADE.

These new Argentine exports grew significantly faster than their world counterparts, increasing their share of world trade in new exports from 0.11 percent in 1995 to 1.01 percent in 2004. Their current share of world exports compares very favorably to the share of total Argentinean exports in world trade (0.39%).

To gain further understanding of the characteristics of the new exports, products are grouped at the two-digit level. We make the correspondences from the HS at the six-digit level to the International Standard Industrial classification (ISIC) at the four-digit level and aggregate it to a two-digit level. Applying this transformation we can work with 25 sectors; only 14 of these sectors include products which we consider new exports. We then construct a “new exports indicator” by industry as the percentage of newly exported products relative to the total number of goods exported in each sector.¹⁷ Figure A3 shows the frequency of new export products in each sector. The sectors with the greatest presence of new exports (5 percent or more) include activities directly linked to the exploitation of mining resources (Mining and Quarrying), industries that process agricultural resources (Food and Beverages), industrial manufactures that process natural resources (Wood and Wood Products, Basic Metals), and Motor Vehicles (a relatively labor-intensive activity that got an initial boost from Mercosur). Other industries with a relatively large number of new exports (between 2 and 3 percent) include Paper and Paper Products and Chemicals.

¹⁷ For example, Sector 15 (Food and Beverages) includes 379 exported products, of which 26 are new exports. Therefore 6.7 percent of that sector’s products are considered new exports.

Figure A3. Percentage of New Exports in the Selected Sectors



Source: IERAL from Fundación Mediterránea based on INDEC.

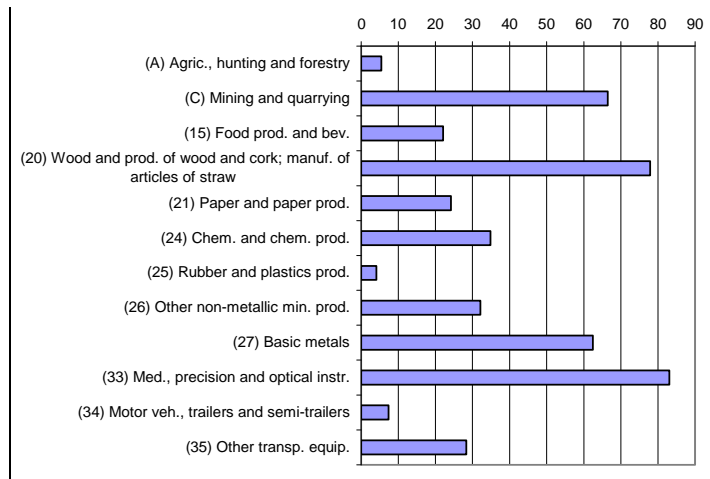
On the other hand, there were very few or no newly exported products in “modern” activities such as Medical, Precision and Optical Instruments, Electronics, Electrical Machinery, and Computing Equipment. The concentration of new exports in activities linked to natural resources is consistent with the previously described gain in share of these sectors in total Argentinean exports.

Figure A4 displays the contribution of new exports to each sector’s export growth.¹⁸ It is interesting to highlight that new exports represented more than 50 percent of sectoral export growth in five out of 13 sectors: Textiles (261 percent), Wood and Wood Products (78 percent), Mining and Quarrying (67 percent), Base Metals (62 percent) and Medical and Precision Instruments (83 percent). In 10 of the 13 sectors new exports accounted for 20 percent or more of export growth. This means that new exports have been a driving force in most industries, even in those where there were relatively few newly exported products. Most sectors experienced substantial intra-sectoral changes in the composition of their exports. For instance, the relatively small number of new exports (1.1 percent) within the Medical, Precision and Optical Instruments

¹⁸ We excluded Sector 17 (Manufacture of Textiles) because it registers a contribution of 261 percent and goes out of scale (while total sectoral exports grew just 3 percent, new sectoral exports rose from 0 in 1993-94 to US\$42 million in 2003-04).

sector (whose exports grew at an annual 7.5 percent rate) explained more than 80 percent of the sector's export growth, and a very small number of new external sales (0.5 percent) in Textiles contributed to the sector's export growth of 261 percent. On the other hand, the Motor Vehicles sector shows a relatively large number of new exports (almost 6 percent), that explain a very small part (7 percent) of sectoral export growth.

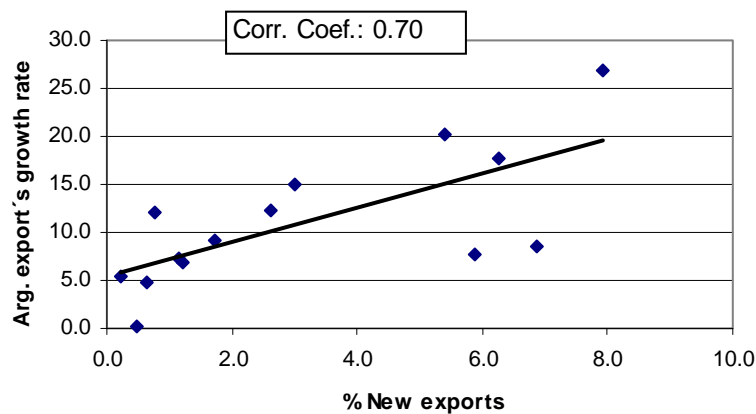
Figure A4. New Exports' Contribution to Sectoral Growth



Source: IERAL from Fundación Mediterránea based on INDEC.

While the contribution of new exports to sectoral export growth was very significant in most industries, this contribution was usually greater in those sectors with a larger number of new exports. As a result, there was a large and positive correlation between the percentage of new exports in each industry and sectoral export growth (see Figure A5).

Figure A5. Percentage of New Exports vs. Annual Growth Rate of Exports from Argentina



Source: IERAL from Fundación Mediterránea based on INDEC.

New exports displayed declining export prices in most sectors. Table A6 shows the average change in export prices between 1995 and 2004 for the new exports in each sector, together with the frequency of new exports by sector. In the eight sectors where new exports were more frequent, prices either declined more than for total sectoral exports (compare to Table A2), or grew less. In the four sectors where discoveries were less frequent, new export prices tended to grow in absolute terms and/or relative to the prices of total sectoral exports (compare to Table A2). This suggests that discoveries occurred more frequently in activities with smaller scope for catching up to the world price and quality frontier.

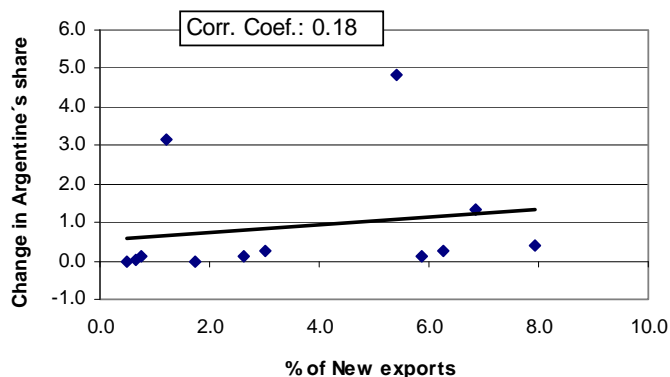
Table A6. Annual Growth Rate in Prices of New Exports, 1995-2004

ISIC2d	Sectors description	Argentina (%)	% NE
20	Manuf. of wood and of prod. of wood and cork	-2.69	7.94
15	Manuf. of food prod. and bev.	-6.84	6.86
27	Manuf. of basic metals	-4.68	6.27
34	Manuf. of motor veh., trailers and semi-trailers	-1.82	5.88
21	Manuf. of paper and paper prod.	---	3.00
24	Manuf. of chem. and chem. prod.	-4.39	2.63
35	Manuf. of other transp. equip.	11.70	1.72
A	Agric., hunting and forestry	-35.02	1.20
33	Manuf. of med., precision and optical instr.	11.57	1.14
25	Manuf. of rubber and plastics prod.	-2.08	0.76
26	Manuf. of other non-metallic min. prod.	2.48	0.65
29	Manuf. of mach. and equip. n.e.c.	5.04	0.21

Source: IERAL from Fundación Mediterránea based on INDEC and COMTRADE.

Figure A6 additionally shows that a greater frequency of new exports by sector did not appear to contribute to significant gains in world trade shares. This is consistent with the poor price dynamics of new exports in the sectors where discoveries were more frequent.

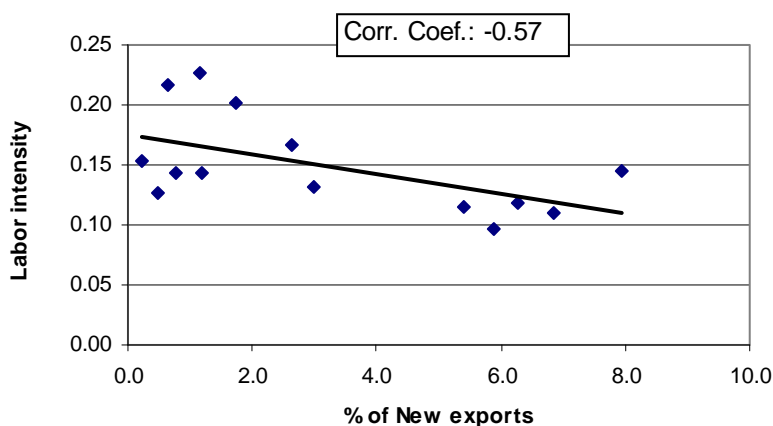
Figure A6. Percentage of New Exports vs. Change in Argentina's Share of World Exports



Source: IERAL from Fundación Mediterránea based on INDEC.

Figure A7 shows that the emergence of newly exported products has been more important in industries that are less labor-intensive.¹⁹ This finding is consistent with the fact that new exports were relatively more important in natural resource processing activities, which tend to be more capital intensive. It could also reflect the fact that capital was relatively cheap vis-à-vis labor during the 1990s, favoring capital-intensive activities.

Figure A7. Percentage of New Exports vs. Labor Intensity



Source: IERAL from Fundación Mediterránea based on INDEC.

Finally, new exports did not appear to represent jumps between trees within sectors with revealed comparative advantage, but rather jumps to new sectors without RCA, as only 28.9 percent of new exports were in sectors with RCA in 1993 (see Table A7). New exports changed the pattern of RCA, as 60 percent of new exports in 2004 were then in sectors with RCA.

Table A7. Percentage of New Exports in Sectors with Revealed Comparative advantage

	1993	2004
Quantity	28.9	60.0
Value	25.3	77.3

Source: IERAL from Fundación Mediterránea based on COMTRADE.

This change is due to a modification in the pattern of revealed comparative advantage, where Capital Intensive Goods and Raw Material Goods changed from RCD to RCA, with Capital Intensive Goods representing 25.9 percent of new exports (see Table A8).

¹⁹ Labor intensity is measured as the labor/sectoral value added ratio, obtained from the 1997 Input-Output Tables.

**Table A8. Revealed Comparative Advantage
for Argentina of Net Exports in Leamer's 10 Commodity Clusters and New Exports
(in Millions of Dollars)**

	1993	2005	% of New exports
Petroleum	833	5,157	5.6
Raw materials	-242	437	3.3
Forest products	-488	-130	8.9
Tropical agriculture	267	2,162	12.2
Animal products	1,003	2,874	5.6
Cereals, etc.	5,172	12,904	5.6
Labor intensive	-440	-250	5.6
Capital intensive	-8	343	27.8
Machinery	-7,549	-9,611	7.8
Chemical	-1,751	-2,220	17.8

Source: IERAL from Fundación Mediterránea based on COMTRADE.

This means that most new exports started in sectors with revealed comparative disadvantage, but their sizable growth led their sectors to acquire a comparative advantage at the end of the period.

Bibliography

- Agosín, M.R., and C. Bravo-Ortega. “The Emergence of New Successful Export Activities in Latin America: The Case of Chile.” Serie Documentos de Trabajo 236. Santiago, Chile: Universidad de Chile, Departamento de Economía.
- Bernard, A.B. and J.B. Jensen. 2004. “Why Some Firms Export.” *Review of Economics and Statistics* 86(2): 561-569
- Bernard, A.B. et al. 2003. “Plants and Productivity in International Trade.” *American Economic Review* 93(4): 1268-1290.
- Clerides, S., S. Lach and J. Tybout. 1998. “Is Learning by Exporting Important? Micro-economic Evidence from Colombia, Mexico, and Morocco.” *Quarterly Journal of Economics* 113(3): 903-47.
- Das, S., M. Roberts and J. Tybout. 2001. “Market Entry Costs, Producer Heterogeneity, and Export Dynamics.” NBER Working Paper 8629. Cambridge, United States: United States: National Bureau of Economic Research.
- Da Silveira, J-M. et al. 2004. “Evolução recente da biotecnologia no Brasil.” Texto para Discussão n. 114. Campinas, Brazil: Universidade Estadual de Campinas (UNICAMP), Instituto de Economia.
- De Ferranti, D. et al. 2002. “From Natural Resources to the Knowledge Economy: Trade and Job Quality.” World Bank Latin American and Caribbean Studies Viewpoints. Washington, DC, United States: World Bank.
- Fundación de Iniciativas para el Desarrollo Social (FIDES). “El Estado del Sistema Nacional de Innovación en Argentina.” Buenos Aires, Argentina: FIDES. Mimeographed document.
- Hausmann, R., J. Hwang and D. Rodrik. 2005. “What You Export Matters.” NBER Working Paper 11905. Cambridge, United States: National Bureau of Economic Research.
- Hausmann, R., and B. Klinger. 2006. “Doomed to Choose: Industrial Policy as Predicament.” Cambridge, United States: Harvard University, Kennedy School of Government. Draft working paper.
- Hausmann, R., and D. Rodrik. 2003. “Economic Development as Self-Discovery.” *Journal of Development Economics* 72(2): 603-33.
- Hidalgo, C. et al. 2007. “The Product Space Conditions the Development of Nations.” *Science* 317(5837): 482-487.

- Hwang, J. 2006. "Introduction of New Goods, Convergence and Growth." Cambridge, United States: Harvard University. Mimeographed document.
- Klinger, B., and D. Lederman. "Discovery and Development: An Empirical Assessment." World Bank Policy Research Working Paper 3450. Washington, DC, United States: World Bank.
- Magalhães, L.C.G. et al. 2003. "Estratégias Empresariais de Crescimento na Indústria Farmacêutica Brasileira: Investimentos, Fusões e Aquisições, 1988-2002." Texto para Discussão 995. Rio de Janeiro, Brazil: Instituto de Pesquisas de Economia Aplicada (IPEA).
- Parente, S., and E. Prescott. 2000. *Barriers to Riches*. Cambridge, United States: MIT Press.
- Popper, S. et al. 2004. "Measuring Economic Effects of Technical Barriers to Trade on U.S. Exporters." DRR-3083-5-NIST. Washington, DC, United States: National Institute of Standards and Technology. <http://www.nist.gov/director/prog-ofc/report04-3.pdf>
- Roberts, M., and J. Tybout. 1997. "The Decision to Export in Colombia: An Empirical Model of Entry with Sunk Costs." *American Economic Review* 87(4): 545-564.
- Sánchez, G., M.L. Alzúa and I. Butler. 2006. "Impact of International Product Standards on Argentine Industrial Exports, Employment and Skill Intensity of Production." Buenos Aires, Argentina: IERAL-Fundación Mediterránea. Mimeographed document.
- Sánchez, G., and I. Butler. 2005. "Measuring the Demand for Trade-Related Technological Public Goods in Argentina." Background Paper for UNIDO Industrial Development Report 2005. Buenos Aires, Argentina: IERAL-Fundación Mediterránea. Mimeographed document.
- Verhoogen, E. 2006. "Trade, Quality Upgrading and Wage Inequality in the Mexican Manufacturing Sector." New York, United States: Columbia University. Mimeographed document.
- Vettas, N. 2000. "Investment Dynamics in Markets with Endogenous Demand." *Journal of Industrial Economics* 48(2): 189-203.

**El desarrollo de nuevos
sectores de exportación en
América Latina:
Lecciones de 10 casos
exitosos**

**Miguel Braun
Germán Feldman
Magali Junowicz y
Alexis Roitman**

El Desarrollo de Nuevos Sectores de Exportación en América Latina: Lecciones de 10 Casos Exitosos

INFORME FINAL

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PRÓLOGO

Durante los últimos años, el surgimiento de nuevos sectores de exportación en América Latina ha contribuido a la dinamización de las ventas externas de la región, produciendo importantes mejoras en la productividad y ampliando el potencial de desarrollo de estas economías. En esta investigación, analiza el proceso a través del cual surgen y se desarrollan nuevos sectores de exportación, identificando y evaluando cuáles han sido las condiciones iniciales y los hitos a lo largo de su desarrollo y evaluando el rol del sector público y privado en ese proceso de surgimiento y expansión de nuevas oportunidades. A través del estudio de casos exitosos, analizamos las condiciones económicas e idiosincrásicas, así como las políticas que favorecieron el surgimiento de nuevos sectores a fin de contribuir a la planificación, el diseño y la implementación de políticas públicas y de cooperación internacional tendientes a promover el desarrollo de las exportaciones en América Latina.

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Lecciones de 10 Casos Exitosos**

INFORME FINAL

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A. INTRODUCCIÓN: OBJETIVOS DEL ESTUDIO

El objetivo principal de este estudio es contribuir a la planificación, diseño e implementación de políticas públicas y de cooperación internacional tendientes a promover el desarrollo de nuevos sectores de exportación en América Latina. La experiencia nos muestra que existen una multiplicidad de factores –económicos, políticos, idiosincrásicos, estructurales- que influyen, favorable o desfavorablemente en el ambiente en el que operan las empresas y que determinan en gran medida la posibilidad de que se generen nuevas oportunidades de negocios. Es por ello, que decidimos adoptar la metodología del estudio de casos como medio para analizar la interacción de estos factores y su impacto en desarrollo de exportaciones en la región y el rol que tiene la política pública en la promoción de estas nuevas actividades.

A fin de contribuir al diseño e implementación de políticas para el desarrollo de nuevos sectores de exportación, este proyecto cuenta con cuatro objetivos específicos:

1. Identificar cuáles han sido los diferentes sectores de exportación que han contribuido a dinamizar la estructura de exportaciones de los países de América Latina en los últimos 10 a 15 años, definir, en base a un criterio de selección, 10 casos de estudio y evaluar cuál ha sido su impacto sobre el desarrollo del sector exportador en los países seleccionados.
2. Comprender el proceso a través del cual se desarrollan nuevos sectores de exportación y/o se dinamizan o modernizan sectores ya existentes pero que estaban orientados únicamente a la economía doméstica, analizando factores económicos, políticos e idiosincrásicos que hayan influido en los casos seleccionados, resaltando el rol de actores públicos y privados.
3. Analizar cuál ha sido el rol de las políticas públicas y de la cooperación internacional en la dinamización de nuevos sectores de exportación Latinoamericanos, a través del análisis sistemático de las medidas adoptadas y su impacto sobre el comercio y el desarrollo.
4. Fortalecer las políticas desarrollo y de cooperación internacional que fomenten el surgimiento de nuevos sectores de exportaciones a través un conjunto de lecciones aprendidas y buenas prácticas que permitan identificar las acciones más exitosas y los factores clave de su éxito así como las acciones que fracasaron y los motivos del fracaso.

A través de varios meses de trabajo y con la presentación de este informe final, sentimos que hemos cumplido con los objetivos propuestos, lo que ha resultado en: (i) un conjunto de casos representativos de nuevos sectores de exportación de América Latina sistematizados que sintetizan las condiciones de base, los procesos de desarrollo y expansión y su impacto sobre la estructura de exportaciones de los países seleccionados; (ii) el análisis sistemático del impacto de las intervenciones públicas en desarrollo de nuevos sectores de exportación incluyendo intervenciones, instrumentos de política e inversiones específicas en los países y sectores seleccionados; y (iii) propuestas de políticas y líneas de acción estratégicas que sirvan a gobiernos y agencias de cooperación

internacional para la promoción del desarrollo de nuevas exportaciones y su difusión a toda la economía.

En la sección B, presentamos una breve discusión acerca de la relación que existe entre el crecimiento y la diversificación de las exportaciones y el desarrollo económico, así como algunos nuevos enfoques de la teoría económica acerca de las dificultades y obstáculos que existen para el surgimiento de nuevos sectores productivos y de exportación y el rol que le cabe al sector público. Luego presentamos algunos de los elementos más importantes de la actual situación en América Latina y de los desafíos que enfrenta la región en su desarrollo exportador. Por último, se describe la metodología para la selección y análisis de los diferentes casos de estudio. La sección C describe el análisis de cada uno de los casos seleccionados, en particular, las características del sector, las condiciones iniciales, los hitos principales en el proceso de desarrollo y la estructura del sector. A su vez, se analiza en profundidad cual ha sido el rol del sector público en el surgimiento, desarrollo y consolidación en cada uno de los casos de estudio, con particular énfasis en cuales fueron los objetivos buscados por el sector público y en qué medida estos fueron alcanzados. La sección D sistematiza el análisis sectorial y presenta algunas de las lecciones aprendidas y mejores prácticas de las políticas implementadas. La sección E presenta las conclusiones del estudio y sus implicancias para el desarrollo de políticas de promoción de nuevas exportaciones.

B. EL DESARROLLO DE NUEVOS SECTORES DE EXPORTACION

1. MARCO TEÓRICO

Numerosos estudios han demostrado que el crecimiento de las ventas al resto del mundo tiene un fuerte impacto sobre el desarrollo de los países. Por un lado las exportaciones generan mejoras en la productividad, ya que permiten ampliar los mercados en los que se comercializan los productos nacionales, generando economías de escala que potencian aún más el crecimiento. A su vez, exportar es una manera de adquirir conocimientos a través del contacto con otras formas de organización de la producción, con novedosas estrategias comerciales, con nuevas tecnologías y exigencias por parte de nuevos mercados consumidores, que obligan a ser más eficientes. En particular, para países en vías de desarrollo que no se encuentran en la frontera tecnológica internacional, las exportaciones destinadas a países más ricos son una puerta de entrada al conocimiento y a mejoras en la productividad. Por último, las ventas al resto del mundo son la fuente de divisas internacionales más importante, las cuales son necesarias para hacer frente a los pasivos denominados en moneda extranjera.

No solo un mayor nivel de exportaciones estaría positivamente asociado a mayores tasas de crecimiento y de producto per capita sino que también la composición de la canasta de exportaciones estaría asociada al desarrollo. Analizando la concentración y diversificación de la producción en diversos países, Imbs y Wacziarg (2003) han encontrado que a medida que los países se desarrollan, su producción se diversifica hacia nuevos sectores. Lederman y Maloney (2003) muestran que la concentración de la canasta de exportaciones en pocos productos esta correlacionada negativamente con el crecimiento económico. Cuando las exportaciones de un país se encuentran concentradas en un solo producto (como podría ser el caso del cobre en Chile o la soja en Argentina, o algunos de los países exportadores de petróleo), aumenta el riesgo de que cambios en el precio de dicho producto genere variaciones importantes en los términos de intercambio, que a su vez tienen un fuerte impacto en el crecimiento.

La diversificación de la estructura productiva y de la canasta de exportaciones requiere descubrir cuáles son los bienes y servicios que pueden ser producidos de manera eficiente en la economía. Hausmann y Rodrik, (2002) describen el descubrimiento de nuevas actividades como un proceso de aprendizaje acerca de cuál es la estructura de producción y costos dentro de la economía y particularmente dentro de cada sector. A través de la experimentación con nuevas tecnologías o formas de organización de la producción, o mediante un cambio en los insumos utilizados, los empresarios van descubriendo nuevas actividades o nuevas formas, más eficientes, de realizar las mismas actividades.

Sin embargo, este proceso de descubrimiento está asociado a la generación de externalidades que afectan los incentivos de las empresas a innovar y experimentar en nuevas actividades. El descubrimiento de la estructura de costos de una actividad genera información muy valiosa no solo para la empresa que lo realiza sino también para otros emprendedores. Si la nueva actividad es rentable, se convierte en una buena oportunidad de inversión para todos y por lo tanto, los beneficios son compartidos por todos los productores. Si la actividad no es rentable, el costo es asumido solo por quien

hizo el intento de descubrimiento. En muchos casos, la rentabilidad de una nueva actividad esta asociada a la existencia de una infraestructura específica (una ruta, un aeropuerto, etc.), o de sectores complementarios (proveedores de insumos específicos, recursos humanos especializados, etc.). Es decir, dichas actividades requieren de la acción coordinada de diferentes actores para ser exitosas.

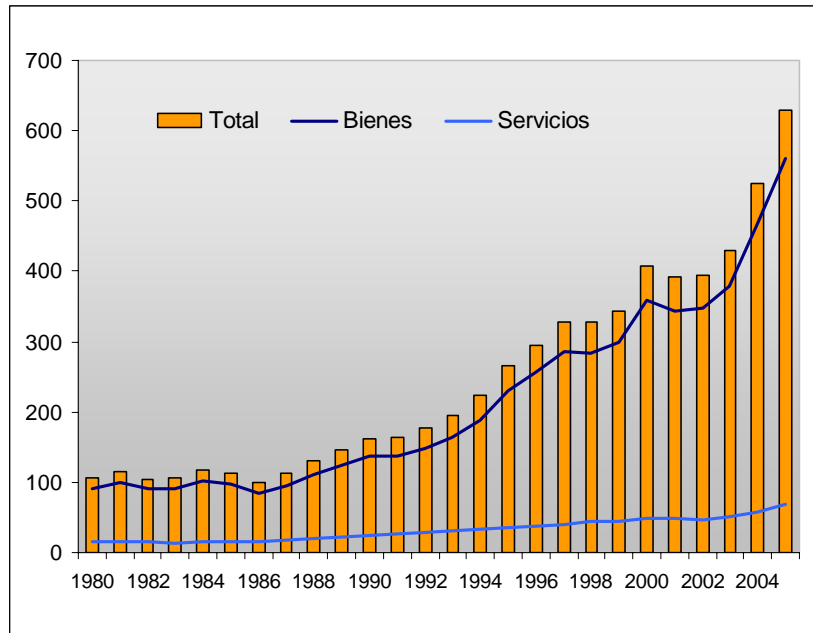
Tanto en el caso de las externalidades asociadas a la producción de información valiosa como en el caso de las fallas de coordinación, las señales que genera el mercado para invertir en estas nuevas actividades no están alineadas con los beneficios sociales y por lo tanto, en muchos casos, la diversificación de las canastas productivas y de exportaciones suele estar asociada a algún tipo de complementación entre el sector público y el sector privado.

El análisis del desarrollo de nuevos sectores de exportación no se limita a la existencia de externalidades y la consecuente intervención pública tendiente a remover estos obstáculos. Muchos países que han tenido éxito en la diversificación de su canasta exportadora han complementado estas políticas microeconómicas con políticas macro tendientes a mantener un tipo de cambio competitivo y estable. Tanto el nivel como la volatilidad del tipo de cambio afectan el crecimiento. Una fuerte devaluación de la moneda suele generar un gran impulso a las exportaciones, contribuyendo al crecimiento. Sin embargo, en el largo plazo el efecto sobre el crecimiento puede no ser sostenible e incluso, desde el punto de la promoción de las exportaciones, podría resultar más importante tener un tipo de cambio estable que un tipo de cambio alto. Una menor volatilidad genera una mayor previsibilidad acerca del valor futuro de la moneda y por lo tanto, estimula al comercio, la inversión y el crecimiento. Ciclos repetidos de gran sobrevaluación y devaluación de la moneda están asociados a alta volatilidad de los ciclos económicos ya que mayor volatilidad desincentiva inversiones en el sector de bienes transables al reducir el retorno esperado (Hausmann-Panizza-Rigobón, 2004). A su vez, una gran volatilidad del tipo de cambio tiende a contrarrestar cualquier intervención pública a nivel microeconómico. El impacto de las políticas tendientes a remover algún obstáculo al desarrollo de un sector o a generar incentivos para ciertas actividades tiende a ser ínfimo ante grandes devaluaciones y/o apreciaciones. Es por eso que el compromiso del mantener un tipo de cambio competitivo y estable resulta de vital importancia para en el marco de una estrategia de desarrollo exportador (Hausmann- Rodríguez Clare- Rodrik, 2005).

2. LA SITUACIÓN EN AMÉRICA LATINA

El desarrollo de nuevos sectores de exportación resulta de fundamental importancia en el caso de América Latina. Las exportaciones de América Latina durante los años noventa y hasta los primeros años del nuevo milenio han tenido un comportamiento muy destacado, en contraste con el pobre desempeño de la década del 80. Sin embargo, con escasas excepciones, las canastas de exportaciones de la mayor parte de los países de América Latina se encuentra concentrada en productos muy bajo valor agregado basados en la abundancia de recursos naturales y mano de obra no calificada.

Gráfico 1
América Latina: Valor de las Exportaciones (FOB)
(en miles de millones de US\$)



Fuente: Elaboración propia en base a CEPAL

La concentración de las exportaciones en productos primarios y/o de bajo valor agregado ha sido una de las características más salientes del sector transable en América Latina y ha sido identificada como una de las principales causas del pobre e inestable crecimiento de la región. Durante los años 50 y 60, comenzó a instalarse la idea, desarrollada originariamente por Prebisch y Singer, de que la especialización en productos primarios, combinada con un bajo nivel de progreso tecnológico en el sector primario y una tendencia declinante de los términos de intercambio de los *commodities* en relación a las manufacturas era la causa subyacente al subdesarrollo de ciertos países, fundamentalmente, los países Latinoamericanos. En primer lugar, la especialización en productos primarios ha estado asociada a menores niveles de productividad que los bienes y servicios de alto contenido tecnológico y alto valor agregado, y por lo tanto, su impacto sobre el desarrollo de la economía ha sido pobre. A su vez, la concentración de las exportaciones en unos pocos productos ha aumentado la vulnerabilidad de estas economías ante *shocks* externos, fundamentalmente cambios bruscos en los términos de intercambio, cuya volatilidad se tradujo en una altísima volatilidad de la mayor parte de las economías de América Latina.

Tabla 1: Clasificación de productos según su contenido tecnológico

Categoría	Ejemplos	Participación en el comercio mundial 1980 (%)	Participación en el comercio mundial 1998 (%)	Partidas clasificadas como de demanda dinámica
Alta tecnología	Computadoras, TV. Equipos de telecomunicaciones, Farmacéuticos, aeroespaciales	10,6	22,3	61,1
Tecnología media	Carros, camiones. Fibras sintéticas, químicos y pinturas. Motores, maquinaria industrial	31,0	34,3	33,3
Baja Tecnología	Productos textiles, cueros, calzado. Vajillas, muebles, partes de metal.	14,2	16,8	31,1
Basados en recursos naturales	Frutas y carnes preparadas, bebidas. Cemento, caucho, productos de petróleo.	18,7	11,6	23,8
Productos primarios	Fruta fresca, carne, arroz, café.	25,6	15,1	4,2

Fuente: BID (2001)

El pensamiento de Prebisch y Singer dio origen a las primeras ideas industrializadoras que llamaban a alterar el perfil exportador de los países Latinoamericanos a través de la directa intervención pública en el desarrollo de ciertos sectores de industria pesada considerados “estratégicos” como la metalurgia y siderurgia, la aviación, el sector nuclear y, más recientemente, la industria del software.

En las últimas décadas, el crecimiento de las exportaciones ha sido la locomotora del desarrollo económico en muchos países de la región. En algunos países, el desarrollo de nuevas actividades ha logrado cambiar la estructura de exportaciones como en el caso de México, cuyas ventas externas estaban inicialmente concentradas en recursos naturales (fundamentalmente petróleo) y actualmente se han diversificado, convirtiendo al país un exportador neto de maquinaria. Otros países han desarrollado nuevos sectores de exportación que, si bien no han cambiado de manera radical la estructura de exportaciones, han dinamizado las ventas al extranjero y han generado grandes ganancias de productividad, como es el caso de Chile con el salmón y los vinos, Argentina con las frutas finas y el software y Brasil con la industria de aviación, entre otros.

Si bien el proceso de desarrollo de los diferentes “casos exitosos” difiere entre sí, la mayor parte de las nuevas actividades y sectores de exportación han surgido, de alguna manera u otra, de la acción conjunta del sector público y el sector privado (Rodrik -2004). En México, el desarrollo de la industria automotriz y de la electrónica ha sido el resultado del desarrollo de las maquilas y del acceso diferencial al mercado de Estados Unidos como consecuencia de la celebración del NAFTA. En Chile, el desarrollo de la producción y exportaciones de salmón y de vinos fue fuertemente impulsado por la financiación pública de investigación y desarrollo y actividades de disseminación. En Argentina, el desarrollo de un fuerte sector de fabricación y exportaciones de reactores y tecnología nucleares han sido el resultado de la directa intervención pública en esta industria considerada estratégica.

Ya sea para reducir la volatilidad de la economía ante variaciones importantes en el precio intencional de ciertos productos, o para complementar (o corregir) las señales que genera el mercado ante la existencia de externalidades, o bien por la valoración estratégica que la sociedad y sus dirigentes tengan acerca del desarrollo de ciertos sectores, resulta fundamental entender el proceso a través del cual se desarrollan estas nuevas actividades y nuevos productos que permiten la diversificación de la canasta de bienes e impulsan el crecimiento económico. ¿Por qué un país decide invertir parte de sus recursos a explorar nuevas oportunidades?; ¿Cómo selecciona esas actividades?; ¿Es diferente el proceso en diferentes países o diferentes sectores?, ¿Qué rol le cabe al sector privado?; ¿Cuáles son las áreas en las que pueden intervenir el sector público y los organismos de cooperación internacional para potenciar y estimular este proceso?

Siendo que fuerzas diversas influyen en el surgimiento de nuevas actividades y dado que las mismas están determinadas por varios factores (económicos, políticos e idiosincrásicos), muchos de las cuales no son fácilmente mesurables, es que nos proponemos analizar de manera sistemática algunas de las experiencias exitosas de surgimiento de nuevos sectores de exportación en Latinoamérica a fin de comprender las condiciones que hicieron posible su surgimiento y desarrollo y extraer lecciones de política económica y de asociatividad público-privada que puedan servir de ejemplo para potenciar y estimular el desarrollo de la región.

3. METODOLOGÍA DE ANÁLISIS

La necesidad de estudiar un conjunto de casos exitosos de desarrollo de nuevos sectores de exportación reside en la existencia de una multiplicidad de factores –económicos, políticos, idiosincrásicos, estructurales- que influyen, favorable o desfavorablemente, en el ambiente en el que operan las empresas y que determinan en gran medida la posibilidad de que se generen nuevas oportunidades de negocios. Dentro de estos factores se destacan el estado de derecho, los recursos naturales, las regulaciones, los procedimientos administrativos, el tejido empresarial, el nivel de desarrollo del sistema financiero, el capital humano y el espíritu emprendedor, entre otros. Asimismo, dichos factores se expresan en las condiciones iniciales que hicieron posible la aparición del sector exportador, hitos, o puntos de quiebre que fueron marcando al sector en su proceso de desarrollo y las acciones llevadas a cabo tanto por el sector público y el sector privado que afectaron –positiva o negativamente- la estructura del mercado y su potencial de crecimiento. La metodología del análisis de casos nos permite analizar la interacción entre estos factores, muchos de los cuáles no son cuantificables, y su relación con políticas públicas a fin de identificar algunas lecciones aprendidas y proponer lineamientos estratégicos y recomendaciones concretas para el desarrollo de nuevos sectores de exportación en América Latina.

Criterio de selección de casos

Para identificar cuáles han sido los diferentes sectores de exportación que han contribuido a dinamizar la estructura de exportaciones de los países de América Latina, concentramos el análisis en un subconjunto de cinco países de la región. Si bien inicialmente habíamos decidido elegir un sector por país, una vez que comenzamos a profundizar el análisis de las series de tiempo notamos que a fin de poder entender el

impacto de la política pública, los factores macroeconómicos y las cuestiones idiosincrásicas, era más conveniente analizar el surgimiento de más de un sector en alguno de los países. En este sentido, hemos concentrado el análisis de actividades de exportación exitosas en 5 países: México, Brasil, Argentina, Chile y Uruguay

México, Brasil y Argentina son las tres mayores economías latinoamericanas (conjuntamente concentran más del 70% del producto bruto de la región). México, a su vez, ofrece un caso de estudio interesante, por la posibilidad que tiene de exportar sus productos a Estados Unidos con tarifa preferencial a partir de la firma del NAFTA y por el impacto que este tratado de libre comercio tuvo sobre su estructura de exportaciones. Por su parte, Brasil es un país con una fuerte intervención estatal en el desarrollo de ciertos sectores de exportación estratégicos, además de ser la mayor economía latinoamericana. Argentina nos ofrece la posibilidad de analizar el impacto que tiene una gran volatilidad del tipo de cambio sobre las exportaciones, con un fuerte retraso cambiario seguido de una brutal devaluación. Por último, seleccionamos dos economías más chicas en términos de su participación en el producto regional, pero que ofrecen características muy interesantes. En primer lugar, Chile ha tenido un boom exportador de gran magnitud en los últimos años apoyado fuertemente por el Estado y Uruguay es una economía cuyas exportaciones dependen en gran medida de sus socios comerciales principales (Brasil y Argentina), y que ha logrado desarrollar sectores dinámicos que apuntan a nuevos mercados.

Una vez seleccionados los países que serán objeto de análisis, hemos identificado cuáles han sido las “nuevas” exportaciones que surgieron en los últimos 10 o 15 años. Para ello, usamos estadísticas nacionales de series de tiempo de exportación desagregadas por sector, así como informes académicos y de la prensa especializada en cada uno de estos países. Para la selección final de los 10 casos, se utilizó el siguiente criterio:

- Dentro de un mismo país, que los casos correspondan a diferentes sectores económicos (Ej. agricultura, manufacturas y servicios), con el objeto de estudiar qué factores son los más relevantes en cada uno de estos sectores y cómo se diferencia y/o se asemeja la acción pública dirigida a cada uno de ellos.
- Entre países, que existan sectores similares cuyo desarrollo pueda ser comparado. Ejemplos de ello son los vinos entre Argentina y Chile, las industrias pesadas entre Brasil (aviación) y Argentina (tecnología nuclear) y la cría pesquera en Chile y Uruguay. Esto nos permite analizar, por un lado, cómo el mismo sector se ve afectado de manera diferencial en contextos diversos y con diferentes tipos de coordinación público-privada. La idea que subyace a este criterio de selección de casos (sectores diferentes dentro de un mismo país y sectores parecidos entre los países) proviene del concepto econométrico de “diferencias de diferencias” (aunque no rigurosamente aplicado). Por un lado, se comparan sectores diferentes entre sí que enfrentan el mismo contexto político y económico, la misma cultura e idiosincrasia. Por otro lado, se compara el desarrollo del mismo sector, o sectores con características intrínsecas similares, en el marco de contextos políticos, económicos culturales e idiosincrásicos distintos.
- El último criterio exige que el surgimiento y/o expansión del sector esté asociado a políticas de promoción de exportaciones o algún tipo de coordinación público-privada. Si bien para este informe de avance solo hemos identificado de manera

preliminar las políticas públicas que afectaron el desarrollo de los sectores seleccionados, desde un comienzo hemos definido el término “políticas de promoción de exportaciones” de manera bastante amplia, abarcando desde una política pública específica para la promoción de un sector particular, hasta políticas generales de promoción de exportaciones, tales como un tratado de libre comercio, el mantenimiento de un tipo de cambio competitivo, la atracción de inversión extranjera directa (IED), o la decisión del gobierno de crear una empresa pública exportadora. A priori, tampoco quisimos determinar el impacto de estas intervenciones públicas. En entrevistas mantenidas con representantes de los diferentes sectores hemos encontrado que algunos reconocen el apoyo del sector público en el desarrollo del sector mientras que otros advierten que la política pública ha funcionado más como obstáculo que como facilitador.

En base a estos criterios hemos identificado los siguientes sectores:

Argentina: *Vinos*, que ha logrado transformarse hacia la producción de de alta calidad capaces de competir a nivel internacional y con una importante promoción de estos productos en el exterior. *Tecnología nuclear*, que ha surgido como un sector deliberadamente generado a través de la creación de una empresa pública. *Frutas finas*, que se ha fortalecido, entre otras cosas, por la declaración de los Valles Andinos Patagónicos como “Área Libre de la Mosca de los Frutos”, más allá de la ventaja natural del mercado de contra estación. Por último, *software*, que se ha beneficiado por la alta calificación de los recursos humanos disponibles y por el nuevo régimen cambiario.

México: *Electrónica*, que ha sido inicialmente el resultado de políticas de sustitución de importaciones y de la creación del régimen de Maquilas, combinado luego con el acceso a tarifas preferenciales a través del NAFTA. El *aguacate*, que también se ha beneficiado del acceso preferencial al mercado norteamericano luego de la firma del NAFTA, combinado con la creación del sistema de regulación fitosanitaria.

Chile: *Vinos*, que se ha favorecido, primero, con la liberación de las restricciones y, luego, con las fuertes políticas de promoción en el exterior. El *salmón*, que ha tenido un gran desarrollo exportador, con formación de clusters y cooperación público-privada.

Brasil: *Aviones*, cuyo surgimiento responde a la creación por parte del Estado de una empresa pública, sumado al envío exportador que tuvo lugar luego de su privatización.

Uruguay: *Caviar y esturión*, cuyo surgimiento se vio facilitado por las favorables condiciones existentes en Uruguay y posteriormente con exenciones impositivas al sector.

Para realizar el análisis hemos utilizado información desagregada de exportaciones clasificadas a 4 y 6 dígitos según el Sistema Armonizado de Designación y Codificación de Mercancías disponible en la Base de Datos Estadísticos de Comercio de Bienes de Naciones Unidas (COMTRADE- *United Nations Commodity Trade Statistics Database*). Para algunos sectores, hemos también utilizado información proveniente de los Institutos Nacionales de Estadística de los países seleccionados. El análisis estadístico fue complementado con documentación existente (documentos estratégicos, planes comerciales, informes económicos, reportes de prensa especializada, etc.), tanto a nivel sectorial como a nivel de país. Por último, hemos realizado algunas entrevistas

(personales y telefónicas) con agentes implicados en el desarrollo de estos sectores (empresarios, organizaciones no gubernamentales, agentes públicos, etc.).

C. ESTUDIO DE CASOS

A continuación se detalla el análisis de cada uno de los casos de nuevos sectores de exportación de América Latina, que sintetizan las condiciones de base, los procesos de desarrollo y expansión y su impacto sobre la estructura de exportaciones de los países seleccionados. Al final de cada caso se presenta un análisis de los principales obstáculos, fallas de mercado y dificultades que fueron surgiendo a lo largo de los diferentes procesos de desarrollo y el rol que han tenido las políticas e intervenciones públicas para facilitar y promover desarrollo de estos sectores.

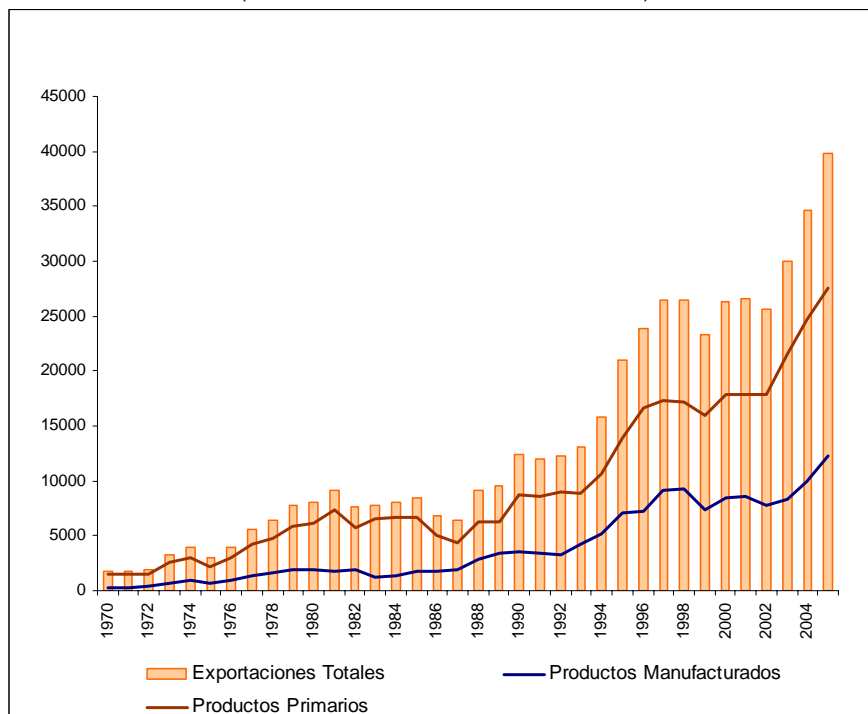
1. ARGENTINA

TENDENCIAS DEL SECTOR EXTERNO

Al considerar las exportaciones argentinas en los últimos 25 años, se observa que su comportamiento no ha sido muy dinámico. Entre 1980 y 2005, la participación de las exportaciones argentinas en las exportaciones mundiales pasó de 0.43% a 0.4%. En contraste, Chile casi duplicó su participación en esos años, y Brasil pasó de 1.07% en 1980 a 1.17% en 2005.

A su vez, el crecimiento de las exportaciones argentinas en esos años distó de ser uniforme, además de evidenciar modificaciones importantes en su estructura. A grandes rasgos se pueden diferenciar dos períodos en la performance exportadora de los últimos 30 años. Una primera etapa –hasta 1990– muestra un comportamiento moderado. Durante gran parte de esos años las ventas al exterior se vieron influidas por la recesión en Estados Unidos y Europa, la crisis de la deuda de los países latinoamericanos y la caída de los precios de los productos argentinos. Es decir que en la década del 80 el comportamiento de las exportaciones argentinas fue significativamente menor que el de las exportaciones mundiales, cayendo hasta un 2.7% en la participación de 1987. Esos años fueron caracterizados por gran volatilidad macroeconómica, fuga de capitales, alta y recurrente inflación, caída del producto per cápita y alta volatilidad del tipo de cambio.

Gráfico 2
Evolución de las Exportaciones Argentinas 1970/2005
 (Valores en US\$ millones - FOB)



Fuente: Anuario Estadístico 2006 de la CEPAL

En cambio, la Argentina recuperó posiciones en el comercio mundial durante la década del 90, un período caracterizado por estabilidad macroeconómica, liberalización comercial, desregulación, privatizaciones, llegada de capitales, apreciación cambiaria y crecimiento del PBI. A su vez, esta recuperación fue favorecida por el contexto internacional y por el desarrollo del MERCOSUR. En cuatro años (de 1993 a 1997) el valor exportado pasó de U\$S 13.100 millones a U\$S 26.400 millones, con un aumento superior al 100%. Este segundo período de gran expansión de las exportaciones se vio interrumpido por la etapa recesiva de 1998/2002. Luego de la devaluación de la moneda en el año 2002, las exportaciones argentinas comenzaron un proceso de recuperación, favorecidas por un tipo de cambio competitivo y estable, y por un contexto internacional de precios crecientes.

El contraste entre los años '80 y '90 es marcado. Con un tipo de cambio relativamente "alto" en la primera década y un tipo de cambio claramente "bajo" -siempre tomando la comparación histórica- en los '90, el comportamiento exportador fue mucho más dinámico en el segundo período -entre 1993 y 1998 las exportaciones de manufacturas de origen industrial (MOI) subieron un 134%.

Por otro lado, en los últimos 30 años se observa una modificación sustancial de la estructura de ventas externas. En 1975 los cereales concentraban el 35% de las exportaciones totales y los productos primarios en su conjunto superaban el 40%. En cambio, la composición actual de las ventas argentinas al exterior muestra una

diversificación mucho mayor, en la cual se destacan los combustibles, los productos del complejo sojero, los cereales y los automóviles.

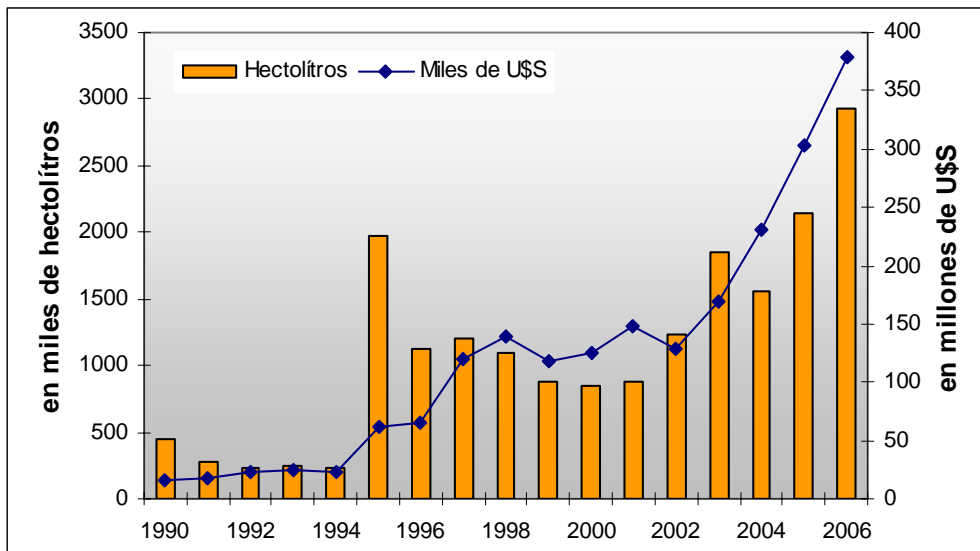
1a. VINOS

a. Breve descripción del sector

Según el informe que brinda la Organización Internacional de la Viña y el Vino, la República Argentina es el primer productor vitivinícola del Hemisferio Sur y el quinto del mundo. Se encuentra entre los países con mayor tradición en la producción del vino. A su vez pertenece al grupo de los denominados del nuevo mundo”, entre los cuales se puede encontrar también a Estados Unidos, Chile, Australia, Sudáfrica. Sin embargo, estos productos no han logrado aún una participación significativa en las exportaciones totales de Argentina debido principalmente al alto consumo interno, similar al de los países europeos. Al mismo tiempo, las exportaciones argentinas no ocupan los primeros puestos a nivel mundial, ubicándose recién en el décimo lugar. Los principales exportadores de productos vitivinícolas son Francia, Italia y Australia, que acumulaban cerca de dos tercios de las exportaciones mundiales en el año 2004. A su vez, en los últimos años resultó relevante el pronunciado aumento de la participación de Chile y Estados Unidos.

En los últimos 16 años el crecimiento de las exportaciones argentinas ha sido abrupto, recuperando terreno frente a sus competidores y ubicando al vino dentro de los sectores de exportación más dinámicos. Mientras en el año 1990 se exportaban tan sólo US\$15 millones, en el año 2006 los envíos de vinos al exterior fueron 25 veces esa cifra, alcanzando US\$379 millones.

Gráfico 3
Argentina: Exportaciones Totales de Vinos



Fuente: Elaboración propia en base a datos del Instituto Nacional de Vitivinicultura (Argentina)

Esto nos indica que, aunque la participación mundial es aún pequeña, es destacable que las exportaciones siguen aumentando cada año. Es importante destacar que este crecimiento se relaciona fuertemente con un cambio dramático en la composición de las exportaciones, siendo los vinos finos (de alta calidad) los que dominaron y guiaron el reciente boom exportador. Mientras en el año 1990 los vinos finos casi ni figuraban dentro de las exportaciones, en 2005 constituían 75% de las ventas totales de vinos al exterior (Artopoulos et. al., 2006). En ese sentido, las exportaciones de vinos finos aumentaron de US\$100 millones en el año 2002 a US\$225 millones en 2005, lo que implica una suba mayor al 100% en tres años.

El impulso que la industria tuvo desde 1995 mediante la incorporación de tecnología de punta y refinamiento en el proceso de conformación final del vino, sólo fue posible gracias a las inversiones de capital extranjero y nacional. En ese sentido, hay que destacar que en la década de 1990 se sentaron las bases para la transformación del Sector Vitivinícola Argentino, a través de la apertura económica y el proceso de desregulación de la economía. De este modo, la producción nacional dirigida a la exportación buscó crear productos de alta calidad capaces de competir a nivel internacional; es así como la producción y comercialización de los vinos finos fue reemplazando periódicamente a la de los vinos de mesa. Las inversiones realizadas en el sector vitivinícola fueron destinadas principalmente a la compra de activos por parte de bodegas internacionales y grupos financieros, para luego enfocarse a la reconversión de la cepa, la mejora de la tecnología instalada y de las técnicas de procesamiento, además de la utilización de financiamiento para la apertura de nuevos mercados. Un dato significativo es que en la década de 1990, la tecnificación de la industria vitivinícola y la incorporación de nuevas inversiones absorbieron el 7% de la inversión total en la Argentina. Ello repercutió en una mayor concentración en las bodegas productoras de vinos finos. Como resultado se dio un cambio de perfil en las empresas del sector vitivinícola, las cuales persiguieron una estrategia de penetración en el mercado externo como fórmula de crecimiento.¹ Por otro parte, entre los principales destinos encontramos a Estados Unidos, Reino Unido, Canadá y Holanda. Brasil ocupa el primer destino de las exportaciones argentinas dentro de Latinoamérica.

b. Condiciones iniciales

Existen en Argentina diversas condiciones que permitieron que el sector comience un desarrollo exportador significativo²:

Ventajas comparativas: existen ventajas comparativas que permiten obtener productos con alta calidad y diferenciación (aridez, suelos diferentes, riego, distintas altitudes, prolongada insolación, poca necesidad de tratamientos fitosanitarios). Estas condiciones ambientales permiten además el desarrollo de una producción integrada.

Oferta variada y diversidad de productos exportados: Se dispone de una oferta diversificada de uvas para elaborar vinos de calidad en todas las gamas. Argentina presenta una gran diversidad en su exportación: vinos en todos los segmentos de precios. A su vez existe

¹ "Análisis de Tendencia del Mercado Internacional del Vino". Fundación Exportar.

² Ver "Plan Estratégico Argentina Vitivinícola 2020" INTA.

una especialidad en vinos tintos de calidad, con el Malbec como cepa emblemática (existen 16.000 ha de uva Malbec que sirven para posicionarla como una de las variedades emblemáticas de Argentina).

*Diversidad geográfica*³: existen zonas diferenciadas por sus características geográficas y por su composición varietal que permiten elaborar vinos con estilos propios. En Argentina pueden distinguirse cuatro grandes zonas vitivinícolas: Mendoza, San Juan, el Noroeste y el Norte de la Patagonia. La más importante se encuentra en la Provincia de Mendoza, donde se obtiene más vid y se ubican la mayoría de las bodegas. La Provincia de San Juan, por su parte, es la segunda en relevancia a escala nacional. Con condiciones climáticas muy similares a las de Mendoza, existe en esta región una especialización histórica en los vinos sin especificación de variedad, ya que la producción de la vid apuntó, por lo general, a la obtención del máximo rinde antes que a la mayor calidad. La región del Noroeste ofrece un pequeño volumen de producción una baja participación en el total nacional. La zona comprende, entre otras, a las provincias de La Rioja, Catamarca, Salta y Tucumán. Se trata también de una producción vitivinícola sin especificación de variedad. Sin embargo, se han detectado en el transcurso de los últimos años distintos procesos de modernización así como políticas públicas regionales orientadas a sostener la actualización tecnológica de la vitivinicultura regional como, por ejemplo, las implementadas en la zona de Cafayate. La región patagónica comprende fundamentalmente a las provincias de Río Negro y Neuquén. La producción allí es muy pequeña e incipiente. No obstante, resulta conveniente señalar que la región presenta diversidad interna. Mientras que, en la Provincia de Río Negro, existen bodegas tradicionales, en la de Neuquén se han establecido durante los últimos años bodegas nuevas y altamente tecnológizadas, que producen vinos varietales de gran calidad destinados principalmente al mercado externo.

Mercado interno: Existe un gran mercado interno en términos de volúmenes consumidos que valora cada vez más la calidad. La cultura argentina de consumir vino es relevante para la industria y para atraer inversiones en el sector. El alto consumo anual per capita fue fundamental para que hoy exista una buena superficie nacional dedicada al cultivo de la vid.

c. Hitos

- Última parte del siglo XIX: Construcción de vías de ferrocarril a Buenos Aires, la provincia de Mendoza y se convierte en centro de expansión de la industria vitivinícola, que ya se había expandido a otras regiones como San Juan, Catamarca, Salta y La Rioja. Se plantan varietales: Cabernet, Malbec, Pinot, Semilon, Merlot y Chardonnay.
- Década del 70-80': Caída del consumo interno de vino (de 80 litros per cápita en 1965 a 32 litros per cápita en 2002), incentivando a los productores a orientar su producción hacia los mercados internacionales.

³ "Informe Exportar N°25" Fundación Exportar.

- Principios de la década del 90': Apertura de la economía argentina, favoreciendo la inversión extranjera y la importación de tecnología. Se comienzan a crear productos de alta calidad capaces de competir a nivel internacional.
- Mediados de la década del 90': Creación de *Wines of Argentina*, una asociación público-privada para la promoción de los productos en el exterior.
- 2000: Se elabora en cooperación público-privado el Plan Estratégico Argentina vitivinícola 2020.
- 2002: Devaluación de la moneda argentina, favoreciendo la competitividad de la industria y abriendo camino para un crecimiento aún más acelerado de las ventas externas.

d. Estructura del sector

Según el Plan Estratégico del Sector Vitivinícola desarrollado por la Corporación Vitivinícola Argentina, una de las fortalezas que posee el sector se relaciona con el dinamismo de sus actores. En el Plan se destaca que en los últimos años el sector ha sabido adecuarse a las necesidades del mercado, produciendo un recambio varietal orientado sobre todo a vinos tintos. La radicación de empresas extranjeras innovadoras imprime también una nueva dinámica al sector. La tendencia creciente a elaborar vinos de calidad muestra que la industria argentina tiene capacidad para producir valor. La industria ha logrado una evolución favorable en los precios de los productos exportados en la última década. Todo esto significa el inicio de un proceso de innovación llevado adelante por las personas que integran la vitivinicultura.

Por otro lado, en el Instituto Nacional de Vitivinicultura existen cerca de 1000 bodegas registradas, al mismo tiempo que el Plan Estratégico muestra una estructura del sector de vinos finos donde existe una amplia diversidad de actores (alrededor de 100 empresas y 30 bodegas boutique). Esto permite un alto nivel de competencia que impulsa la innovación. En cuanto a la ubicación regional de las bodegas, se puede observar una significativa participación de las exportaciones argentinas en Mendoza, concentrando esta provincia el 80% de las exportaciones argentinas totales. En segundo lugar encontramos a San Juan, que concentra el 10% de las exportaciones, quedando para las demás provincias exportadoras el restante 10%⁴.

e. Barreras al Desarrollo Exportador y el Rol del Sector Público

Según lo expresado por diversos productores, uno de los obstáculos para el desarrollo el mercado, tanto interno como de exportación vinos, fue la descoordinación de las bodegas en su accionar como representantes nacionales, ante la falta de una marca Argentina y una identidad reconocidas internacionalmente. En ese sentido, las débiles estrategias colectivas para fortalecer el mercado interno y promover la exportación y la falta de innovación organizacional e institucional resultaron ser barreras al desarrollo.

⁴ Datos de la Fundación Exportar

La falta de coordinación entre los diferentes productores fue el punto de partida para la creación de Wines of Argentina (a mediados de la década del 90), una sociedad mixta (pública/privada) encargada de la promoción en el exterior. Esta entidad está integrada por más de 100 Bodegas pertenecientes a todas las regiones vitivinícolas del país, que representan aproximadamente el 95% del total de las exportaciones de vinos argentinos, Su misión es contribuir al éxito global de la industria vitivinícola del país, construyendo el "Origen Argentina", en base a productos de excelente calidad. Su visión es consolidar a Argentina entre los principales países exportadores (no tradicionales) de vino en el mundo. Instituciones como el Ministerio de Relaciones Exteriores y Culto, Fundación Exportar, Fundación Pro Mendoza, Secretaría de Turismo de la Nación, Marca País, Consejo Federal de Inversiones y la Corporación Vitivinícola Argentina apoyan a *Wines of Argentina* en sus actividades. Actualmente *Wines of Argentina* está presente con diversas acciones en 28 países y más de 50 ciudades del mundo.

A nivel provincial, el gobierno de la provincia de Mendoza (principal productora de vinos en el país) junto con la Unión Comercial e Industrial, la Bolsa de Comercio y la Federación Económica de Mendoza, crearon en 1996 la Fundación Pro-Mendoza, que impulsa la proyección internacional especialmente de las pequeñas y mediana empresas. Esta institución semi-pública se encarga de la promoción de los vino de esa provincia en

En cuanto a la innovación institucional y organizacional, el Instituto Nacional de Tecnología Agropecuaria (INTA) se encarga de generar información técnica para los productores. Trabaja con las bodegas para desarrollar técnicas de cultivo y también elabora mapas de microclimas de las diferentes regiones de cultivo de vinos. En el año 2000, esta institución, junto con el sector privado, elaboró el Plan Estratégico Argentina Vitivinícola 2020, que sirvió de base para la sanción de una ley nacional que crease COVIAR, la Corporación Vitivinícola Argentina (encargada de implementar el plan estratégico). Esta institución busca ayudar a coordinar las actividades necesarias para el cultivo de las uvas, y a su vez trabaja conjuntamente con *Wines of Argentina* en la promoción de los vinos argentinos en el exterior.⁵

Otro de los obstáculos principales identificados, y para los cuales aun no ha habido una respuesta satisfactoria (en base a la percepción de los productores) es la falta de inversión nacional y de mecanismos alternativos de financiamiento. Esta inexistencia de mecanismos de financiamiento alternativos al bancario, les dificulta a los productores concretar los procesos necesarios de innovación. A todo esto se suma la atomización de la ayuda estatal, que no constituye un factor clave de apoyo al desarrollo del sector privado.

1b. FRUTAS FINAS

a. Breve descripción del sector

Las "frutas finas" agrupan a un conjunto de especies frutales que se caracterizan principalmente por su reducido tamaño en comparación a otras especies. Dentro de esta

⁵ Artopoulos et al (2006)

categoría existen dos subgrupos: *berries* y *cherries*. Las primeras, dentro de las que se incluyen principalmente la frutilla, la frambuesa y el arándano, se caracterizan por su rápida perecibilidad. Los *cherries*, por su parte, son la cereza y la guinda.

En general, son producciones intensivas en mano de obra y capital. Asimismo, las características de perecibilidad, especialmente en el caso de las *berries*, imponen requerimientos muy específicos en relación a la poscosecha y el transporte. En efecto, las frutas finas requieren una logística adecuada para llegar a los mercados con calidad y frescura, y en las fechas más convenientes. Esto exige abordar dos cuestiones críticas: la reducción de los tiempos de transporte (el acortamiento de los plazos es esencial para aprovechar los nichos de precios, con relación a lo cual hay limitaciones en la infraestructura general: rutas, aeropuertos, distancia de éstos a las zonas productivas, frecuencias de vuelos, etc.) y el acceso al crédito, utilizado principalmente para construir instalaciones de la cadena de frío (Von Bernard et. al., 2003).

Argentina ha registrado en los últimos 15 años un importante salto en la producción de frutas finas, que la llevó no sólo a abastecer el consumo interno de *berries* y *cherries*, (supliendo a las importaciones), sino que también permitió la expansión de las exportaciones, ganando progresivamente presencia en el mercado internacional.

Características del mercado internacional de frutas finas, por tipo de cultivo

Arándanos: La producción mundial de arándanos de los últimos años se ubica en alrededor de 344 mil toneladas, obtenida sobre una superficie cercana a las 30 mil hectáreas. Los principales productores son Estados Unidos y Canadá, que generan conjuntamente el 95% del total mundial (79% y 16% respectivamente). Asimismo, cuando se analizan las exportaciones mundiales, estos dos países también se encuentran como principales exportadores, dado que poseen el 82% del mercado total (52 mil toneladas). En tercer lugar se encuentra Chile, quien exporta 7,3 mil toneladas (posee 12% del mercado de exportación). Junto con Chile, Argentina es el país del hemisferio sur con mayor desarrollo de la producción de arándanos.

Cerezas: Dentro de los principales países productores se encuentran Irán, Ucrania y Alemania. Este último país es también, dado su elevado consumo interno de frutas finas, el primer importador de cerezas del mundo (24,8 mil toneladas, 28% del mercado). Lo siguen Rusia, Austria, Reino Unido y Canadá, con aproximadamente 17 mil toneladas de cerezas importadas cada uno. Por su parte, entre los vendedores, el principal exportador es Estados Unidos, con el 32% del mercado y 45,4 mil toneladas. En orden de importancia le siguen Turquía y Austria. Por su parte, Chile con una producción que ronda las 33 mil toneladas, de las cuales destina casi el 40% al mercado internacional, es el líder entre los países del hemisferio sur y 5to exportador a nivel mundial.

Frutillas: La producción mundial de frutillas es de alrededor de 3.113 mil toneladas. El principal país productor es Estados Unidos, quien concentra el 54% de la producción mundial; le siguen España, Japón y Corea en orden de importancia. El principal exportador es España, con casi el 50% del mercado y el 75% de su producción destinada a la exportación. Este país abastece principalmente a la Unión Europea. Los países con mayor demanda son Alemania, Francia, Canadá y Estados Unidos (entre los dos primeros demandan 60% de las frutillas del mercado).

Frambuesas: El principal país productor es Rusia, que no participa en el mercado de exportación, seguido por Serbia y Montenegro, quien es el principal país exportador de frambuesas del hemisferio norte. Por su parte, Chile aparece como el segundo exportador mundial (5,8 mil toneladas). Los principales destinos son Alemania (representa 36% del mercado de exportación), Austria (concentra 20% de las compras globales), Canadá y Estados Unidos.

Tabla 2
Importaciones mundiales de frutas finas frescas

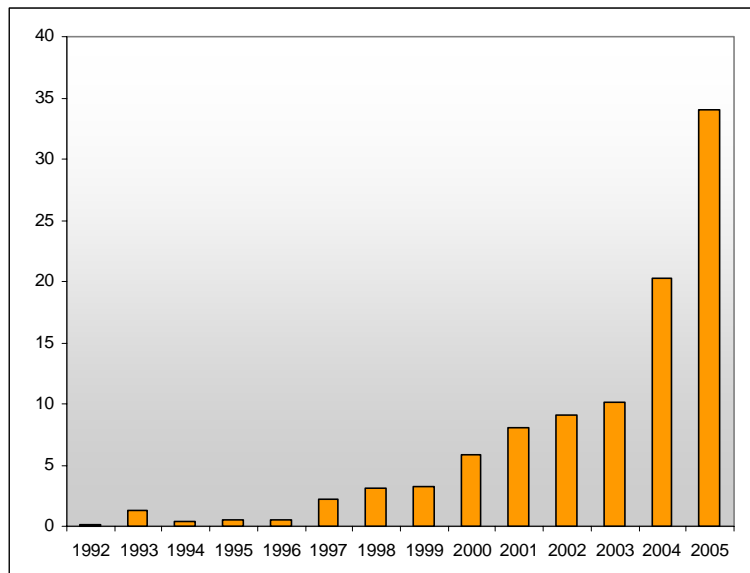
Especie	Valor (mil U\$S)		var (%)	Volumen (mil ton)		var (%)	Part. ventas argentinas ('00/'01)
	Promedio 1990/91	Promedio 2000/01		Promedio 1990/91	Promedio 2000/01		
Frutas Finas	997.249	1.341.812	35%	482	766	59%	0,51%
Cereza	215.665	390.951	81%	115	168	46%	1,25%
Arándano	58.171	137.067	136%	46	86	86%	2,44%
Frambuesa	43.390	111.551	157%	29	48	64%	0,04%
Frutilla	680.023	702.243	3%	292	464	59%	0,03%

Fuente: Von Bernard y Obschatko (2003)

En Argentina, los cultivos se ubican en distintas provincias. La producción de arándanos se concentra en Buenos Aires y Entre Ríos; las cerezas en Río Negro, Mendoza y Neuquén; las frutillas en Tucumán, Santa Fe y Buenos Aires y las frambuesas en Río Negro, Buenos Aires y Santa Fe.

El producto que más exporta Argentina es el arándano, el cual tiene una participación en el total de las exportaciones de frutas finas del 70%. Las partidas que le siguen en orden de importancia son las cerezas (29%), las frutillas (1%), y por último las frambuesas y grosellas, que no alcanzan en conjunto al 1%. Por su parte, después de Chile, Argentina es el segundo exportador de América Latina. Los principales destinos de exportación para las frutas finas de la Argentina son Estados Unidos (47%), Reino Unido (21%) y, en menor medida, Holanda (13%). Estos países concentran 81% del total de los envíos argentinos.

Gráfico 4
Argentina: Exportaciones de frutas finas frescas
(en miles de US\$)



Fuente: Elaboración propia en base a INDEC

Como puede apreciarse en el Gráfico 2, las exportaciones argentinas de frutas finas frescas aumentaron 210 veces en los últimos 15 años: mientras que en 1992 las ventas externas facturaban US\$162 mil, en el año 2005 las mismas alcanzaron US\$34 millones. Asimismo, el boom cobra aún más relevancia si se tiene en cuenta que hasta el año 1996 el país era importador neto de frutas finas (es decir, las importaciones superaban a las exportaciones).

b. Condiciones iniciales

La producción y exportación de frutas finas ha tenido un fuerte crecimiento en la Argentina de los años '90, estimulado por la existencia de condiciones iniciales que hicieron posible el éxito en los mercados externos.

Condiciones naturales: Existen condiciones naturales favorables que hacen de la Argentina un lugar adecuado para la explotación de este tipo de cultivos; una de las más importantes consiste en que gran parte de la producción de cerezas y frambuesas se realiza en zonas libres de la mosca de la fruta, cuya presencia resulta una traba para el ingreso a muchos mercados. Asimismo, dado que esas mismas zonas prácticamente no sufren de plagas, los cultivos de frutas finas pueden llevarse adelante como producciones orgánicas.

Sin embargo, hasta hace pocos años, estas ventajas no habían determinado un crecimiento significativo de la producción. En rigor, fueron acontecimientos exógenos los que estimularon su desarrollo. Además del aumento de la demanda de frutas finas, también influyó positivamente un factor externo a las decisiones macroeconómicas: la producción argentina sea realiza en contra estación respecto del Hemisferio Norte. En esta región se localizan los centros de consumo del rubro, donde se manifiesta una

marcada preferencia por el consumo del producto fresco en relación de 2 a 1 respecto del destinado a la industria⁶.

Modelo a imitar: Por su parte, el rápido y sostenido incremento en la producción y la exportación de *berries* de Chile sirvió como modelo para probar la factibilidad del ingreso competitivo de Argentina en los mercados externos.

c. Hitos

- 1994: Estados Unidos autoriza el envío de arándanos frescos a ese país, previa aplicación de bromuro de metilo antes del embarque.
- 1999: Las frutas provenientes de los Valles Andinos Patagónicos se benefician con la declaración de estos valles como “Área Libre de la Mosca de los Frutos”.

d. Estructura del sector

La producción de arándanos se encuentra concentrada en pocos productores de gran tamaño, nucleados en la Cámara Argentina de Productores de Arándanos y otros Berries. Por su parte, en el caso de cerezas y frambuesas existen grandes productores y empresas PYME. En el caso de las segundas, existen algunos emprendimientos que intentan coordinarlas, tales como la Cooperativa Agrícola y de Provisión Paralelo 42°, ubicada en el Bolsón.

Entre los principales limitantes de la producción, se encuentra la dificultad para contar con mano de obra para la época de cosecha (debido en parte a la competencia con el petróleo o el turismo), el bajo poder de negociación en la venta debido a los bajos volúmenes y la falta de asociativismo en la producción y comercialización tanto de frutas como de productos industriales.

Especialmente en los casos de cerezas y frambuesas, la mayor presencia de pequeños y medianos productores hace que los mismos sólo puedan participar del negocio de exportación si logran aumentar la escala mediante algún tipo de asociación entre ellos y si cuentan con alguna fuente de crédito adecuada.

Por otra parte, es necesaria la acción pública en materia de infraestructura de exportación. Mientras que los productos frescos se transportan vía aérea, las frutas finas congeladas se envían a los centros de consumo por vía marítima.

e. Barreras al Desarrollo Exportador y el Rol del Sector Público

En conversaciones con diferentes productores de frutas finas y con la cámara hemos identificado diferentes obstáculos que han surgido a lo largo del proceso de desarrollo del sector, algunos de los cuales continúan siendo importantes trabas para el desarrollo

⁶ El actual y potencial de estos productos en las exportaciones es significativo si se considera que la producción de una hectárea de trigo puede tener un valor de exportación de alrededor de US\$ 300, la de una de soja en grano alrededor de US\$500 y una hectárea de arándanos puede llegar a US\$100 mil” (Von Bernard y Obschatko, 2003).

del sector y otros que ha sido removidos o parcialmente disipados a través de la acción pública y la cooperación entre privados, y otros que aún no han encontrado solución.

Desde el punto de vista de acceso a nuevos mercados, la escasa información de los productores en relación a los requerimientos y procesos para la certificación orgánica de productos y las barreras fitosanitarias que dificultan el acceso a los principales mercados de exportación han sido un importante limitante al desarrollo del sector. Desde hace ya varios años, el Instituto Nacional de Tecnología Agropecuaria (INTA) ha venido trabajando en el control de las condiciones fitosanitarias de los cultivos. A su vez, el Servicio Nacional de Sanidad Agraria (SENASA) ha brindado asistencia técnica y financiera a los productores con el fin de controlar las condiciones fitosanitarias de los cultivos, a través de organismos no gubernamentales tales como la Fundación Barrera Zoofitosanitaria Patagónica (FUNBAPA).⁷ Los requisitos fitosanitarios establecidos internacionalmente limitan el ingreso a determinados mercados o exigen complejos y onerosos tratamientos cuarentenarios a los productos hospederos provenientes de países considerados infestados por la plaga. A los efectos de eliminar estas exigencias cuarentenarias y lograr el acceso a aquellos mercados, comienza a implementarse el PROCEM-Patagonia a partir del año 1996, en el marco de la FunBaPa y con la activa participación de todos los sectores vinculados a la actividad frutícola. En cerezas y frambuesas, las frutas provenientes de los Valles Andinos Patagónicos se benefician con la declaración de estos valles como “Área Libre de la Mosca de los Frutos” (1999), condición que ha sido reconocida tanto por Chile como por Estados Unidos y que ha potenciado el acceso a nuevos mercados. Por un lado, el libre tránsito a través del territorio chileno abrió la oportunidad de exportar por el Pacífico. En arándanos, resultó relevante la autorización de Estados Unidos lograda en 1994 por la cual es posible enviar arándanos frescos a ese país, previa aplicación de bromuro de metilo antes del embarque.

Otro de los problemas importantes para acceder a nuevos mercados ha sido la falta de asociativismo en la producción y comercialización. A fin de aumentar el diálogo y la coordinación entre actores, el Estado argentino ha creado en enero de 2005 el Foro Virtual de Frutas Finas, un ámbito que busca incentivar el intercambio de ideas y de información entre los distintos actores que conforman el sector productivo, integrándolas en una comunidad virtual que se caracteriza por el trabajo orientado a colaborar en la búsqueda de soluciones a los problemas comunes. Este Foro es coordinado por la Dirección Nacional de Alimentos, y se basa en la utilización del correo electrónico como vínculo de intercambio. El sistema no sólo facilita la circulación de información que resulta de interés estratégico para la toma de decisiones empresarias, sino que acrecienta los vínculos y desarrolla el espíritu de colaboración entre los distintos actores de la cadena alimentaria, independiente de su localización geográfica. Adicionalmente, en el año 2006, la Dirección Nacional de Alimentos, dependiente de la Secretaría de Agricultura, Ganadería y Pesca de Argentina, creó el Foro Federal de Frutas Finas. A través del Foro, se pretende generar un ámbito de debate y diálogo

⁷ FUNBAPA es un organismo público-privado que desde el año 1992 busca cubrir los requerimientos sanitarios y de calidad exigidos tanto nacional como internacionalmente mediante programas técnica, política y financieramente sustentables.

permanente, que contribuya a brindar soluciones a los participantes de la Cadena de Frutas Finas.

Por otro lado, la falta de un adecuado desarrollo genético que permita adaptar el producto a las demandas de los mercados internacionales y/o las condiciones climatológicas y la falta de experiencia en I+D en el desarrollo de productos con posibilidades de industrialización, han motivado la constitución del Fondo Fiduciario para la Investigación y el Desarrollo del Arándano en la Argentina (FFIDAA, Septiembre de 2005). El Fondo tiene por objetivo proveer de financiamiento a investigaciones y desarrollos locales en torno a este cultivo. El FFIDAA es un espacio para que confluyan actores públicos y privados de toda la cadena del arándano, el objetivo es conseguir recursos, concretar convenios y generar situaciones de mayor competencia para el sector.

Continúan siendo importantes los problemas de acceso al financiamiento, que afectan fuertemente a la capacidad de producción particularmente de cerezas y frambuesas, que son los sectores con mayor presencia de pequeños y medianos productores. No existen actualmente líneas de crédito directas al productor para adquirir sistemas anti-granizo, anti-heladas y protecciones contra el viento, cuyo costo podría alcanzar los US\$ 10.000. La ausencia de estos sistemas en gran parte de las plantaciones genera importantes pérdidas de producto en la cosecha. La falta de financiamiento afecta también la capacidad en la elaboración de dulces, ya que la ineficiencia y la falta de trituradoras, pulsadoras y tamizadoras no permite alcanzar una granulología fina para la elaboración de dulces. A su vez, la baja capacidad tecnológica de frío en campos productores, comercializadoras y en unidades móviles no permite una adecuada conservación y transporte de la fruta.

Otro obstáculo importante es la baja mecanización de las actividades de cosecha de frutas finas y la escasa capacidad de empaque. La cosecha manual, tanto de los cultivos de arándanos como de frutas y frambuesas, enfrenta un limitante importante en la escasez y los elevados costos de la mano de obra calificada para la cosecha de la fruta. Alrededor del 70% del costo de producción de producción corresponde a la mano de obra. A su vez, la escasa capacidad de empaque, poco mecanizada y/o con tecnología insuficiente para el desarrollo de productos con valor agregado es un problema importante, sobre todo en fichas pico de cosecha. Por último, en el caso de los arándanos, como resultado del crecimiento de las exportaciones, comenzaron a surgir problemas con el transporte de la fruta a destino debido a la falta de espacio en las bodegas aéreas para canalizar las exportaciones.

1c. TECNOLOGÍA NUCLEAR

a. Breve descripción del sector

Argentina es una de las pocas economías en desarrollo que han alcanzado un considerable grado de avance en el campo de la tecnología nuclear.

Entre las exportaciones de tecnología nuclear que ha llevado a cabo la Argentina, se destacan las ventas de reactores de investigación, plantas de fabricación de elementos combustibles, plantas de producción de radioisótopos y equipamiento de medicina nuclear.

Los reactores de investigación son instrumentos usados para diversos campos de investigación, formación de ingenieros, físicos y químicos nucleares, testeo de materiales, creación de semiconductores y fabricación de radioisótopos, sustancias químicas radioactivas de uso médico e industrial.

INVAP emprendió un firme esfuerzo en materia de exportaciones nucleares, habiendo concretado, entre otras, exportaciones de reactores de investigación, plantas de fabricación de elementos combustibles, plantas de producción de radioisótopos y equipamiento de medicina nuclear, destinadas a países de América Latina, África, Asia y Europa.

Entre los reactores exportados por INVAP se destacan el reactor RP-0, vendido a Perú en 1977, el reactor NUR, exportado a Argelia en 1985, el reactor RP-10 (Perú, 1988), el reactor ETRR-2 (Egipto, 1992) y la venta más reciente, el reactor OPAL, exportado a Australia en 2000. A su vez, la empresa rionegrina vendió al exterior dos plantas radioisotópicas: la CENTIS (Cuba, 1995) y la INSHAS (Egipto, 2006).

Los trabajos de exportación constituyen en la actualidad más de las tres cuartas partes de la facturación de la empresa (Otheguy, 2006). Por citar algunos ejemplos, las ventas a Argelia, Egipto y Australia alcanzaron en suma una facturación de US\$400 millones.

b. Condiciones iniciales

En 1950 el gobierno argentino creó la Comisión Nacional de Energía Atómica (CNEA). Tradicionalmente el país prefirió desarrollar su propia tecnología a adquirirla "llave en mano". Asimismo, en aquellos casos en que resultó ineludible la contratación en el exterior del diseño y la realización de obras correspondientes, el país desarrolló una participación activa a través de la CNEA y de empresas privadas argentinas, tanto en la etapa del diseño como en la de construcción (i.e. Atucha I y Embalse). Lo fundamental de todo este proceso es que permitió la acumulación de una experiencia y capacidad de realización muy valiosas en diversos campos de la actividad nuclear.

Por su parte, las restricciones en materia de transferencia de tecnología nuclear adoptada por los países líderes obligaron a la Argentina a desarrollar por sí misma técnicas y equipos no disponibles en el exterior.

La historia del desarrollo nuclear en la Argentina puede dividirse en tres etapas: la primera, de formación, que va desde la creación de la CNEA en 1950 hasta 1958; la segunda, de consolidación, caracterizada por el significativo desarrollo de aplicaciones nucleares (abarca desde 1959 hasta 1967) y la tercera, de madurez, que se extiende hasta la actualidad (CARI, 1999).

El sector nuclear argentino ha desarrollado por lo general una tecnología libre de sofisticaciones y adaptada a las posibilidades de producción y mantenimiento de la industria local, que resulta particularmente adecuada a los requerimientos y posibilidades de muchos países en desarrollo.

Más allá de la consolidación de INVAP como proveedor mundial de reactores, imagen formada a partir de los emprendimientos llevados a cabo durante las décadas del '80 y '90 a nivel doméstico, y los casos exitosos de exportación antes mencionados, existe en la actualidad un nicho de mercado en lo referente a la tecnología nuclear, esperando ser aprovechado. Es el de los servicios de "*retrofitting*" o reparación y modernización de centrales. En efecto, por citar un ejemplo, en Estados Unidos hay 104.000 megavatios nucleares instalados y ninguna planta ha sido construida con posterioridad al año 1973. En este contexto, la empresa argentina también cuenta con el respaldo de haber realizado trabajos similares en centrales domésticas. Tal es el caso de la reparación de Atucha I en 1987/88, máquina que pudo volver al servicio por un costo sensiblemente menor al ofrecido por el proveedor original del equipo.

c. Hitos

- 1950: Se crea la Comisión Nacional de Energía Atómica (CNEA).
- 1958: Es inaugurado el primer reactor experimental de América Latina, construido íntegramente en el país.
- 1976: Se crea la empresa INVAP, mediante un convenio firmado por la CNEA y el Gobierno de la Provincia de Río Negro.
- 1978: INVAP exporta su primer reactor nuclear a Perú (el RP-0).
- 2002: La NASA certifica la capacidad de INVAP para formar parte de proyectos espaciales. Es la única empresa argentina que posee dicha calificación.
- 2006: INVAP exporta a Australia el reactor OPAL. Por su costo, resulta la mayor exportación de tecnología "llave en mano" de la historia argentina (alrededor de US\$200 millones). Por sus capacidades, a fecha de hoy es el reactor de investigación más poderoso y complejo del mundo. Asimismo, no sólo es el primer reactor argentino que se exporta al "mundo desarrollado", sino que las condiciones de venta fueron bajo licitación, por lo que la empresa argentina compitió con empresas extranjeras tales como la General Atomics de los Estados Unidos, Technicatome de Francia, Siemens de Alemania y AECL de Canadá.

d. Estructura del sector

El sector está conformado básicamente por una única empresa, INVAP S.E. Es una empresa de tecnología cuyo capital accionario corresponde enteramente al estado rionegrino. La misma nació a partir de las actividades de desarrollo tecnológico llevadas a cabo por la CNEA en el Centro Atómico Bariloche. Se dedica principalmente al desarrollo y construcción de instalaciones nucleares y de plantas químicas vinculadas a la actividad nuclear, así como también de sistemas de aplicación médica y científica. Además participa en el desarrollo y la construcción de satélites para uso científico.

La empresa cuenta con sus oficinas centrales en Bariloche (Río Negro, Argentina). Adicionalmente, tiene presencia permanente en Buenos Aires y en el exterior, cuenta con oficinas en Australia y en Egipto. También posee empresas subsidiarias en Estados Unidos y Brasil.

El principal inconveniente que enfrenta el sector productor y exportador de tecnología nuclear en Argentina es la falta de derrames hacia el resto de la economía. Excluyendo el caso de algunos proveedores particulares, el notable éxito de la empresa INVAP puede

considerarse un caso excepcional. De este modo, no hay incentivos para el surgimiento de nuevas empresas, Asimismo, la institución enfrenta las limitaciones del mercado de trabajo argentino asociadas a la falta de ingenieros, técnicos, y otras clases de personal calificado.

e. Barreras al Desarrollo Exportador y el Rol del Sector Público

Iniciar la producción de reactores nucleares y otras aplicaciones derivadas es una tarea que demanda inversiones iniciales de gran magnitud, y que, como resultado de sus altos costos fijos, presenta economías de escala técnicas. De este modo, es inusual que sea el sector privado quien encare este tipo de proyectos. Especialmente en el caso de los países emergentes, cuyo mercado de capitales generalmente no se encuentra lo suficientemente desarrollado, es el sector público quien se hace cargo de este tipo de emprendimientos de "industria pesada". En el caso argentino, el sector surgió como resultado directo de una política pública, derivada de la decisión por parte del Estado de desarrollar un sector estratégico a nivel mundial y cuyo monopolio estaba concentrado en los países centrales.

En el mercado mundial de reactores nucleares y otras aplicaciones, la reputación del proveedor resulta fundamental. En este sentido, el hecho de que el Estado Nacional le diera prioridad al proveedor doméstico (INVAP) en diversos emprendimientos locales – por ejemplo para la construcción del reactor experimental RV6, para el cual se desistió de contratar a la empresa norteamericana "General Atomic", hicieron posible que dicha empresa comience a consolidar una imagen en el exterior.

En esta línea, no sólo la proyección exitosa de la empresa sino también la imagen de la Argentina en el mundo jugaron un rol primordial. Con la suscripción a diferentes tratados internacionales (Tratado de no proliferación nuclear (TNP) en 1993 y Tratado de Comercio Internacional (TIC) en 1992), Argentina se transformó en un país "confiable no proliferante", facilitándole las operaciones de exportación.

A nivel micro, desde un comienzo el desarrollo del sector nuclear en Argentina enfrentó un problema esencial en la falta de personal calificado (ingenieros, técnicos, etc.). Con el fin de superar dicha restricción, el Estado nacional creó el Instituto Balseiro en 1955 en la Ciudad de Bariloche, lugar del cual saldrían los ingenieros y técnicos que luego trabajarían en INVAP. Si bien el Instituto Balseiro ha dado respuesta a lagunas de las necesidades de recursos humanos, la falta de mano de obra ha sido un déficit a lo largo de toda la historia del sector. En particular, en los últimos 20 años se ha verificado un renovado faltante de ingenieros, técnicos y otra clase de personal calificado necesario.

Por su parte, entre los problemas que se presentan de cara al futuro de la producción de tecnología nuclear en Argentina se avizoran dos áreas fundamentales: la falta de derrames al resto de la economía, producto de la falta de incentivos para el surgimiento de nuevas empresas más allá de un pequeño número de proveedores locales de insumos, y la ausencia de coordinación con el Sector Nuclear Argentino, nucleado en la Comisión Nacional de Energía Atómica (CONEA).

1d. SOFTWARE Y SERVICIOS INFORMÁTICOS

a. Breve descripción sector⁸

En los últimos años la industria de software y servicios informáticos (SSI) ha sido una de las más dinámicas a escala global. En términos de la composición del mercado mundial, junto con Europa y Japón, Estados Unidos es el principal país productor y consumidor de SSI (50% del mercado mundial). Sin embargo, hay algunos países en desarrollo que han tenido un gran crecimiento en el mercado, siendo el ejemplo típico el de la India. Este país junto con Irlanda e Israel conforman el conocido grupo “de las 3 I”, tres países de “ingreso tardío” que han alcanzado un gran éxito en esta industria. En cuanto a las exportaciones, en el año 2004 los principales países exportadores de software y servicios informáticos eran Irlanda (19%), India (16%), Gran Bretaña (11%) y Estados Unidos (9%).

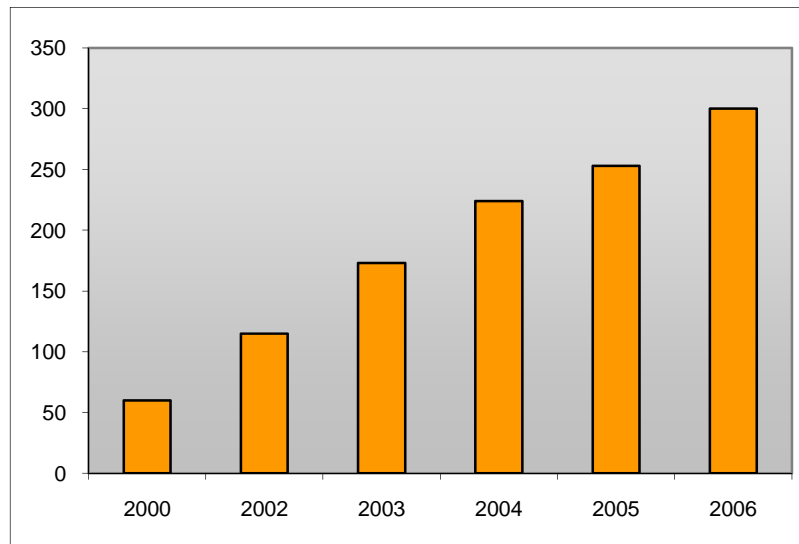
En este contexto mundial el sector de software y servicios informáticos de Argentina ha tenido un desarrollo exportador muy reciente, presentando, sin embargo, una evolución de 40 años en el mercado interno. Hasta el año 2002 las exportaciones eran prácticamente marginales, según datos de la cámara de software (CESSI) en el año 2000 representaban apenas el 3% de la facturación. Esta fuerte orientación comercial hacia el mercado interno se debía al tipo de productos y servicios ofrecidos, la debilidad de las firmas en materia de comercialización, las deficiencias de calidad de los productos que dificultaban su inserción externa. A su vez, el conflictivo entorno macroeconómico no ayudaba (tipo de cambio, dificultad para acceder al financiamiento, ausencia de políticas públicas de apoyo a la exportación, etc.).

Luego de la devaluación del peso argentino en el año 2002 esta situación se revierte y las exportaciones comienzan a ocupar un lugar más relevante (alcanzando un 19% de las ventas totales en el año 2006). Las exportaciones de SSI no sólo crecieron en valores absolutos, sino también con relación al total de exportaciones del país. Según datos de la cámara de software (CESSI) en 2005 las exportaciones de SSI habrían estado en torno al 4% de las exportaciones de servicios del país y al 0,5% de las exportaciones totales, mientras que en el año 2000 esas cifras eran tan solo de 1,2% y 0,2% respectivamente.

Este fuerte crecimiento exportador del sector en Argentina queda evidenciado al observar que, según un estudio de la OECD (2006), la Argentina se posiciona en el 4º lugar entre los países que han tenido las mayores tasas de crecimiento de sus exportaciones de SSI durante 1995-2004, detrás de Letonia, Croacia e Irlanda.

⁸ En base a López (2003 y 2007) y a “Plan Estratégico de SSI 2004-2014” Ministerio de economía (2003)

Gráfico 5
Argentina: Exportaciones de SSI (en millones de US\$)⁹



Fuente: Elaboración propia con datos de López 2007 y CESSI.

En cuanto a los destinos de las exportaciones argentinas, los mercados más frecuentes son los países de la región, en especial Chile y México, seguidos por los EE.UU., España, Uruguay, y Brasil¹⁰.

b. Condiciones iniciales¹¹

La existencia de recursos humanos calificados. La Argentina tiene una larga tradición en materia educativa, con prestigiosas universidades y una buena reputación en ciencias exactas y posee ventajas –aunque decrecientes– por sobre otras naciones de la región en los indicadores de capital humano. Este factor es relevante para la decisión de invertir.

El huso horario. La zona horaria en común permite mejorar los trabajos que requieren actividades de tipo *on-line* y contar con la posibilidad de estar comunicado con el cliente con más facilidad¹².

La cercanía cultural. El rasgo cultural es un punto especialmente importante para las empresas que proveen a clientes de países de Europa o América y puede ser también

⁹ Sin datos para el año 2001.

¹⁰ Según datos de la última encuesta realizada por la CESSI en el año 2005. Esta información reflejaría fundamentalmente la actividad exportadora de las firmas locales.

¹¹ En base a “Plan Estratégico de SSI 2004-2014” Ministerio de economía (2003)

¹² Sin embargo, no parece ser un aspecto determinante dado que no todos los trabajos requieren cercanía de husos horarios –por ejemplo, los trabajos en cadena no lo necesitan– y, por el otro, a veces el estar en un huso horario opuesto (como el caso de la India y los Estados Unidos) permite cierta sincronía en las etapas del trabajo que no son posibles cuando los horarios laborales son simultáneos.

una motivación importante en algunas decisiones de inversión. No sólo se relaciona con el idioma sino con aspectos vinculados a las prácticas comerciales, las costumbres y la idiosincrasia. Estos factores serían ventajas de Argentina con respecto a los países asiáticos.

El dinamismo de la demanda local. Si bien las firmas transnacionales no están enfocadas al mercado doméstico exclusivamente, el hecho de que la demanda local muestre un alto dinamismo resulta otro factor a considerar a la hora de invertir.

Una infraestructura de comunicaciones moderna. Si bien en los últimos años no ha recibido las inversiones necesarias, todavía parece estar dentro de los estándares buscados por las empresas.

c. Hitos

- Década del '60: Nace el sector de SSI y se desarrolla en base a una estrategia marcadamente mercado-internista durante las décadas siguientes.
- Mediados de los años '80: Se producen los primeros diagnósticos sobre la situación de la actividad, que mostraban que ya existía un sector de SSI con un cierto grado de desarrollo en la Argentina. Al menos 300 firmas operaban en SSI en aquella época.
- Mediados de los años '90: Existían aproximadamente 300 empresas activas en la producción y/o distribución de software, las que empleaban a unas 3000 personas en actividades vinculadas con software y a unas 1500 en la provisión de servicios.
- 2000: Comienza el aumento de las exportaciones, inicialmente consecuencia de la recesión del mercado local.
- 2002: La devaluación de la moneda argentina favorece el desarrollo exportador del sector y comienza la fuerte expansión externa.
- 2003: Distintas organizaciones gubernamentales, empresariales, académicas, etc. elaboran conjuntamente el Plan Estratégico 2004-2014 de SSI.
- 2004: Se sancionó la Ley del Software, que establece beneficios para el sector

d. Estructura del sector

Según estimaciones recientes (de carácter más bien informal) citadas en López (2007), el sector de SSI argentino estaría conformado actualmente por alrededor de 900 empresas, a las que se suman emprendimientos informales o de tipo unipersonal¹³.

En cuanto al tipo de empresa, el "Plan Estratégico de SSI 2004-2014" da cuenta de los siguientes grupos:

- i) *Empresas de gran tamaño:* son relativamente pocas, generalmente de capital extranjero y dedicadas principalmente a la comercialización de productos extranjeros y la prestación de servicios informáticos para grandes clientes - tanto para el mercado local como externo.

¹³ Algunas estimaciones hablan de 1000-1500 emprendimientos de este tipo.

- ii) *Empresas de tamaño medio:* también son pocas, de capital nacional y que emplean entre 100 y 500 personas.
- iii) *Empresas de tamaño pequeño:* son empresas locales, muy numerosas y heterogéneas, relativamente jóvenes y dedicadas tanto al desarrollo de productos de software local como a la provisión de servicios informáticos diversos.

En cuanto al empleo del sector, mientras en el año 2000 existían 15.000 puestos de trabajo, en el año 2006 ese número ascendía a más de 40.000. Al comparar con otros sectores se ve la importancia de este número de ocupados: en la industria plástica hay 28.000 trabajadores y en el sector automotor 60.000. Por otro lado, según el trabajo de Nahirñak (2006), existe un alto grado de atomización en el sector: más de la mitad del empleo (tanto asalariado como cuentapropista) está concentrado en empresas de menos de 25 ocupados.

e. Barreras al Desarrollo Exportador y el Rol del Sector Público

Hasta el año 2002, la paridad cambiaria entre el peso y el dólar se traducía en una debilidad de las firmas en materia de comercialización. La fuerte devaluación del peso a comienzos del 2002, favoreció, entre otros, la exportación de servicios informáticos y software. En vistas a las nuevas posibilidades de comercialización externa y con el objetivo de realizar una planificación del sector, en el año 2003 distintas organizaciones tanto públicas como privadas elaboraron el Plan Estratégico 2004-2014. A partir de esto, en el año 2004, se sancionaron dos leyes de promoción para el sector de SSI -la N° 25.856 y N° 25.922-. La primera de ellas establece que la actividad de producción de software será considerada como una actividad industrial a los efectos de la percepción de beneficios impositivos, crediticios y de cualquier otro tipo. Por su parte, la Ley 25.922 - de Promoción de la Industria del Software- otorga beneficios fiscales a las empresas y crea un Fondo de Promoción de la Industria del Software (FONSOFT), destinado a financiar gastos en investigación y desarrollo en PyMEs de SSI, universidades y centros de investigación. Tanto el Plan estratégico como las leyes, tuvieron un impacto positivo. Entre otras cosas contribuyeron a generar un marco de interés y estímulo para el desarrollo de la actividad, incluso más allá de sus efectos específico. Los temas de la formación de recursos, en los que el plan hacía eje, dieron lugar a varias iniciativas concretas. A su vez, otro de los efectos positivos que tuvo la ley fue contribuir a “blanquear” trabajadores, debido al gran número de empresas que se anotaron en ella.

Por otro lado, existen políticas regionales de promoción de la industria de SSI. Varias de las provincias argentinas están ofreciendo beneficios extras a las empresas de software que se radiquen en los respectivos territorios, más allá de los incentivos otorgados por las dos leyes nacionales mencionadas

Asimismo, el Instituto Nacional de Tecnología Industrial (INTI), creó un Laboratorio de Referencia de Desarrollo y Certificación de Software, y firmó un convenio de colaboración recíproca con la Cámara de Empresas de Software y Servicios Informáticos (CESSI) con el objetivo de dar apoyo técnico para favorecer el desarrollo del sector.

Uno de los problemas recurrentes de los sectores intensivos en mano de obra calificada es la falta de recursos humanos en algunos segmentos de la industria y deficiencias en la calidad de los productos. Para responder, aunque parcialmente, a estas dificultades, se diseñaron recientemente algunas políticas orientadas a revertir este fenómeno. A fines de 2005 la CESSI y el Ministerio de Educación, Ciencia y Tecnología lanzaron el programa "InverTI en vos", que busca difundir las nuevas posibilidades de formación y trabajo en carreras tecnológicas en la Argentina entre los estudiantes que están en los últimos años del colegio secundario, apoyándose en un programa de becas que administra el mencionado Ministerio. En mayo de 2005 los Ministerios de Trabajo, Economía y Educación firmaron un Acuerdo Nacional de Capacitación para el sector de Software y Servicios Informáticos, con lo cual se inició la primera etapa de desarrollo de un Plan Nacional de Formación Profesional para Trabajadores del Sector de SSI, que incluye la creación de un Fondo para el Mejoramiento de la Enseñanza de la Informática (FOMENI) de carácter público-privado, destinado a proveer recursos y evaluar y controlar los programas de formación propuestos por polos, cámaras, consorcios y demás organizaciones empresarias y educativas. Esta medida había sido señalada como prioritaria dentro del Plan Estratégico y el Plan de Acción 2004-2007 que emanó del mencionado Foro de SSI.

En la actualidad también existen dificultades relacionadas con el acceso al crédito. Con el predominio de firmas pequeñas y jóvenes que ofrecen bienes y servicios intangibles, reducido volumen de activos que puedan servir de garantía para la toma de préstamos y desarrollo de actividades sujetas a un fuerte grado de incertidumbre, el sector de SSI sufre particularmente la falta de acceso al crédito y el limitado nivel de desarrollo del mercado de capitales argentino.

2. MÉXICO

TENDENCIAS DEL SECTOR EXTERNO

Entre los años de 1978 a 1983 la elevada protección arancelaria y los regímenes de permisos previos dificultaron el comercio internacional. Las manufacturas en general no contaban ni con la calidad ni con los precios que les permitiera competir en el mercado internacional, y el reducido volumen de exportaciones realizadas (aproximadamente 20% del total) correspondía a empresas que operaban en el ámbito internacional con una amplia estructura de apoyos fiscales internos.

A partir de la crisis energética a inicios de la década de los ochenta, las exportaciones petroleras dejaron de ser las exportaciones más importantes en el total de las ventas externas, así su papel como principal generador de divisas fue sustituido por las exportaciones no petroleras, dentro de las cuales las manufacturas constituyeron el componente más dinámico. La estrategia de industrialización pasó entonces, de una etapa orientada a la sustitución de importaciones, que llegó a su agotamiento en ese periodo, a una exportadora.

Entre 1985 y 1988 inició una etapa de cambio estructural e instrumentación del proceso de apertura de la economía, en la que se modificó la política comercial liberalizando el comercio exterior, el cual inició con el ingreso de México al Acuerdo General sobre

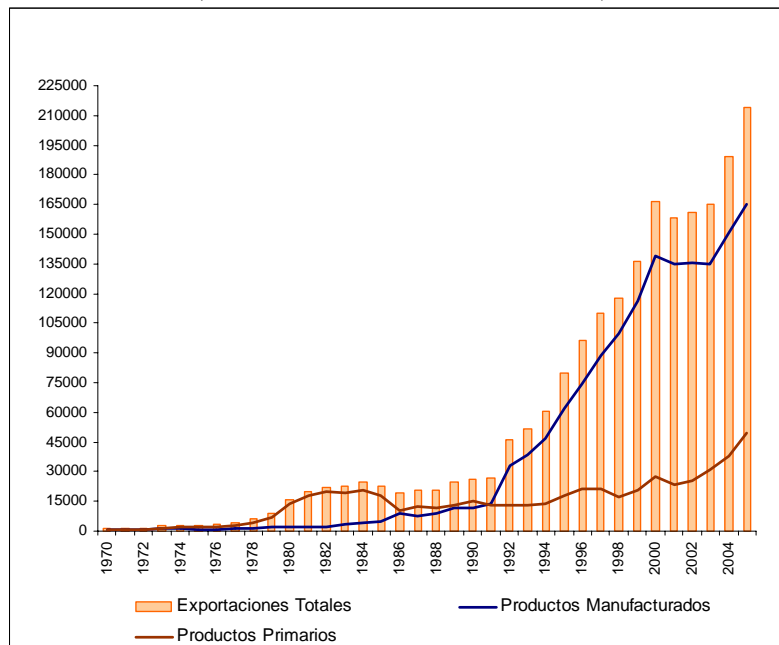
Aranceles Aduaneros y Comercio (GATT) en 1986, eliminándose los premisos previos, se redujeron las tarifas arancelarias, las que fueron homogéneas sin grandes diferencias por tipos de productos.

La política comercial en la década de los noventa, se caracterizó por un proceso de apertura comercial a través de la desregulación y la firma de tratados comerciales con otros países. El grado de apertura al exterior del sector manufacturero pasó de un promedio de 9.3% entre 1980 y 1985 a 16.2% entre 1986-1994. A partir de 1995 el grado de apertura llegó a representar un poco más de la cuarta parte del Producto Interno Bruto, siendo en promedio de 28.9% entre 1995 y 2000.

Desde los años ochenta la evolución del comercio exterior mostró un incremento, el cual se caracterizó por el aumento significativo de la participación de la industria maquiladora de exportación dentro del volumen del comercio exterior total y un incremento en la importancia de la actividad manufacturera junto a una reducción en el comercio de las actividades no manufactureras, en particular de la industria extractiva.

En este sentido, las exportaciones manufactureras no maquiladoras representaron casi el 20% de las exportaciones totales a principio de la década de los ochenta alcanzando el nivel máximo histórico en 1996, representando el 45.9%. En la década de los ochenta el principal cambio estructural se observó en las ramas de productos metálicos, maquinaria y equipo cuya participación pasó de 4.4% en 1980 a 17.8% en 1990, debido al impulso que recibieron la industria automotriz y de autopartes, siguiéndole las ramas de productos eléctrico y electrónicos.

Gráfico 6
Evolución de las Exportaciones Mexicanas 1970/2005
 (Valores en US\$ millones - FOB)



Fuente: Anuario Estadístico 2006 de la CEPAL

La importancia de la industria maquiladora de exportación radica en que por más de 30 años ha sido una industria altamente generadora de divisas y de empleo. A partir de mediados de los años cincuenta la expansión del sector maquilador respondió a la reestructuración de la industria estadounidense hasta 1982. Posteriormente, entre 1982 y 1993 esta industria fue impulsada por los cambios estructurales que presentó el proceso productivo de las ramas automotriz, electrónica y de la confección en Estados Unidos, que dio lugar a una relocalización geográfica que benefició a las mismas ramas industriales que se instalaron en la zona fronteriza de México con Estados Unidos.

2a. ELECTRÓNICA

a. Breve descripción sector

La industria electrónica en México está conformada por varios sectores: Audio y Video (televisores, chasis, videograbadoras, etc.), Cómputo (PCs, monitores, impresoras), Telecomunicaciones (teléfonos celulares, radios, etc.), Partes y Componentes (incluye electrónica automotriz) y Equipo de Oficina (fotocopiadoras, cajas registradoras, etc.).

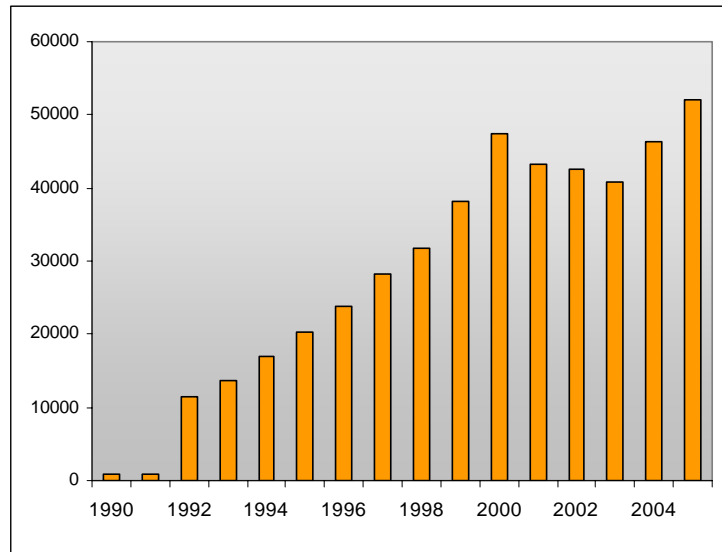
A nivel mundial, la industria electrónica se ha transformado en un sector altamente globalizado y estratégico, ya que su participación en los procesos de producción y contenido de los productos fabricados en otros sectores es cada vez mayor (Secretaría de Economía de México, 2002). Durante la década del '90, el comercio de productos electrónicos mostró el mayor nivel de crecimiento entre los sectores manufactureros, con tasas anuales promedio de 12%. De este modo, en el año 2000 las exportaciones de productos electrónicos representaron el 15% del valor total de las mercancías comerciadas en el mundo (US\$ 1.129 miles de millones).

La industria electrónica se ha constituido como el primer sector exportador en México, con el 30% del total de las exportaciones manufactureras (US\$43.000 millones).

El sector es uno de los mayores empleadores de la economía, con una contribución superior al 9% del total de la industria manufacturera: en el período 1994-2001 generó casi 168.000 empleos.

Entre los años 1990 y 2005, las exportaciones de la industria electrónica en México pasaron de US\$795 millones a US\$52.096 millones, registrando una tasa de crecimiento anual promedio de 32%. Dentro de los principales productos electrónicos exportados se encuentran los televisores a color y el equipo de cómputo (68% de las exportaciones totales), siendo los mayores destinos Estados Unidos, Canadá y Japón.

Gráfico 7
México: Exportaciones de la industria electrónica
(en millones de US\$)



Fuente: Elaboración propia en base a Comtrade - Naciones Unidas

b. Condiciones iniciales

La industria electrónica en México surge durante los años sesenta con la fabricación de productos electrónicos de consumo como radioreceptores, consolas, fonógrafos, aparatos estereofónicos y televisores. Hacia la década del '70 la política de sustitución de importaciones estimula el crecimiento del sector sustentado únicamente en el mercado interno.

En 1986, México se adhiere al GATT. A partir de ese año inicia el desarrollo de un importante sector exportador sustentado principalmente en las maquiladoras (empresas que ensamblan, manufacturan, procesan o reparan materiales temporalmente importados para su posterior envío a su país de origen).

Sumado a la experiencia acumulada por los productores tras las décadas de abastecimiento exclusivo del mercado interno, han ejercido su efecto positivo la coyuntura macroeconómica interna y el contexto internacional del país. Del lado doméstico, luego de la crisis del Tequila en 1995, la economía mexicana se ha caracterizado por una relativa estabilidad macroeconómica (control de la inflación, sostenibilidad fiscal, altos niveles de reservas internacionales, aseguran un ambiente de negocios propicio). A su vez, en el frente externo, la economía americana, principal mercado de exportación de México, ha registrado en la última década uno de los períodos de mayor crecimiento desde la posguerra.

Asimismo, existen condiciones geográficas que favorecen al sector. Por un lado, México cuenta con un "bono demográfico" asociado a la existencia de una población joven (la fuerza laboral tiene una edad promedio de 22 años). Por el otro, la cercanía a Estados Unidos resulta esencial para la entrega de productos justo a tiempo, lo que coloca a México en una situación privilegiada respecto a sus competidores.

Finalmente, diversos tratados comerciales firmados por México en las últimas dos décadas permiten la exportación de los productos fabricados en México bajo tratamientos preferenciales.

c. Hitos

- 1982: La devaluación del peso mexicano derivada de la crisis de deuda significó una fuerte reducción de las importaciones del sector cómputo (que en 1978 alcanzó US\$50 millones anuales). La producción local se reorientó hacia la industria del cómputo.
- 1983: Se desregulariza la Ley de Inversiones Extranjeras.
- 1994: México ingresa al Tratado de Libre Comercio de América del Norte (TLCAN). Se pactó la eliminación a 10 años de todos los aranceles, así como la reducción o eliminación de otras barreras comerciales.
- 1995: Luego de la crisis del Tequila, la subvaluación del tipo de cambio incrementa la rentabilidad del sector.

d. Estructura del sector

Existen más de 1.300 empresas electrónicas en el país. De ese total de empresas, el 56% son maquiladoras, las cuales a su vez generan aproximadamente el 60% de las fuentes de trabajo de la industria electrónica en México.

Asimismo, hay una fuerte presencia de empresas transnacionales. Las mismas se han concentrado en distintas regiones del país, lo que ha permitido el desarrollo de importantes clusters (agrupamientos industriales), en las zonas norte, occidente y centro del país. Por su parte, se ha desarrollado una especialización a nivel regional por tipo de producto, distinguiéndose cuatro grandes agrupamientos por valor de producción: Baja California en la fabricación de equipos de audio y video; Jalisco (Guadalajara) en el segmento de equipo de cómputo y telecomunicaciones; Estado de México en telecomunicaciones y Chihuahua en productos de audio y video.

e. Barreras al Desarrollo Exportador y el Rol del Sector Público

La industria electrónica en México surgió durante los años '60, en el marco del proceso de industrialización por sustitución de importación que caracterizó a varias economías latinoamericanas en la segunda mitad del siglo XX. Así, su marcada orientación mercado-internista sumado a la protección existente frente a las importaciones, generó un ambiente de escasa competencia y como consecuencia de ello, retrasos en la adopción de nuevas tecnologías y bajo desarrollo de fabricantes domésticos de componentes. De este modo, la principal barrera al desarrollo exportador de la industria electrónica mexicana fue la falta de incentivos para elevar la productividad y con ello, incrementar la capacidad de competir con los países productores líderes del sector, especialmente las economías del sudeste asiático.

El Estado Nacional jugó un rol importante en la reestructuración de la industria mexicana, no tanto a través de intervenciones directas para la promoción sino utilizando como herramienta de disciplinamiento e incentivo a mejoras en la productividad la apertura comercial y financiera. En 1986, México se adhiere al Acuerdo General sobre

Aranceles y Comercio (GATT). A partir de ese año, se inicia el desarrollo de un importante sector exportador sustentado principalmente en las maquiladoras¹⁴. Con la entrada en vigor del Tratado de Libre Comercio de América del Norte (TLCAN), en 1994, la industria electrónica mexicana logró el ingreso preferencial al mercado norteamericano, así como el acceso a partes y componentes importados a precios competitivos. Consecuentemente, cobró impulso el crecimiento de las exportaciones. Asimismo, la economía mexicana en la década del '90 atravesó por un proceso de apertura comercial y financiera y desregulación que favorecieron la llegada de inversiones extranjeras y el desarrollo productivo de la "maquila", caracterizada por los elevados niveles de globalización en sus procesos. Así, la eliminación de requisitos de desempeño y de permisos previos para la importación, de los compromisos de integración nacional y de balanza de divisas permitió la importación de insumos, partes y componentes que utilizan las empresas electrónicas.

En el plano impositivo, la principal herramienta diseñada por el gobierno mexicano para mantener la competitividad de la industria ha sido el Programa Sectorial de la Industria Electrónica (PROSEC), implementado en 1998. El mismo consiste en la aplicación de aranceles preferenciales, en su mayoría a tasa cero, sobre los consumos y componentes específicos utilizados por la rama electrónica. La condición que impone el PROSEC para su autorización es que los bienes importados deberán ser exclusivamente utilizados para la fabricación de los ensamblajes y bienes finales electrónicos, igualmente listados en el programa.

2b. AGUACATE

a. Breve descripción del sector

El aguacate se comercializa principalmente como fruta fresca. También poseen diversos usos sus productos derivados, tales como el guacamole, aceites, cosméticos e incluso shampoo.

A nivel mundial, la producción de aguacate alcanzó en el año 2001 US\$2.650 millones. De ese total, 63% se concentraba en 6 países: México, Estados Unidos, Colombia, Indonesia, Chile y República Dominicana.

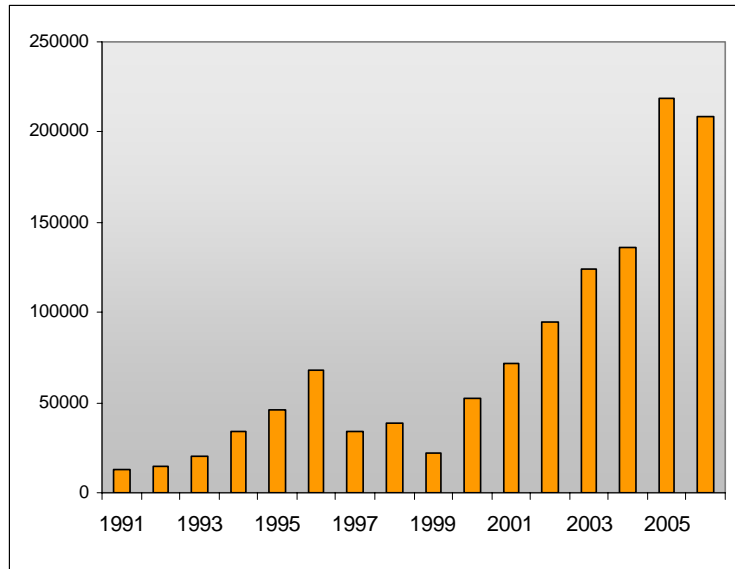
Del lado de la demanda, México es el principal consumidor de aguacate (aproximadamente 817 mil toneladas anuales), seguido por Estados Unidos con 296 mil toneladas anuales. Como resultado del balance entre producción y consumo doméstico, Francia y Estados Unidos son los principales importadores de este fruto, alcanzando compras anuales de 10,5 mil toneladas y 78 mil toneladas respectivamente.

México produce aproximadamente 40% de la oferta mundial de aguacate. Por su parte, desde 1993 es el principal exportador, con ventas externas que representan 10% de su producción (Vega, 2003). A nivel geográfico, el estado de Michoacán produce 85% de la producción mexicana de aguacate.

¹⁴ Las maquiladoras son empresas que importan, bajo régimen temporal, partes y componentes utilizados para el ensamble de productos finales, los cuales son posteriormente exportados.

Las exportaciones mexicanas de aguacate comenzaron a crecer sostenidamente a partir de mediados de los años 80. En 1986, el país exportó apenas 3,8 mil toneladas con un valor aproximado de 2 millones de dólares (FAO). En la década siguiente tuvo lugar un verdadero auge del sector exportador. Entre los años 1991 y 2006, México multiplicó sus exportaciones de aguacate por quince (las ventas externas pasaron de 13,1 mil toneladas a 208,3 mil toneladas).

Gráfico 8
México: Exportaciones de aguacate
 (en toneladas)



Fuente: Elaboración propia en base a Comtrade – Naciones Unidas

b. Condiciones iniciales

El boom del aguacate en México puede atribuirse a diversos factores, entre los que se destacan la introducción de variedades genéticamente modificadas (variedad Hass), el clima y las propiedades del suelo del estado de Michoacán. A nivel macroeconómico, la entrada de país al NAFTA permitió la desregulación y eliminación de tarifas y otras barreras no arancelarias (i.e. las restricciones fitosanitarias) impuestas por Estados Unidos.

Condiciones naturales: El estado mexicano de Michoacán posee los requerimientos bioclimáticos necesarios para la plantación de aguacate: suelo volcánico, tierra rica en sustancias orgánicas, hierro, aluminio y potasio.

Amplio mercado interno: el hecho de que México sea el primer consumidor mundial de aguacate asegura el sostenimiento de los precios para los productores locales.

Complementariedad con el ciclo productivo norteamericano: Mientras que el pico de la temporada productiva en Estados Unidos se da entre los meses de marzo y agosto, la temporada de cosecha en Michoacán tiene lugar principalmente entre los meses de octubre y febrero.

Esta ventaja no pudo ser aprovechada hasta 1997, debido a la prohibición impuesta por Estados Unidos sobre las importaciones de aguacate fresco proveniente de México, vigente desde 1914¹⁵.

c. Hitos

- 1994: Entra en vigencia el NAFTA. Marca un cambio significativo en la relación entre México y Estados Unidos, incrementando la integración económica y dependencia mutua.
- 1997: Se levanta la prohibición de exportación al mercado norteamericano. México y Estados Unidos acuerdan el permiso para que las exportaciones de aguacate desde Michoacán puedan entrar a 19 estados americanos.

El proceso mediante el cual fue superada la prohibición merece un capítulo especial. En numerosas oportunidades en los años 70's, 80's y 90's los productores mexicanos elevaron planes de trabajo para exportar a Estados Unidos, cada uno de los cuales fue rechazado por la APHIS (Servicio de Inspección de la Salud de Plantas y Animales).

En 1994 la APHIS finalmente aceptó uno de los planes de trabajo propuestos y permitió la exportación de aguacate mexicano al estado de Alaska, considerando que su ubicación geográfica eliminaba los potenciales riesgos fitosanitarios. El organismo de control norteamericano continuó verificando las prácticas fitosanitarias mexicanas por los siguientes dos años, hasta que en 1996 aprobó la importación de aguacates mexicanos de aquellas zonas que fuesen previamente certificadas.

Con el fin de desarrollar un programa de certificación de áreas libres de amenazas fitosanitarias, la APHIS sólo trataría con los productores mexicanos agrupados en una institución que los representara, lo que obligó a la creación de la APEAM.

d. Estructura del sector

La mayor parte de las 78.376 hectáreas plantadas con aguacate en el estado de Michoacán se reparten en 27 municipalidades con centro en la ciudad de Uruapán. La región incluye más de 9000 productores, 33 asociaciones agrícolas, 279 centros de envase y 14 firmas de procesamiento (Ramos Novelo 2002, Vega 2003). El 80% de los productores son pequeños, con campos que no exceden 10 hectáreas de superficie. Sólo unos pocos poseen áreas de cultivo de más de 1000 hectáreas (Ardavín et. al, 2004).

Los productores se encuentran nucleados en la Asociación de Productores y Empacadores Exportadores de Aguacate de Michoacán (APEAM). Dicha entidad no sólo reúne a productores y empacadores, sino que también actúa como regulador del mercado, imponiendo cuotas de exportación hacia Estados Unidos con el fin de sostener los precios.

¹⁵ La medida se fundamentó en que el aguacate mexicano no cumplía con los requerimientos fitosanitarios, es decir, dicho producto era portador de insectos y otras plagas características de este tipo de frutos. En consecuencia, los productores de aguacate de California presionaron al gobierno de Estados Unidos en busca de protección.

Luego de la inclusión del sistema de cuotas de la APEAM, el número de firmas exportadoras a Estados Unidos aumentó 24 veces: mientras que en 1997-98 eran 59, en 2003-04 sumaban 1.490 empresas (Ardavín et al., 2004). Junto con el incremento absoluto en el número de exportadores se dio una reducción en la escala productiva media, de 25 hectáreas a 11 en el mismo período de tiempo.

e. Barreras al Desarrollo Exportador y el Rol del Sector Público

Hasta 1997 las exportaciones de aguacate mexicano a los Estados Unidos estuvieron prohibidas, como resultado de una barrera fitosanitaria impuesta en 1914. La justificación radicaba en el miedo al contagio de un insecto típico de dicha fruta “el avocado *seed weevil*” hacia la producción americana, principalmente situada en el estado de California. Dado el tamaño del mercado estadounidense y su cercanía con México, dicha barrera constituía la principal barrera al desarrollo exportador.

El proceso a través del cual Michoacán, principal estado productor de aguacate en México, logró acceder el mercado norteamericano consta de dos componentes principales: la influencia política y la investigación científica. Los productores mexicanos, asesorados por la APHIS –Servicio de Inspección de Plantas y Animales del Departamento de Agricultura de los Estados Unidos- implementaron un plan de eliminación de pestes fitosanitarias y un régimen de inspección, con certificaciones oficiales de calidad. Desde 1990 comenzaron las conversaciones entre los Departamentos de Agricultura de México y Estados Unidos, donde también participaron los entes de control fitosanitario locales. Una vez alcanzados los estándares de calidad requeridos por la APHIS, el gobierno mexicano llevó adelante un fuerte lobby sobre el gobierno de Estados Unidos. Así, en 1997 los productores mexicanos certificados comenzaron a exportar a territorio americano.

El proceso comenzó en 1990, año en que se iniciaron las conversaciones entre el Departamento de Agricultura mexicano (SAGARPA), su par norteamericano –USDA-APHIS- y diversas agencias locales de control fitosanitario. Entre 1990 y 1992 los productores presentaron a la APHIS sus planes de trabajo, hasta que uno de ellos fue aceptado para exportar aguacates a Alaska, ventas que comenzaron a materializarse en 1994. Durante aquellos años, la supervisión de la APHIS hizo posible que dicho organismo vaya ganando confianza sobre la capacidad mexicana para mantener los estándares requeridos. En 1995, la creación del sistema de regulación fitosanitaria permitió que las agencias locales comenzaran a emitir a sus miembros certificados de registro que daban cuenta de que cumplían con todas las exigencias fitosanitarias. Cuatro años más tarde, 59% del total de hectáreas cultivadas exhibían dicha certificación de control. También en ese año se formó la Asociación de Productores y Empacadores Exportadores de Aguacate de Michoacán (APEAM). A tal fin, esta institución recibió un préstamo de Mex\$320.000 de la agencia de desarrollo económico del Estado de Michoacán para financiar sus primeras actividades. Actualmente está constituida por aproximadamente 3,800 productores y 26 empresas empacadoras exportadoras a los E.U. Todos certificados por las autoridades de los E.E.U.U. y México.

La expansión gradual de los cultivos certificados resultó en un crecimiento sostenido de las exportaciones de aguacate mexicano hacia Estados Unidos desde la inauguración del programa en 1997.

3. CHILE

TENDENCIAS DEL SECTOR EXTERNO

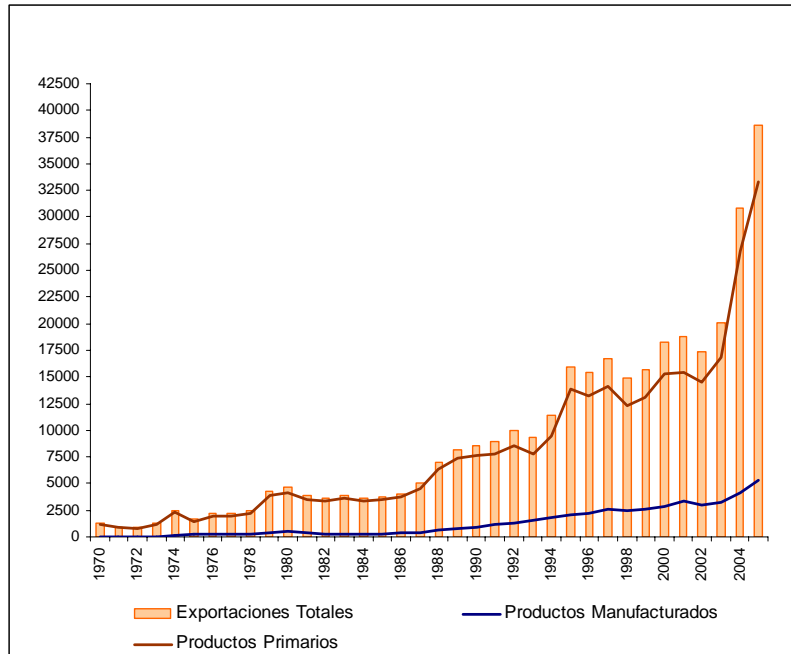
En las últimas décadas del siglo XX el sector externo de la economía chilena se caracterizó por una fuerte expansión y diversificación de sus exportaciones. La mayor diversificación no sólo se puede apreciar porque se redujo la fuerte dependencia de las exportaciones de cobre, que pasaron de representar más del 80% de las exportaciones del país a principios del decenio de 1980 a menos del 40% en la década de 1990, sino también por la creciente introducción de nuevos productos, la apertura de nuevos mercados y la entrada de un número mayor de empresas a los mercados internacionales (Álvarez, 2004).

Entre los diversos factores que han hecho de Chile un caso exitoso de crecimiento exportador, la literatura destaca la liberalización comercial, una fuerte depreciación cambiaria, subsidios a sectores específicos, el rol empresarial del Estado, e incentivos a la inversión extranjera directa con énfasis en sectores donde el país contaba potencialmente con ventajas comparativas.

Entre 1970 y 1989, el número de productos exportados se elevó de 1.200 a 1.490 y en el período 1990-2002 subió de 2.300 a 3.750.1 En cuanto a la apertura de nuevos mercados, se tiene que el número de países de destino de las exportaciones chilenas aumentó de 31 en 1970 a más de 150 en 2002.

Asimismo, las exportaciones de bienes y servicios han liderado el crecimiento económico, mostrando una tendencia ascendente como proporción del PIB y elevándose desde 15% en los setenta a cerca de 30% a comienzos del nuevo siglo (Ffrench-Davis, 2002).

Gráfico 9
Evolución de las Exportaciones Chilenas 1970/2005
 (Valores en US\$ millones - FOB)



Fuente: Anuario Estadístico 2006 de la CEPAL

El dinamismo exportador ha sido el resultado de sucesivas reformas. La liberalización comercial chilena es la más antigua y de aplicación más persistente en América Latina. Aunque los efectos fueron inicialmente favorables (Ffrench-Davis, 2001), hacia 1981 el quantum y el valor de la mayor parte de las exportaciones estaba decreciendo. Superada la crisis de la deuda de 1982 se registró un segundo despegue exportador. El nuevo contexto se caracterizó por la vigencia de un tipo de cambio real depreciado significativamente durante los ochenta y por políticas públicas preactivas. Finalmente, en la década pasada un tercer episodio de dinamismo exportador se vio estimulado por una política más integral, que buscó conjugar los principios de una economía abierta con procesos de integración selectiva hacia algunos socios comerciales estratégicos, particularmente en América Latina; todo esto se desarrolló en un nuevo ambiente, caracterizado por una elevada inversión interna y una creciente productividad general hasta 1998.

3a. VINOS

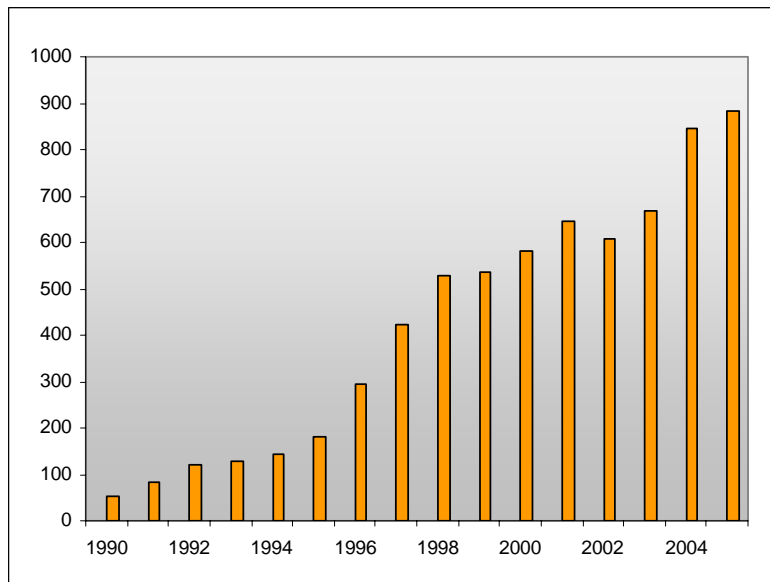
a. Breve descripción del sector

El sector vitivinícola chileno experimentó una gran transformación a partir de fines de los años 80, desde un sector tradicional orientado al mercado doméstico sumido en una profunda crisis, hacia un sector dinámico, tecnológico, orientado principalmente a los mercados externos. Mientras en el año 1990 Chile exportaba tan sólo US\$50 millones en vinos, en el año 2005 las exportaciones rondaban los US\$900 millones. Este verdadero cambio estructural involucró una reorientación en todos los planos: tecnologías de producción, desarrollo de productos, canales de distribución, envases, nuevas empresas productoras y alianzas internacionales. De este modo, se duplicó la superficie plantada,

pasando de 50 mil a poco más de 100 mil hectáreas, y con más de la mitad de la producción orientada a las exportaciones. En ese sentido, la participación de la exportación chilena en el mercado mundial ha aumentado significativamente en los últimos 15 años. Desde una participación de sólo un 0,38% en 1988, hasta alcanzar en el 2003 un 5,45 % del mercado mundial de exportaciones de vino, el quinto lugar después de Francia, Italia, España y Australia. La evolución del precio por botella exportada también ha sido positiva, variando de 1 dólar por botella en 1987 a valores cercanos a los 2 dólares en los últimos cuatro años.

La profunda transformación del sector se ha atribuido a la existencia de una demanda externa por vino fino, al establecimiento de nueva categoría de productos (“nuevo mundo”), y a las fortalezas de Chile en la producción de vinos de calidad. Sin embargo, este desarrollo no ha sido exclusivo de Chile. También en otros países del llamado Nuevo Mundo - Estados Unidos, Australia, Argentina- países de Europa Oriental y también de algunas regiones o de países de Europa Occidental han experimentado un fuerte cambio y desarrollo en los últimos años¹⁶.

Gráfico 10
Chile: Exportaciones de Vinos
(en millones de US\$)



Fuente: Elaboración propia en base a Comtrade - Naciones Unidas

El destino de las exportaciones de vino chileno se reparte en más de 109 países, dentro de los cuales los más importantes son Estados Unidos y Gran Bretaña. Cabe destacar que la distribución de los países de destino de las exportaciones de vino chileno ha variado de forma importante en los últimos 20 años. Latinoamérica, primer mercado de destino en los años 80, hoy sólo representa un 7,1% de las exportaciones, mientras que Europa

¹⁶ “Prospectiva en la Industria del Vino Fino. Competitividad y Desarrollo para Chile 2010”
Edmundo Bordeu S. y Gonzalo Vargas O.

pasó en ese mismo período de un 2% a un 57%. Otros mercados en desarrollo son Asia y Oceanía.

b. Condiciones iniciales¹⁷

Clima y Geografía: Una amplitud térmica muy marcada; ausencia casi total de lluvias en el período estival; amplia diversidad de zonas y condiciones productivas; condiciones sanitarias y ambientales excepcionales que significan una menor presión de plagas y enfermedades, lo que permitiría que Chile tenga la viticultura más limpia del mundo.

Tradicición: Dentro del “Nuevo Mundo”, Chile tiene la industria de vino fino más antigua. Además, la inexistencia de *phyloxera* permite que en Chile se encuentren algunas de las plantaciones más antiguas del mundo, y muchas de las empresas productoras tengan varias generaciones en el negocio. Al igual que las condiciones naturales, Chile posee una fortaleza en su tradición que bien puede ser explotada en diversos mercados, especialmente en aquellos países como los asiáticos que recién comienzan a consumir vinos.

Bajos costos: El menor costo de la mano de obra, en comparación con los principales competidores internacionales, permite que en Chile se aplique prácticas vitícolas con un nivel de sofisticación impensable en la mayoría de los competidores, lo que representa una ventaja en la producción de vinos exclusivos con procesos de tipo artesanal.

Cepas finas: Ningún otro país tiene su producción concentrada en cepas tan finas como Chile, en las variedades más vendidas y que todos quisieran tener.

Contexto económico: La economía chilena es una de las más abiertas del mundo, sin barreras a la exportación ni proteccionismo para las importaciones, al tiempo que posee una serie de tratados de libre comercio firmados en los últimos años con Estados Unidos, la Unión Europea, Corea del Sur, Canadá, México y otros países de Centro y Sudamérica. A su vez, Chile posee instituciones sólidas y estabilidad económica como buenas señales para los inversores.

c. Hitos¹⁸

- Entre 1940 y 1980: Sucesivas crisis vitivinícolas. Impuestos que gravaban la industria vitivinícola, una ley de alcoholes que prohibió la plantación de viñedos y los trasplantes de viñas, la Segunda Guerra Mundial que cerraba la puerta de las importaciones, y la caída interna de los precios de la uva en la década de los años setenta.
- 1974: Derogación de la ley que restringía los viñedos, impulso a la recuperación de la industria
- Década del 80': Crecimiento de la industria gracias a: 1) introducción de nuevas tecnologías en la producción de vino (tanques de acero inoxidable introducidos

¹⁷ En base a “Prospectiva en la Industria del Vino Fino. Competitividad y Desarrollo para Chile 2010” Edmundo Bordeu S. y Gonzalo Vargas O.

¹⁸ En base a Wines of Chile y a Katrina Muller (2004) “Chile Vitivinícola en pocas palabras”, Universidad de Chile

- por Miguel Torres); 2) apertura económica y política de exportaciones; 3) paso del esquema de familias tradicionales propietarias de grandes viñas al de grupos económicos o sociedades anónimas; y 3) retorno a la democracia en 1990.
- Años 90': Consolidación de los vinos chilenos en el mercado internacional, con exportaciones a Europa, Estados Unidos y Asia.

d. Estructura del sector

A pesar de la falta de una mejor articulación entre los sectores que componen la industria del vino, la presencia de algunas pocas empresas grandes y un número mayor de empresas más pequeñas representa una estructura empresarial adecuada para competir. Contrariamente a lo que a veces se sostiene, esta estructura permite que haya empresas con estrategias competitivas complementarias, que en conjunto contribuyen a potenciar la competitividad del país. En rigor, las empresas pequeñas en Chile corresponden a empresas de tamaño medio o grande según los estándares de Europa. No obstante, en comparación con otros países, Chile no tendría un número suficiente de empresas pequeñas orientadas a la producción de las más altas calidades.

En cuanto a las instituciones que agrupan al sector, Chile cuenta con varias asociaciones que apoyan el desarrollo del rubro. Entre ellas, las más importantes son las dos asociaciones de productores de vinos: Chilevid, que agrupa 42 viñas, y Viñas de Chile, entidad que agrupa a 45 viñas responsables del 90% de las exportaciones de vino embotellado y alrededor del 90% del mercado interno. Estas dos asociaciones son representadas en el extranjero (Estados Unidos y Gran Bretaña) por Wines of Chile, fundada en julio de 2002 con el propósito de fortalecer la imagen de Chile y estimular las ventas de vinos finos chilenos en el extranjero. Un papel importante lo ha cumplido ProChile, que es la agencia gubernamental dependiente del Ministerio de Relaciones Exteriores destinada a fomentar las exportaciones chilenas. El SAG (Servicio Agrícola y Ganadero) tiene como objetivo contribuir a garantizar la genuidad e inocuidad de los vinos y bebidas alcohólicas. La Corporación Chilena del Vino es una asociación gremial, orientada a mejorar la cooperación y la competitividad de las empresas vitícolas en todos los ámbitos productivos, siendo una de sus principales funciones la de representar al sector vitivinícola en aspectos técnicos ante instituciones gubernamentales y privadas. Las universidades que forman a los enólogos chilenos y que llevan a cabo la investigación relacionada son, indiscutiblemente, la Universidad de Chile (Departamento de Agroindustria y Enología de la Facultad de Ciencias Agronómicas), la Universidad de Talca, ubicada en la zona de mayor producción de vinos de Chile, y la Pontificia Universidad Católica de Chile.

e. Barreras al Desarrollo Exportador y el Rol del Sector Público

Antes de los años 80 el sector estaba orientado al mercado doméstico y en una profunda crisis. Había impuestos que gravaban la industria vitivinícola y una ley de alcoholes que prohibió plantación de viñedos y los trasplantes de viñas. Estas restricciones fueron derogadas y eliminadas a partir de 1974, lo que dio un fuerte impulso al sector. En cuanto a las políticas públicas, la apertura económica y política pro exportadora beneficiaron profundamente todas las exportaciones de Chile y también a este sector. Algunas firmas aseguran que un factor importante en la promoción de exportaciones de

vinos entre mediados de los 80 y mediados de los 90 fue la recesión y la fuerte depreciación del peso (resultado de la crisis financiera y de balance de pagos de 1982-83), lo que permitió a los productores comprar tierras a bajo precio. (Agosin y Bravo-Ortega 2006)

A su vez, con el objetivo de impulsar un mayor desarrollo de tecnología, el sector se vio beneficiado por un programa de gobierno de transferencia de tecnología dirigido al sector agrícola en general (para favorecer links con instituciones como el Instituto Nacional de Investigación Agropecuaria). Por otro lado, en 1990 la Corporación de Fomento de la Producción (CORFO, organismo estatal creado en 1939 encargado de promover el desarrollo productivo nacional) inició la creación de Centros de Desarrollo Empresarial. ChileVid y la Corporación de Viñas de Chile, dos consorcios empresariales que reúnen distintas empresas, fueron creados con el apoyo de CORFO y de gran importancia como proveedores de bienes públicos para la industria. A su vez, estas asociaciones son el link principal entre la política del gobierno y la industria, y jugaron un rol principal en lograr que el vino chileno siga los requerimientos de los mercados externos y también en ubicar el producto en ferias internacionales. Luego, estas actividades fueron transferidas a la nueva entidad creada conjuntamente por la Coporación de Viñas de Chile y ChileVID: Wines of Chile. Institución fundada en julio de 2002 con el propósito de fortalecer la imagen de Chile y estimular las ventas de vinos finos chilenos en el extranjero. Este cuerpo representa a 90 vinerías chilenas y cuenta con oficinas en Santiago de Chile y Londres. (Agosin y Bravo-Ortega 2006)

Por otro lado, la CORFO patrocina actividades de I+D que lleven a cabo en forma conjunta asociaciones de negocios y universidades. Las actividades incluyen la investigación en los gustos del consumidor ya diversas formas de mejorar los vinos.

A su vez, ProChile agencia del gobierno encargada de fomentar las exportaciones, ha jugado un papel de apoyo constante al sector y ha impulsado la exportación de vinos mediante la organización de eventos promocionales de los vinos chilenos en el exterior. Ésta agencia pertenece a la Dirección General de Relaciones Económicas Internacionales del Ministerio de Relaciones Exteriores de Chile, y desarrolla tareas con el fin de profundizar y proyectar la política comercial del país. En ese sentido trabaja en el apoyo a la pequeña y mediana empresa en su proceso de internacionalización; el aprovechamiento de las oportunidades que generan los Acuerdos Comerciales que tiene el país; la asociatividad público-privada y el posicionamiento de la imagen de Chile en otros mercados.

Finalmente, en cuanto a la calidad de los vinos, el Servicio Agrícola y Ganadero contribuye a garantizar la calidad de los vinos y bebidas alcohólicas.

3b. SALMÓN

a. Breve descripción del sector¹⁹

La industria del cultivo del salmón en Chile ha tenido un crecimiento notable. En el año 2005 se exportaron US\$1.721,5 millones de productos derivados del salmón, una cifra

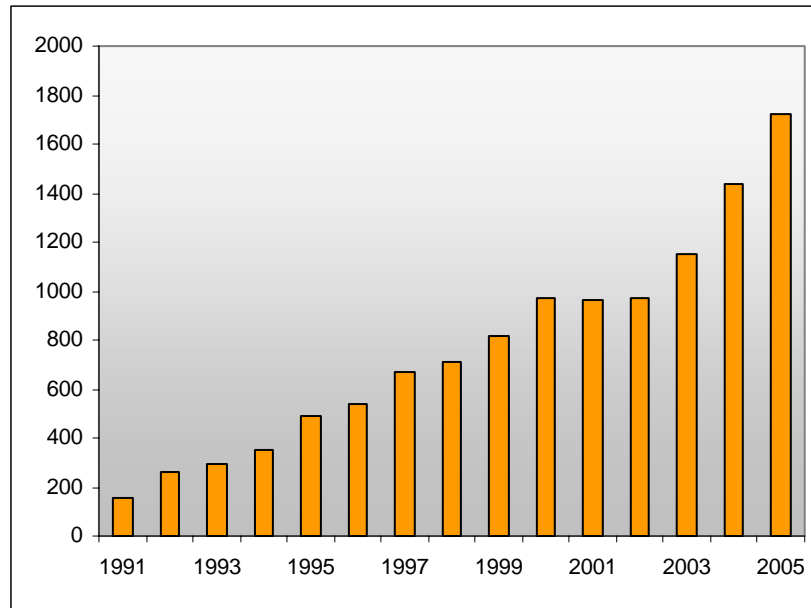
¹⁹ En base a "Informe Económico Salmonicultura 2005" Jorge Quiroz y Consultores Asociados.

20% superior a las registradas en el año 2004 y cinco veces mayor a los US\$348,7 millones que se exportaron en 1994. En la actualidad, la salmonicultura es el cuarto sector exportador del país, genera más de 45.000 empleos directos e indirectos, y es el segundo productor de salmónes en el mundo superado sólo por Noruega. El sector se ha constituido en un pilar importante de la diversificación económica nacional y en uno de las bases fundamentales de la estrategia orientada a convertir a Chile en una potencia alimentaria. En los últimos diez años, la importancia relativa de la salmonicultura en la canasta exportadora ha aumentado significativamente. Las exportaciones acumuladas de salmón y Trucha han superado los US\$ 10.400 millones durante el período 1995-2005. En el 2005 este sector representó un 9% de las exportaciones no mineras y un 4,5% de las exportaciones totales del país.

Al comparar a la salmonicultura con otros sectores exportadores chilenos, que igualmente han tenido un rol muy importante en el desempeño exportador del país durante la última década, se ve que su desempeño relativo ha sido superior. Tal es el caso al comparar con las exportaciones de los sectores agroalimentario, exportaciones no mineras y exportaciones de celulosa. Las exportaciones de salmón registran crecimientos que son superiores en un 70%, respecto a las exportaciones no mineras y a las agroalimentarias, y en un 90% respecto de las exportaciones de celulosa.

Los principales destinos de las exportaciones de Chile en 2005 fueron Japón, Estados Unidos y la Unión Europea, con un 37,1%, 35,2% y 13,7% de los envíos respectivamente. El resto de los destinos, Asia sin Japón y América Latina, representan el 6,4% y 5,1% respectivamente. En cuanto a los productos, Chile exporta básicamente tres especies de salmón: Atlántico, Coho y Trucha, con el 59,7%; 20,5% y 19,5% de los envíos respectivamente. Para el año 2005 el salmón atlántico representó el 98,7% de las ventas de salmón a Estados Unidos y el 96,1% a la Unión Europea. Por otro lado, las exportaciones de salmón a Japón se dividieron entre trucha (41,1%) y salmón coho (49,6%).

Gráfico 11
Chile: Exportaciones de salmón y trucha
(en millones de US\$)



Fuente: Elaboración propia en base a SalmonChile

El notable crecimiento de las exportaciones de Chile de salmón de la última década se ha concentrado de manera creciente en productos de mayor valor agregado como el filete y steak. Estos incrementaron su importancia relativa en el total de exportaciones de salmón desde un 15% en 1994 a un 57% en 2005. En ese año la Unión Europea concentró el 32,2% de las exportaciones de steak. Los filetes, por su parte, tienen como principal destino a Estados Unidos con el 57,1% de los envíos totales.

Tabla 3
Chile: Exportaciones de salmón por tipo de producto

Especie	1994	2005
Exportaciones Totales	100%	100%
Entero	19,20%	8,40%
HG	55,40%	33,20%
Filetes	14,60%	43,50%
Steak	0,70%	13,60%
Otros	10,10%	1,40%

Fuente: SalmonChile

b. Condiciones iniciales

Estabilidad y apertura económica: La buena *performance*, estabilidad y apertura de la economía chilena favoreció el desarrollo exportador del sector del salmón.

Favorables condiciones naturales: Las Regiones X y XI de Chile gozan de excelentes condiciones naturales para la producción de salmónidos. La costa es protegida y las aguas tienen una profundidad adecuada. Las temperaturas de las aguas aseguran un

buen crecimiento durante el año y las corrientes de las mareas permiten la renovación necesaria del agua.

Tradición de la industria pesquera: Chile es una nación pesquera estabilizada y la mayoría de las materias primas necesarias para la producción de alimentos para peces, como la harina de pescado y aceite de pescado, se obtienen fácilmente. La tradición de procesamiento de pescado, junto con una mano de obra estable y capacitada, ha favorecido el rápido desarrollo de la industria procesadora de salmón y la iniciativa de los inversionistas y gerentes chilenos y extranjeros ha expandido la industria rápidamente.²⁰

c. Hitos²¹

- 1921: Los primeros salmones (coho o plateado) llegaron a Chile gracias al Instituto de Fomento Pesquero (IFOP).
- 1974: Se inicia el cultivo de trucha arco iris con fines netamente comerciales para consumo nacional y exportación. Una de las primeras iniciativas privadas y origen del giro radical que daría la salmonicultura en Chile.
- 1976: Se da la construcción de las dos primeras jaulas para alevines y la llegada de 500 mil ovas de salmón Coho.
- 1977: Se inició un cultivo de circuito abierto y se liberaron más de 200 mil alevines de salmón Coho en el lago Popetán y 170 mil alevines de salmón Chinook en Curaco de Vélez (X región).
- 1978: El aporte del Estado se hizo más importante con la creación de la Subsecretaría de Pesca y el Servicio Nacional de Pesca.
- Entre 1978 y 1980: Se desarrollaron una serie de iniciativas privadas y se crearon distintas empresas dedicadas exclusivamente a la salmonicultura.
- 1985: Existían en Chile 36 centros de cultivo operando y la producción total llegaba a más de 1.200 toneladas.
- 1986: Comienza el auge de la industria salmonicultora. La producción superaba las 2.100 toneladas anuales. Nace la Asociación de Productores de Salmón y Trucha de Chile A.G (hoy SalmonChile²²)
- 1990: Se comenzó a desarrollar reproducción en Chile y se obtuvieron las primeras Ovas nacionales de salmón Coho (primer adelanto científico chileno y punto de partida para el despegue definitivo de la industria). Desde este momento se realizaron las mejoras más importantes en los alimentos para salmones. El aumento de los volúmenes permitió la profesionalización de la industria, incorporando los alimentos secos con crecientes contenidos de lípidos, y un balance más eficiente entre éstos y las proteínas. Junto con las mejoras en los procesos de alimentación, la industria avanzó en otras técnicas de cultivo.

²⁰ "La Acuicultura en Chile" Dr. Richard Luco, Oscar Proessel, Roberto Bahamonde, y a datos de SalmonChile.

²¹ En base a "La Acuicultura en Chile" Dr. Richard Luco, Oscar Proessel, Roberto Bahamonde, y a datos de SalmonChile.

²² Cuyo principal objetivo ha sido generar un sello de calidad para la producción y promoción del salmón chileno en los mercados mundiales.

- 1998: Se da un complicado momento a nivel global debido a la crisis asiática, que hizo caer los precios en Japón, y resultó en una sobreproducción a nivel mundial. Sin embargo la industria Chilena pudo sobrellevar el problema y seguir aumentando su producción.

d. Estructura del sector

Los trabajos que han estudiado este sector²³ concuerdan en que existe suficiente evidencia para sostener que la industria del salmón chilena cumple con gran parte de los atributos de un cluster, según la visión de Porter. Uno de los factores constituyentes más significativos de este cluster es la aparición de importantes redes asociativas luego de esfuerzos colectivos en torno a la estandarización de la calidad de procesos. Por un lado, la Asociación de la Industria del Salmón de Chile A.G. (SalmonChile), instancia que agrupa a 72, entre productores y proveedores, y su instituto tecnológico (INTESAL). A ella, se suman asociaciones más especializadas como la Asociación de Armadores Marítimos (ARASEMAR), la Asociación de Talleres de Redes (ATARED), la Asociación de Empresas de Buceo (ADEB) y la Asociación de Laboratorios Veterinarios (ALAVET). Es posible que uno de los factores determinantes de la asociatividad e innovación en la industria sea el carácter integrado de las empresas pioneras, a partir de las cuales emigraron profesionales y técnicos para desarrollar empresas de servicios. Esto y la proximidad física de los diversos actores facilitaron la interacción y construcción de esfuerzos asociativos²⁴.

En los últimos diez años, Chile se benefició naturalmente de la transferencia de experiencia y tecnología, principalmente de Escandinavia. Sin embargo, durante el mismo período, se desarrolló una eficiente industria local de suministros y servicios. La industria se está consolidando rápidamente, ya que esta veloz expansión requiere de compañías más grandes. Hay aproximadamente 48 compañías que participan en la industria de cultivo de salmónes en Chile. Actualmente, diez de estas compañías producen más el 50% de la producción total de Chile. Por otra parte, hay grandes firmas extranjeras presentes en el país, como Nutreco, con su empresa Marine Harvest, Statkorn con Mainstream, The Western Group con Fiordo Blanco, Nipon Suisan con Salmónes Antártica y, más recientemente, Fjord Seafood con Salmoamérica y Tecmar. Las compañías chilenas más grandes son Pacífico Sur, Compañía Pesquera Camanchaca, Salmónes Multiexport, Salmónes Unimarc, Invertec Pesquera Mar de Chiloé y Aguas Claras, todas con una producción sobre las 10 mil toneladas cada una.²⁵

A su vez, generalmente las empresas salmonicultoras chilenas tienen una estructura vertical, con instalaciones de engorde, cosecha, procesamiento y comercialización, en incluso algunas producen su propio alimento. Esta estructura es consecuencia de la carencia de la infraestructura local que había en los inicios, lo que obligó a la industria

²³ Ulloa (2006); Pietrobelli y Rabelotti (2005); Torres (2006)

²⁴ "Desafíos en la Consolidación del Cluster del Salmón Chileno: Contribución del Programa Territorial Integrado" Felipe Bañados y Adolfo Alvial

²⁵ "La Acuicultura en Chile" Dr. Richard Luco, Oscar Proessel, Roberto Bahamonde, y a datos de SalmonChile

joven a ser prácticamente autosuficiente. En la actualidad, sin embargo, la estructura vertical de la industria asegura una buena planificación, coordinación y eficiencia.²⁶

e. Barreras al Desarrollo Exportador y el Rol del Sector Público

Las variaciones de los precios internacionales, el incremento de los costos por diversas causas, el incremento de las exigencias y de las normas de calidad de distintos mercados son algunos factores que dificultan el comercio de este producto. Por otro lado, iniciativas ecologistas que buscan regulaciones ambientales y tributos de compensación a posibles daños, afectan la imagen y las proyecciones de la acuicultura.

Por otro lado, debido a la necesidad de contribuir al desarrollo del sector e impulsar la iniciativa privada en 1978 el gobierno crea la Subsecretaría de Pesca y el Servicio Nacional de Pesca. A su vez políticas generales de fomento de las exportaciones también tuvieron un impacto positivo en esta actividad, así también como políticas sectoriales y normativas que buscan el desarrollo racional y la administración de los recursos naturales involucrados en la acuicultura, la protección del medio ambiente, la prevención y tratamiento de enfermedades de alto riesgo y otros aspectos reglamentarios.

Debido a que la investigación en el área no era suficiente, en 1995 fue creado el Instituto del Salmón, con el aporte de la industria salmonera y del Estado de Chile, a través de un Fondo de Transferencia Tecnológica de la Corporación de Fomento de la Producción. El objetivo era desarrollar un centro de investigación científica para proveer de avances y tecnología a la industria del salmón de Chile. También hubo contribuciones al desarrollo tecnológico, la competitividad y la innovación de entidades de investigación (Fundación Chile, Instituto de Fomento Pesquero) y de las unidades académicas y centro universitarias especializadas en Ciencias del Mar.

El año 2005 marcó un hito en cuanto a investigación y desarrollo en acuicultura, con la creación de un Programa Territorial Integrado denominado “Fortalecimiento del Cluster del Salmón en la Zona Austral de Chile” (PTI Cluster Salmón), que constituye una instancia de coordinación público-privada financiada por CORFO (Corporación de Fomento) y dirigida por INTESAL (Instituto Tecnológico del Salmón). Con esto se busca canalizar mayores recursos hacia la I+D vinculada al sector acuícola y enfrentar diversos desafíos productivos que aún están pendientes. Su objetivo es proponer y generar alternativas de solución para aquellos puntos críticos de la cadena de valor que afectan a la competitividad de la industria²⁷.

4. BRASIL

TENDENCIAS DEL SECTOR EXTERNO

En la amplia perspectiva histórica de más de cincuenta años, los cambios experimentados por la economía brasileña han significado la transición desde la política

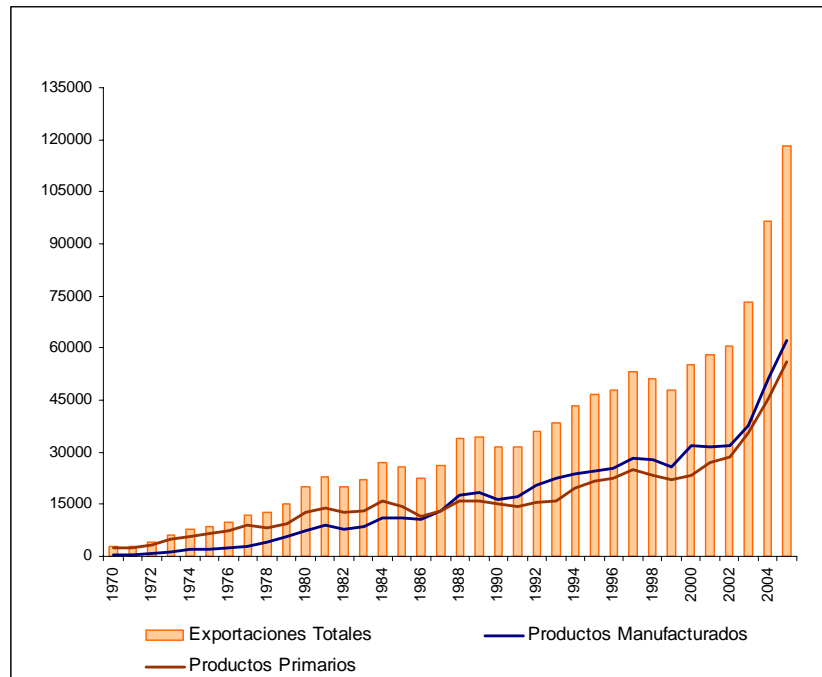
²⁶ *Idem*

²⁷ “Informe Económico Salmonicultura 2005” (Jorge Quiroz y Consultores Asociados).

de sustitución de las importaciones (política nacionalista), llevada a cabo desde los años 40 hasta los 70 del pasado siglo, hacia un largo y complejo proceso de liberalización, iniciado hacia finales de los años 70 y que todavía hoy está vigente en Brasil en el marco de un proceso de integración regional (Bressiani et. al. 2004).

Las exportaciones brasileñas se han incrementado de manera sostenida en el transcurso del las cinco décadas analizadas (ver Gráfico).

Gráfico 12
Evolución de las Exportaciones Brasileñas 1970/2005
 (Valores en US\$ millones - FOB)



Fuente: Anuario Estadístico 2006 de la CEPAL

En el período dictatorial (1964-85), la tendencia se mantuvo constante, observándose oscilaciones en el período de transición. Entre los años 92 y 97 se produjo un acentuado crecimiento, que se ve truncado por la crisis asiática. Pasado un período de inestabilidad entre 1997 y 1999, año de la devaluación de la moneda brasileña, se observa un incremento exponencial en los últimos años, resultado de políticas de estímulo a las exportaciones.

Respecto a la composición de la canasta exportadora, hasta 1977 Brasil podía considerarse un país predominantemente exportador de productos primarios y, en consecuencia, con un patrón de comercio exterior similar al de los países en vías de desarrollo. A partir de ese momento las exportaciones brasileñas comienzan a estar compuestas, mayoritariamente, de productos manufacturados, lo que significa que se acrecienta, aunque muy lentamente, la integración de Brasil en la economía mundial. Ahora bien, incluso en la actualidad, la estructura de las exportaciones brasileñas está lejos de asimilarse a las de los países desarrollados, en los que las exportaciones de

productos manufacturados, incluidas las semimanufacturas, se aproxima al 80 por 100 de las exportaciones.

4a. AVIONES

a. Breve descripción del sector

La industria aeronáutica brasilera se concentra en segmentos específicos del mercado: comercial, defensa y aviación ejecutiva.

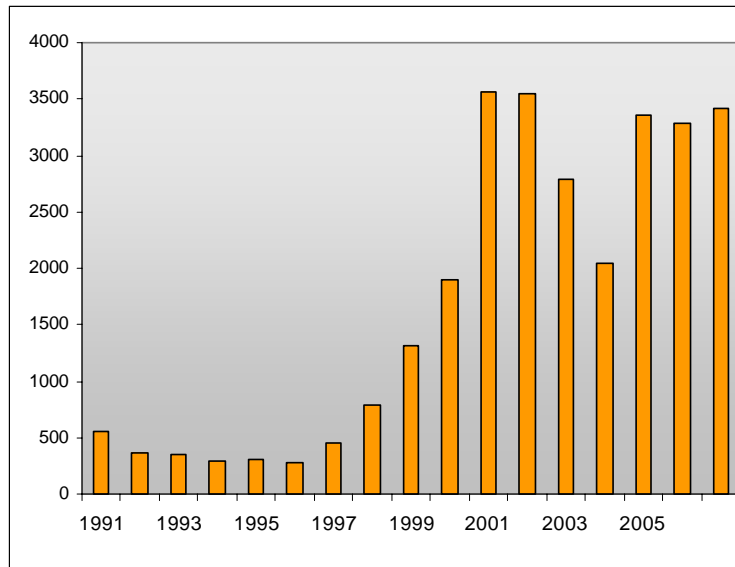
A nivel global, el mercado mundial de aviones y partes presenta la característica de estar organizado como un oligopolio (es decir, existen pocas y grandes empresas), la mayor parte de las cuales se establecieron hacia el final de la Primera Guerra Mundial. La Empresa Brasileira de Aeronáutica S.A. (Embraer) pelea en la actualidad por el tercer puesto entre los mayores productores de aviones comerciales del mundo junto con la canadiense Bombardier, en un mercado dominado por las firmas americanas y europeas (Boeing y Airbus principalmente).

Para tener una idea de la importancia de la industria en la economía brasilera, la misma emplea alrededor de 21.000 personas y genera 5.000 puestos más indirectamente (Embraer, 2007).

En materia de desempeño internacional, la industria aérea brasilera comenzó a exportar en la segunda mitad de la década del '70, creciendo progresivamente hasta alcanzar un pico de \$500 millones en 1989. Por su parte, luego de la privatización de la empresa estatal Embraer, las exportaciones comenzaron a crecer aceleradamente. En efecto, desde el pico de finales de los años '80, las ventas externas de aviones y partes se multiplicaron por siete, alcanzando la cifra de US\$3.417 millones en 2006 (Comtrade). De este modo, actualmente las exportaciones dan cuenta del 90% de las ventas totales de EMBRAER.

Entre los principales destinos de exportación, Estados Unidos ha sido históricamente el mayor mercado: en la actualidad, da cuenta del 71% de las ventas de aviones y partes brasileras (alrededor de US\$ 2.050 millones). En orden decreciente de importancia le siguen Canadá (5,1%), México (3,2%) y Suecia (3,1%) (Bonelli et. al, 2006).

Gráfico 13
Brasil - Exportaciones de aviones, partes y componentes
(en millones de US\$)



Fuente: Elaboración propia en base a Comtrade - Naciones Unidas

b. Condiciones iniciales

La industria aeronáutica en Brasil encuentra su origen en el establecimiento del Centro Tecnológico Aeroespacial en 1946 y el Instituto Tecnológico de Aeronáutica en 1950. Asimismo, en 1954 se creó el Instituto de Investigación y Desarrollo (IPD) con el objetivo de impulsar estudios para la producción de aviones.

En 1969, el gobierno militar, decide crear la empresa EMBRAER, alegando que, por razones de seguridad nacional, Brasil no podía depender de la importación de aviones y partes, ni debía librar la producción doméstica al control de compañías extranjeras (Goldstein, 2002).

Desde el comienzo, la compañía busco la cooperación de socios extranjeros, facilitando la transmisión de tecnología y penetración a nuevos mercados.

Por su parte, la EMBRAER ha tenido la habilidad para identificar diversos nichos en el mercado internacional. Por citar un ejemplo, a comienzos de los años '80, cuando la tendencia a nivel mundial apuntaba a la construcción de grande aeronaves (con el fin de explotar las economías de escala existentes), EMBRAER introdujo el modelo "Bandeirante", un avión pequeño de 15 asientos que se emplea en la aviación civil. Su tamaño y costo lo hicieron adecuado para operar en el marco de la aviación regional (en ciudades de tamaño medio con aeropuertos que presentan escasa infraestructura).

En 1994 la firma es privatizada. Entre las causas del cambio de propiedad de manos públicas a privadas, se destacan la contracción del mercado mundial de aviones (producto de la recesión global de finales de los años '80 y comienzos de la década del '90) y la interrupción de los subsidios y esquemas de beneficios a la exportación que

venía otorgándole el gobierno nacional, especialmente a través del FINEX (Golstein, 2002).

c. Hitos

- 1969: El estado brasileño crea la Empresa Embraer.
- 1981: Embraer gana su primera gran licitación internacional, logrando un contrato con el Ministerio de Defensa francés para la venta de 41 aviones “Xingu”.
- 1994: Luego de la privatización de Embraer en este año, comienza el despegue de las exportaciones de aviones y partes de Brasil.
- 1996: Embraer alcanza la certificación ISO 9001. Desde 2002 también posee certificación ISO 14001 y OHSAS 18001, siendo la primera empresa de aviación en alcanzar dicho status en estándares de calidad internacionales.

d. Estructura del sector

El sector está conformado por más de 320 compañías, la mayor parte de las cuales están ubicadas en la región sur del país (Bonelli, et al, 2006). Entre ellas, se destaca especialmente la empresa EMBRAER (Empresa Brasileira de Aeronáutica), quien se encuentra entre las dos mayores firmas exportadoras de Brasil en los últimos 8 años. La misma cuenta con sus oficinas centrales y plantas industriales en el estado de San Pablo. Asimismo, la empresa cotiza en las bolsas de Nueva York y San Pablo.

e. Barreras al Desarrollo Exportador y el Rol del Sector Público

Mientras fue pública, el presupuesto de la empresa Embraer estuvo condicionado a la salud de las cuentas fiscales del estado brasileño. Así, durante la segunda mitad del siglo XX, la industria aeronáutica se favoreció de numerosas políticas públicas. En 1946 se establece el Centro Tecnológico Aeroespacial y cuatro años más tarde el Instituto Tecnológico de Aeronáutica. Asimismo, en 1954 se creó el Instituto de Investigación y Desarrollo (IPD) con el objetivo de impulsar estudios para la producción de aviones. Por su parte, las Fuerzas Armadas locales garantizaban una demanda estable para la producción de la empresa (hacia 1980 demandaban cerca de un tercio de la producción de aviones de EMBRAER). Asimismo, las compañías productoras de armamento se encontraban exentas de tarifas a la importación de insumos, y en el caso de EMBRAER, tampoco pagaba otros impuestos ligados a la producción y a las ventas externas. Además, las compañías brasileñas que compraban acciones de la empresa aeronáutica obtenían un reembolso de 1% del impuesto a las ganancias corporativas. Adicionalmente, los aviones y partes importados que competían con la industria local debían soportar tarifas de 50%. Finalmente, en materia de financiamiento, el Banco Nacional de Desarrollo (BNDES) otorgaba crédito a los potenciales clientes de EMBRAER, y la empresa también se beneficiaba del Fondo de Financiamiento a la Exportación (FINEX).

Sin embargo, hacia mediados de los años '80, los cimientos sobre los que se basaba el éxito de la industria aeronáutica brasileña comenzaron a debilitarse. Por un lado, se eliminó el Fondo de Financiamiento de Exportaciones (FINEX) como respuesta a una economía brasileña inmersa en una recesión, sumado a un mercado internacional de aeronaves estancado y algunos proyectos que no tuvieron el éxito esperado -tal es el

caso de la fabricación del CBA-123-, devino en una trayectoria explosiva de la deuda de la empresa. Así, la privatización llevada a cabo en 1994 respondió más a problemas financieros propios de la empresa y a un estado ausente para ayudarla que a la convicción de que siendo privada, la misma aumentaría su eficiencia. Más allá del caso particular de Embraer, la privatización de empresas públicas fue un proceso que se generalizó a la mayor parte de los países latinoamericanos en la década del '90.

La recuperación de Embraer luego de su privatización obedeció en buena medida a las acciones implementadas por la nueva administración, que combinó el núcleo de actividades que la firma venía teniendo mientras era de propiedad pública con las "señales de negocios que emitía el mercado". El cambio de propiedad liberó a la empresa de numerosas regulaciones que tenían que obedecer todas las empresas públicas brasileñas. Por ejemplo, el financiamiento de proyectos debía ser aprobado por el Senado, en un proceso que podía durar hasta un año.

Sin embargo, la asistencia del sector público no finalizó una vez que la empresa pasó a manos privadas. Instituciones como el Banco Nacional de Desarrollo brasileño (BNDES) y la Financiadora de Estudios y Proyectos (FINEP), dependiente del Ministerio de Ciencia y Técnica, apoyaron financieramente la elaboración de diversos proyectos. Adicionalmente, Embraer ha sido uno de los mayores beneficiarios del Programa de Desarrollo Tecnológico-Industrial (PDTI), una herramienta horizontal que brinda beneficios fiscales, recibiendo entre 1993 y 2000 alrededor de R\$ 142 millones en concepto de subsidios (Goldstein, 2002).

Por su parte, el gobierno brasileño ha intervenido en el escenario internacional para favorecer a la empresa. En efecto, Embraer y la canadiense Bombardier se disputan el tercer lugar entre las firmas productoras de aeronaves, y dicha rivalidad se materializa en las negociaciones comerciales, especialmente en el terreno de las rondas organizadas por la Organización Mundial del Comercio (OMC).

5. URUGUAY

TENDENCIAS DEL SECTOR EXTERNO

Cuando el régimen militar uruguayo tomó el poder en 1973, se encontró con una economía estancada y que experimentaba incipientes presiones inflacionarias. En este contexto, el gobierno reestructuró la economía, en base a dos pilares: la apertura y liberalización. El combate de la inflación, esencialmente a partir del manejo de variables cambiaras, fue el objetivo que se priorizó a partir de 1978 (Sanguinetti y Azar, 2001). La reducción de las tarifas²⁸ se tradujo en un incentivo a las exportaciones. Las medidas orientadas al incentivo del sector exportador se basaron en reintegros a las exportaciones, créditos promocionales, exoneraciones fiscales, que junto al descenso de los salarios

²⁸ A fines de 1978 se introdujo un cronograma para la unificación de los aranceles en una tarifa global, que convergería desde un máximo de 150% en 1979 a 35% en 1985

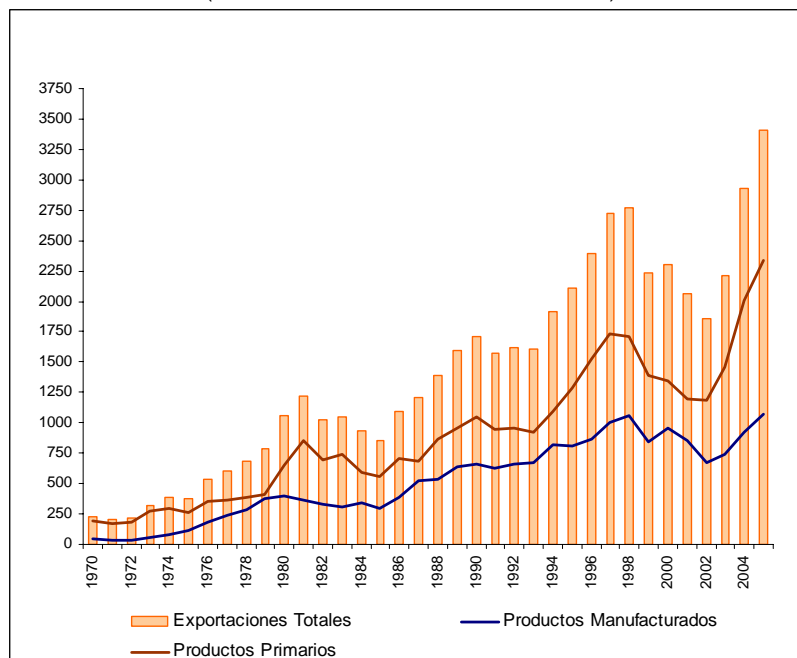
reales y de los aportes patronales a la seguridad social se constituyeron en un verdadero fomento al comercio exterior.

Paralelamente al proceso de apertura global, se intensificaron las relaciones comerciales de Uruguay con Argentina y Brasil. En este marco, se firmó el Convenio Argentino-Uruguayo de Cooperación Económica (CAUCE) en 1975, y el Protocolo de Expansión Comercial (PEC) con Brasil en 1976. Ambos convenios supusieron la eliminación de barreras no arancelarias y la reducción recíproca de aranceles para un conjunto de productos negociados.

Los años '80 estuvieron marcados por una fuerte volatilidad macroeconómica -al igual que en el resto de la región-, fenómeno que afectó particularmente a Uruguay cuyas exportaciones históricamente se han dirigido especialmente a los países vecinos. En efecto, en los últimos 20 años Brasil y Argentina constituyen respectivamente el primer y tercer destino de las exportaciones uruguayas. En el primer caso, Uruguay ha colocado 21,8% de sus ventas al exterior, mientras que en el caso argentino, el valor exportado alcanza 10,9% del total.

Desde comienzos de la década del '90 los sucesivos gobiernos intentaron liberalizar el comercio, proceso que sin embargo no se tradujo en una diversificación de la canasta exportadora: Uruguay es aún fuertemente dependiente de unas pocas commodities exportables tradicionales (arroz, carne, cuero y madera). En relación al primero de estos productos, el valor de las exportaciones representó 5,1% del total exportado en 2006.

Gráfico 14
Evolución de las Exportaciones Uruguayas 1970/2005
(Valores en US\$ millones - FOB)



Fuente: Anuario Estadístico 2006 de la CEPAL

Por su parte, con la reducción de tarifas en la década pasada el sector manufacturero sufrió la competencia internacional; su participación en el PIB pasó de 28% en 1990 a tan sólo 16,9% en 2001. Sin embargo, desde el año 2003 el sector comenzó a recuperarse, liderado por las ramas productoras de bebidas y tabaco, industria química, productos metálicos, maquinaria y equipo.

5a. CAVIAR Y ESTURIÓN

a. Breve descripción sector

El más refinado y caro es el elaborado a partir de las diferentes especies de esturiones del Mar Caspio, en la costa iraní. Normalmente, en el Caspio se pesca el esturión para extraer el caviar dos veces al año: en otoño (octubre) y en primavera, generalmente en abril y mayo. Irán y Rusia han controlado su producción de caviar en los últimos años, pero no así el resto de países productores, que han llevado al borde de la extinción al esturión. Hay que tener en cuenta que un esturión sevruga tarda unos 10 años en alcanzar su madurez sexual, y una beluga, al menos 15. Hay tres tipos de caviar, que reciben el nombre de la variedad de esturión de la que proceden:

Beluga. Es un caviar de huevas grandes de color gris claro, negras, frágiles y bien separadas. Es el más caro.

Asetra u Oscietra. Caviar de huevas de menor tamaño que el anterior, de color amarillo-dorado, tirando a marrón, de sabor afrutado. Este caviar es un poco más barato que el anterior.

Sevruga. Es el más pequeño y, generalmente, el más oscuro y de textura cremosa. Este caviar es el más abundante y menos caro.

Según un estudio de la Universidad de la República²⁹, el esturión se encuentra dentro de la categoría de “acuicultura empresarialmente rentable”. Este tipo de acuicultura supone cultivos intensivos, con alta inversión y con previsible alta rentabilidad. En ese sentido, el esturión cuenta con un alto precio de venta, buenos mercados y con una tecnología de cultivo desarrollada, lo que resulta en excelentes perspectivas de rentabilidad. En el mismo estudio se destaca que el esturión es una especie muy rústica de clima templado/frío. Si bien soporta temperaturas desde 0 a 26 °C, el óptimo de crecimiento estaría entre 16 a 22 °C y el óptimo de maduración entre 12 a 16 °C. Su alimento natural durante el primer año de vida son larvas³⁰, siendo su hábito de alimentación nocturno. Los reproductores maduran a los 4 años los machos y a los 6 a 8 años las hembras. El alevinaje se puede hacer en estanques de 0,2 a 0,5 ha a una densidad de 30 peces/m² o en tanques con circulación de agua a 300 peces/m². Generalmente las hembras (que tienen más valor por la producción de caviar) se crían en jaulas o *raceways*, mientras que los machos (que se venden para consumo de la carne) son criados en jaulas o estanques. En estanques se siembran unos 10000 peces/ha el primer año, hasta obtener peces de 1500 a 2000 gr.; y 3000 a 5000 peces/ha el segundo año obteniendo peces de 2500 a 4000 gramos.

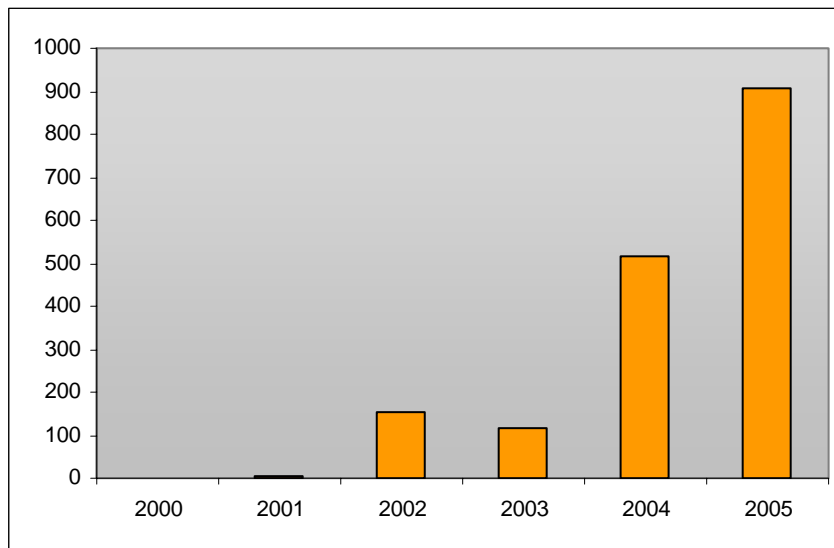
²⁹ “Análisis de las oportunidades de cultivo de especies acuáticas en Uruguay” Daniel Carnevia UDELAR Diciembre 2006.

³⁰ de dípteros, cladóceros, copépodos, coleópteros, moluscos, oligoquetos y trichópteros.

El principal producto procesado derivado de la pesca del esturión es el caviar, aunque la carne de esturión también resulta relevante. Los principales productores de esturión en el mundo son los cuatro países que rodean al mar Caspio: Rusia, Irán, Azerbaiján y Kazakistan, mientras que dentro de los principales exportadores de caviar encontramos a Irán, Rusia, Alemania y Francia³¹.

La acuicultura en Uruguay se encuentra en un estado incipiente de desarrollo, no obstante los esfuerzos esporádicos que se han venido desarrollando desde 1957, a través de proyectos experimentales y comerciales de cultivo de diversas especies que incluyen peces, crustáceos, moluscos, etc. En este marco, la producción de Esturiones y Caviar es una actividad resiente y con grandes potencialidades de desarrollo. En 1995 la empresa Esturiones del Río Negro se estableció en Uruguay, y de ese momento ha crecido en forma considerable. Esta empresa explica la totalidad de las exportaciones de caviar de Uruguay, aunque debido a su éxito ya hay varios proyectos de inversión en el sector.

Gráfico 15
Uruguay: Exportaciones de Caviar de la empresa Esturiones del Río Negro
(en miles de US\$)



Fuente: Snoek et al (2007)

*b. Condiciones iniciales*³²

Economía Abierta: Uruguay posee un modelo económico nacional abierto que alienta la inversión privada, promueve la diversificación económico-productiva, y estimula la incorporación de nuevas tecnologías

³¹ Snoek et al (2007)

³² "Propuesta de Política Nacional para el Desarrollo Sostenible de la Acuicultura en la República Oriental del Uruguay" Dr. Alejandro Flores Nava, Proyecto FAO-TCP/URU3101, Diciembre 2006:

Una geografía favorecida: Uruguay cuenta con ecosistemas diversos en medios dulceacuícola, salobre y marino, incluyendo aguas termales, que en conjunto hacen un aproximado de 1.6 millones de hectáreas, muchas de las cuales ofrecen potencial para la acuicultura. A su vez, este país posee una superficie territorial de 176,215 km², sin contar sus 125,000 km² de mar territorial (zona oceánica y Mar Del Plata). A lo largo del litoral oceánico, presenta lagunas costeras con gradientes de salinidad que incluyen ambientes dulceacuícolas, estuarinos y marinos, con una superficie de casi 150,000 Ha. Adicionalmente, el territorio cuenta con aproximadamente 50,000 estanques o tajamares de dimensiones variables, alimentados pluvialmente y utilizados como reservorios para riego agrícola.

Un sector pesquero con tradición exportadora: que ha posicionado productos acuáticos reconocidos por su calidad en mercados internacionales.

Experiencia acumulada a lo largo de cinco décadas: tanto del sector gubernamental como, en forma más reciente del sector privado, en materia de producción acuícola que, aún con modestos avances, puede capitalizarse en beneficio de un nuevo rumbo del sector.

c. Hitos³³

- 1957: Se construye la primera estación piscícola del país en Laguna del Sauce. Inicio de trabajos de reproducción de pejerrey, e introducción de trucha arco iris *Onchorhynchus mykiss*. Primeros intentos de cultivar mejillón *Mytilus edulis platenses*
- 1974: Se realizan las primeras investigaciones con camarón marino *Penaeus paulensis* en el Instituto de Investigaciones Pesqueras- Facultad de Veterinaria
- 1975: Se crea el Instituto Nacional de Pesca y, como parte de su estructura, el Departamento de Acuicultura y Aguas Continentales
- 1980: Se crea el Departamento de Acuicultura en la Facultad de Ciencias y Humanidades de la Universidad de la República
- 1995: Se introduce al país el esturión siberiano *Acipenser baeri* con fines de cultivo comercial, por parte de la iniciativa privada nacional: Empresa Esturiones del Río Negro.
- 1996: Se declara la acuicultura de interés nacional y se la beneficia con exenciones impositivas.
- 2000: Se dan las primeras exportaciones de esturión
- 2003: Se obtiene el primer lote de alevines de esturión en Uruguay

d. Estructura del sector

Para la producción del esturión aparece como atractivo el establecimiento de grandes empresas con grandes inversiones que se dediquen a la obtención de caviar; así como de empresas más pequeñas (asociadas a aquellas) que realicen el engorde de los machos en estanques.

³³ En base a "Propuesta de Política Nacional para el Desarrollo Sostenible de la Acuicultura en la República Oriental del Uruguay" Dr. Alejandro Flores Nava, Proyecto FAO-TCP/URU3101, Diciembre 2006, y Snoek et al (2007)

Según el DINARA, en Uruguay hay una sola empresa (Esturiones del Río Negro), aunque existen varios proyectos de investigación. A su vez, existen tres proyectos emergentes de empresas para cultivar esturiones que están comenzando sus actividades, uno de estos proviene de un grupo emprendedor Iraní y es inclusive de mayor escala que Esturiones del Río Negro.³⁴

e. Barreras al Desarrollo Exportador y el Rol del Sector Público

Uruguay es el país con menos desarrollo acuícola de toda Latinoamérica, lo que se traduce en desafíos enormes en el abastecimiento de algunas materias primas, servicios y tecnología. Al mismo tiempo, por carencias o falta de nivel de calidad de productos, es necesaria la importación de varios insumos principales. Por ejemplo ovas fertilizadas, materias primas para la formulación de raciones, medicamentos o vacunas, raciones starters, alimento para larvas, tecnología desde elementos de medición hasta las redes para hacer jaulas e inclusive envases de vidrio y latas para caviar. A esto se suma la falta de recursos humanos especializados. No existe en el país servicios veterinarios altamente calificados para el diagnóstico y seguimiento de patologías en peces. Tampoco existen organizaciones estatales dedicadas a desarrollar I&D con financiamiento para llevarlo a cabo. Por último en Uruguay es altamente dificultoso el acceso a créditos para la producción o capital de trabajo en esta área, ni existe un marco jurídico apropiado a esta actividad, ni seguros de producción agropecuaria, ni protecciones ambientales que impidan la instalación de otras industrias o desarrollos excluyentes a esta actividad.

En términos de las políticas públicas existentes, el gobierno declaró la acuicultura de interés nacional en 1996 y se la benefició con exenciones impositivas. A su vez, Esturiones del Río Negro, única empresa del sector, recibió apoyo de la DINARA y de la Universidad de la República. También recibió beneficios fiscales, como todo el sector exportador. Finalmente, a la empresa se la benefició con la posibilidad de ubicar la planta de piscicultura en un predio que le pertenece a UTE (y por el cual la empresa tiene un comodato).

D. LECCIONES APRENDIDAS SOBRE EL ROL DEL SECTOR PÚBLICO EN EL DESARROLLO DE NUEVOS SECTORES DE EXPORTACIÓN

Los diferentes casos que hemos analizado nos sirven para evaluar como el sector público ha participado en la promoción del desarrollo exportador en América Latina. En cada uno de ellos, en mayor o menor medida, las políticas implementadas por el Estado han contribuido, directa o indirectamente a consolidar alguna de las etapas de la cadena de valor de los nuevos sectores de exportación. En Argentina, por ejemplo, el salto de las exportaciones de vino de calidad se vio favorecido por la coordinación público-privada en la conformación de una marca y una identidad reconocidas internacionalmente. A su vez, las exportaciones de frutas finas se ha beneficiado del trabajo del INTA en el control de las condiciones fitosanitarias de los cultivos. Por su parte, en México el tratado de Libre comercio de las Américas y la creación del programa de maquilas han favorecido el crecimiento de las exportaciones electrónicas. El desarrollo del sector de aviones en

³⁴ Snoek et al (2007)

Brasil, así como el de tecnología nuclear en Argentina, fue beneficiado con políticas directas y sectoriales de promoción industrial. Asimismo, en Chile la financiación pública de investigación y la diseminación de oportunidades de desarrollo ha sido uno de los pilares del desarrollo de las exportaciones de salmón. Finalmente, en Uruguay el desarrollo de las exportaciones de caviar, estuvo apoyado por exenciones impositivas y el trabajo conjunto con la Universidad de la República.

A partir de la evidencia empírica anterior y aún cuando resulte un poco aventurado establecer generalidades en base a al análisis de tan sólo 10 casos, es posible apreciar que, sobre todo en exportaciones no tradicionales -ya sea porque son nuevos tipos de producto o nuevos sectores- la aplicación de políticas públicas a nivel macro y micro-sectorial tiene un importante rol en el surgimiento y/o desarrollo de nuevas exportaciones.

Lección # 1

El Estado tiene un importante rol que jugar a la hora de promover exportaciones, especialmente en el caso de sectores no tradicionales, donde las fallas de mercado son particularmente severas.

Tanto el tipo de intervenciones como su impacto varían entre los diferentes casos, incluso si tomamos en cuenta las políticas implementadas en los mismos sectores pero en diferentes países. Como se desprende de la sección anterior, el impacto potencial de las políticas implementadas está fuertemente influenciado por una multiplicidad de factores económicos, políticos, institucionales y culturales que determinan, en gran medida, las posibilidades de éxito de las iniciativas implementadas. Esto nos obliga a ser muy cautos a la hora de sacar conclusiones a partir de las experiencias analizadas. Cada una de ellas debe ser entendida en el contexto en el que fue desarrollada y, si bien sirve como ilustración de un caso exitoso, las particularidades de cada una de ellas son, valga la redundancia, específicas a cada contexto y no necesariamente replicables a situaciones diferentes. Por ello, a la hora de analizar, diseñar o recomendar políticas de promoción y desarrollo de exportaciones resulta fundamental tomar en consideración estos factores idiosincráticos y adaptar, en la medida de lo posible, las lecciones que nos da la experiencia internacional a las realidades que se enfrentan en cada momento.

Lección # 2

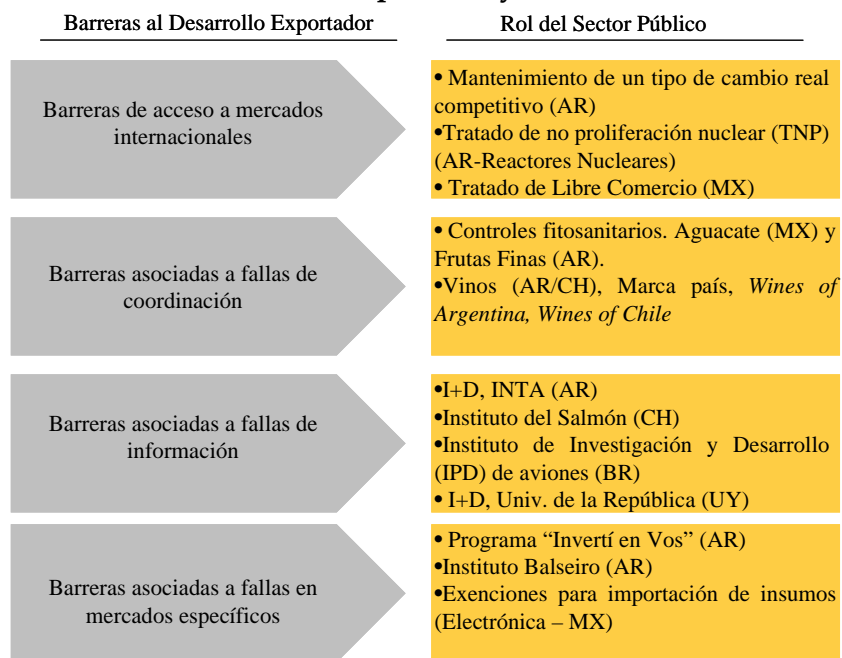
Las políticas de promoción y desarrollo de exportaciones deben estar diseñadas específicamente para su contexto de aplicación, dada la multiplicidad de factores, económicos, políticos, culturales e institucionales que influyen en su impacto potencial.

En el proceso de desarrollo de nuevas exportaciones, una de las principales características que se repite en casi todas las experiencias analizadas es que las empresas se enfrentan con distintos tipos de barreras que dificultan y en muchos casos impiden su desarrollo exportador. En este sentido, una de las maneras en las que se puede definir el rol del sector público es como removedor de obstáculos, destrabando los impedimentos que dificultan el desarrollo exportador. Hemos tipificado estas barreras en cuatro categorías:

- ***Barreras de acceso a mercados internacionales:*** En esta categoría incluimos todas aquellas trabas que dificultan el acceso de los productos a los mercados internacionales, tales como tarifas y cuotas. Incluimos también dentro de esta categoría la ausencia de un tipo de cambio competitivo que favorezca la colocación de los productos locales en el exterior. Si bien los factores que afectan la determinación del tipo de cambio son diversos, algunos de los cuales no están asociados a la voluntad de acceder a nuevos mercados, nos interesa destacar es que el nivel del tipo de cambio es uno de los factores fundamentales que afecta las posibilidades de exportar a nuevos mercados.
- ***Barreras asociadas a fallas de coordinación:*** En muchos casos, la capacidad de una firma de exportar se ve altamente influenciada por factores que requieren de la acción coordinada con otros actores. Por ejemplo, para garantizar ciertos estándares fitosanitarios en la producción de bienes agrícola-ganaderos, es necesaria la acción coordinada de todos los empresarios del sector para erradicar plagas y enfermedades.
- ***Barreras asociadas a fallas de información:*** Como decíamos al comienzo del estudio, todo descubrimiento de oportunidades asociadas a una actividad genera información muy valiosa no sólo para la empresa que lo realiza sino también para otros emprendedores. Por esa razón, la inversión en investigación y desarrollo de nuevas formas de producción suele ser sub-óptima.
- ***Barreras asociadas a fallas en mercados específicos:*** Por último, agrupamos aquí aquellas barreras que surgen de a partir de la existencia de fallas en mercados particulares que afectan el desarrollo exportador. Uno de los ejemplos más claros es la existencia de problemas de selección adversa y riesgo moral en el mercado de crédito, que afecta la capacidad de las empresas de conseguir el financiamiento necesario para el desarrollo de sus exportaciones. También pueden incluirse en esta categoría las fallas en los mercados de trabajo.

La figura 1 ilustra la relación entre los distintos tipos de obstáculos o barreras que enfrentan las empresas en su desarrollo exportador:

Figura 1
La Barreras al Desarrollo Exportador y el Rol del Sector Público



La importancia de tipificar cada una de estas barreras radica en sistematizar el análisis de las intervenciones del sector público que tuvieron como fin aliviar o incluso eliminar el peso de estos obstáculos. En el caso de las barreras de acceso a mercados internacionales, la firma del Tratado de Libre Comercio de América del Norte (TLCAN), en 1994, posibilitó a la industria electrónica mexicana el ingreso preferencial al mercado norteamericano, así como el acceso a partes y componentes importados a precios competitivos. La firma del Tratado de no proliferación nuclear (TNP) en 1993 y Tlatelolco en 1992 convirtió a la Argentina en un “país confiable no proliferante”, facilitándole las operaciones de exportación. En base a nuestra tipificación, también entendemos que el mantenimiento de un tipo de cambio competitivo es una intervención tendiente a mejorar el acceso a los mercados internacionales. Si bien en el caso de Argentina la fuerte devaluación del tipo de cambio no se debió exclusivamente a cuestiones de competitividad internacional, sí subyacía un problema fundamental de acceso a los mercados externos que fue revertido drásticamente, como demuestran los cuatro casos de desarrollo de exportaciones argentinas que estudiamos.

Salvo en el caso de las barreras al acceso a mercados internacionales, donde consideramos que la intervención del Estado es unívocamente necesaria, la mayor parte de las barreras podrían ser sorteadas por las firmas directamente, si no fuera porque el costo de hacerlo para una única empresa es muy alto. Por ello, y dado que estos obstáculos afectan simultáneamente a muchas empresas, el Estado puede lograr economías de escala proveyendo este tipo de “bien público”. En los 10 casos que conforman este estudio podemos ver cómo las barreras asociadas a fallas de coordinación desencadenaron acciones públicas tales como el establecimiento de estándares regulatorios y fitosanitarios, la asociatividad público-privada para el

desarrollo de una marca, entre otras, que generaron fuertes externalidades positivas para todos los empresarios del sector. En particular, uno de los principales problemas para el desarrollo de las exportaciones de vinos de calidad argentinos era la acción descoordinada de las diferentes bodegas en la promoción de sus productos en el exterior. Como respuesta a este problema se crea *Wines of Argentina* hacia mediados de los años '90, una sociedad de propiedad mixta (pública/privada) encargada de la promoción en el exterior que actualmente representa al 95% de las exportaciones de vinos de Argentina y está presente en más de 50 ciudades del mundo. La misma estrategia fue adoptada por Chile con la creación de *Wines of Chile*, fundada en julio de 2002 con el propósito de fortalecer la imagen de Chile y estimular las ventas de vinos finos chilenos en el extranjero. A su vez, tanto en el caso del desarrollo de las exportaciones de frutas finas en Argentina como en el caso del aguacate en México, organismos públicos -en soledad o con la ayuda de organizaciones no gubernamentales- o bien asociaciones público-privadas han desarrollado políticas activas para controlar las condiciones fitosanitarias de los cultivos.

En el caso de las fallas de información, en Argentina el Instituto Nacional de Tecnología Agropecuaria (INTA) genera periódicamente información técnica para los productores vitivinícolas, trabaja con las bodegas para desarrollar técnicas de cultivo y elabora mapas de microclimas de las diferentes regiones de cultivo de vinos. Este tipo de información bien podría ser generada por las empresas, pero dadas las externalidades asociadas a la generación de conocimiento tiene sentido que sea el Estado, una asociación entre el sector público y el sector privado o bien un grupo que nuclea a las empresas del sector quien lleve adelante este tipo de investigación. En el caso de las frutas finas, la falta de un adecuado desarrollo genético que permita adaptar el producto a las demandas de los mercados internacionales y/o las condiciones climatológicas, han motivado la constitución del Fondo Fiduciario para la Investigación y el Desarrollo del Arándano en la Argentina (FFIDAA) cuyo objetivo es proveer de financiamiento a investigaciones y desarrollos locales en torno a este cultivo. Una situación similar se da en Chile con el Instituto del Salmón, creado con el aporte de la industria salmonera y del Estado chileno, para proveer de avances y tecnología a la industria del salmón y con el Programa Territorial Integrado "Fortalecimiento del Cluster del Salmón en la Zona Austral de Chile" (PTI Cluster Salmón), que constituye una instancia de coordinación público-privada financiada por CORFO (Corporación de Fomento) y dirigida por INTESAL (Instituto Tecnológico del Salmón). Por su parte, en Brasil el Instituto de Investigación y Desarrollo (IPD) tiene el objetivo de impulsar estudios para la producción de aviones. Por último, en Uruguay la Universidad de la República colabora con el sector de caviar y esturión a través del desarrollo de trabajos de investigación.

Por último, a partir de los casos analizados hemos identificado diferentes intervenciones del sector público dirigidas a corregir -a nivel sectorial- fallas de mercado que obstaculizan el desarrollo de nuevas exportaciones (en particular en los mercados de trabajo, insumos específicos y de crédito). Tal es el caso de la tecnología nuclear en Argentina, que desde sus inicios enfrentó un problema esencial en la falta de personal calificado (ingenieros, técnicos, etc.). La creación del Instituto Balseiro en la Ciudad de Bariloche, permitió formar ingenieros y técnicos, muchos de los cuales fueron contratados para trabajar en INVAP, dando respuesta a algunas de las necesidades de

recursos humanos altamente calificados. Algo similar sucede con el sector de software en Argentina. Ante la falta de recursos humanos en el área de sistemas, a fines de 2005 la CESSI y el Ministerio de Educación, Ciencia y Tecnología lanzaron el programa “InverTI en vos”, que busca difundir las nuevas posibilidades de formación y trabajo en carreras tecnológicas entre los estudiantes que están en los últimos años del colegio secundario. A su vez, el Plan Nacional de Formación Profesional para Trabajadores del Sector de SSI, que incluye la creación de un Fondo para el Mejoramiento de la Enseñanza de la Informática (FOMENI) de carácter público-privado, se encuentra también destinado a proveer recursos y evaluar y controlar los programas de formación. En México, dada la escasez de insumos necesarios para el desarrollo de las exportaciones de electrónica, el PROSEC autoriza la compra de bienes importados con aranceles preferenciales con la condición de que se dirijan a la fabricación de ensamblajes y bienes finales electrónicos. Asimismo, en cuanto a las barreras del mercado de crédito, hemos identificado que existen un gran número de demandas por parte de los empresarios en cada uno de estos sectores. Casi sistemáticamente en cada una de las entrevistas realizadas los empresarios y actores de cada uno de los sectores han manifestado la falta de políticas tendientes a facilitar el acceso al crédito como una de las mayores falencias de las políticas públicas. Este rasgo se repite en casi todos los casos de Argentina (vinos, frutas finas y software) y en el caso del caviar y esturión en Uruguay. Este hecho coincide con el bajo nivel de desarrollo del sector financiero, especialmente en referencia a los préstamos para las pequeñas y medianas empresas.

Lección #3:

El diseño de políticas de promoción y desarrollo de exportaciones requieren que el Estado sea capaz de identificar los obstáculos que enfrenta el sector privado, de manera de enfocar la política pública directamente hacia la eliminación o reducción de estos obstáculos.

De las entrevistas que hemos realizado surge casi sistemáticamente la necesidad de coordinar las acciones del sector público con las necesidades del sector privado. Para ello, no se requiere de un Estado omnisciente que conozca todos los obstáculos y actúe en consecuencia, sino más bien de un sector público abierto a escuchar y evaluar cuáles son las necesidades que enfrenta el sector empresario para su desarrollo exportador, de manera de que el diseño de políticas sea el camino para dar respuesta a dichas necesidades. En resumen, es preciso que ambas partes, Estado y sector privado, se constituyan en socios.

Lección #4:

El diálogo fluido entre el sector privado y el sector público es la manera más eficaz para identificar las barreras existentes y diseñar políticas orientadas directamente a resolverlas.

Otra de las tipificaciones de las políticas públicas identificadas en los casos estudiados se basa en el análisis del ámbito de aplicación de las mismas. Como se ilustra en la figura 2, cada una de las secciones de la pirámide ilustra diferentes ámbitos de aplicación de las políticas públicas y, por lo tanto, diferentes niveles de impacto de las mismas. En la sección más baja de la pirámide agrupamos a las políticas macroeconómicas y de

inversión en capital físico y humano, cuyo rol fundamental es el mantenimiento de condiciones económicas que favorezcan el desarrollo, como el mantenimiento de un tipo de cambio competitivo y un buen clima de inversión que permita el desarrollo de nuevos sectores, una burocracia competente, una política de endeudamiento responsable, el desarrollo de infraestructura, etc. Si bien, en muchos casos estas políticas no están orientadas a la promoción de exportaciones per se, su impacto sobre el comercio exterior puede ser muy significativo. En México, por ejemplo, la desregulación de la Ley de Inversiones Extranjeras tuvo un efecto considerable en el posterior desarrollo de las exportaciones de productos electrónicos, sector que tiene una fuerte presencia de firmas transnacionales. Adicionalmente, en Argentina la devaluación de la moneda local tuvo un impacto fundamental en el desarrollo de cada uno de los sectores analizados.

Figura 2
Ámbitos de Aplicación de las Políticas Públicas



Escalando la pirámide, un nivel más arriba encontramos aquellas políticas tendientes a promover la apertura comercial y el intercambio con el resto del mundo. Estas intervenciones incluyen tanto la celebración de acuerdos y tratados bilaterales o multilaterales que faciliten el intercambio comercial con el resto del mundo como así también políticas horizontales que promuevan las exportaciones de bienes y servicios. Entre las primeras, podemos mencionar el ingreso de México al Tratado de Libre Comercio de América del Norte (TLCAN) en 1994, en el cual se pactó la eliminación a 10 años de todos los aranceles, así como la reducción o eliminación de otras barreras comerciales. Entre las segundas, se encuentran los beneficios fiscales que goza todo el sector exportador uruguayo, o bien las políticas pro exportadoras implementadas en Chile, que beneficiaron profundamente todas las exportaciones del país. Entre estas políticas se encuentran también aquellas orientadas a facilitar el acceso al crédito por

parte de los exportadores. En las entrevistas que mantuvimos con diversas firmas, sobre todo en Argentina, hemos notado que uno de los mayores problemas al desarrollo exportador es la falta de acceso a oportunidades de crédito. En este sentido, hemos encontrado que si bien existen algunas líneas de crédito para exportadores, el acceso a las mismas es muy complicado y su existencia no está muy difundida. Este hecho estilizado nos permite arribar a una nueva lección.

Lección #5: Una de las principales razones que reducen el impacto de las políticas de promoción de exportaciones es la dificultad de acceso a las mismas y la falta de difusión acerca de los instrumentos existentes

En la cima de la pirámide agrupamos a aquellas políticas sectoriales orientadas a promover el desarrollo exportador. A diferencia de las anteriores, estas intervenciones tienen por objetivo impulsar el surgimiento y/o desarrollo de un sector particular. Entre ellas encontramos la intervención pública directa en el surgimiento (y luego, de las exportaciones) de tecnología nuclear en Argentina y de la aviación en Brasil. En ambos casos, la decisión del Estado de crear estas empresas (INVAP y EMBRAER) se basó en cuestiones de seguridad nacional y en un modelo de industrialización basado en el desarrollo de industrias pesadas. En el resto de los casos, la participación directa del sector público en el desarrollo de nuevos sectores de exportación se basó en la intervención, a través de políticas verticales, en alguna de las etapas del proceso exportador. En el caso del aguacate en México y las frutas finas en Argentina, este fenómeno se dio en la etapa de producción, a través del control fitosanitario. En el caso de vinos en Argentina y Chile, la intervención pública apuntó a la etapa de desarrollo, a través de I+D y a la etapa de comercialización, a través del desarrollo y promoción, conjuntamente con el sector privado, de una marca país. En el caso del caviar y esturión, en Uruguay, a través de la cesión de un terreno público planta la instalación de la planta, y del apoyo de DINARA y la Universidad de la República.

Estos tres niveles de intervención pública están presentes casi simultáneamente en cada uno de los casos analizados. Como hemos visto, las restricciones que afrontan las empresas en su crecimiento exportador son multidimensionales y por lo tanto, es difícil contar con una única herramienta que permita enfrentar a todas. En efecto, es la interacción entre los diferentes tipos de políticas y sus ámbitos de aplicación lo que ha hecho posible, en la gran mayoría de los casos analizados, el desarrollo de nuevos sectores de explotación.

Lección #6:

La intervención simultánea del sector público en diferentes ámbitos de aplicación facilita la promoción y el desarrollo de nuevos sectores de exportación.

E. CONCLUSIONES

Más allá de las diferencias que hemos encontrado en el proceso de desarrollo de exportaciones de cada uno de los casos analizados, uno de los patrones comunes que hemos identificado es que el Estado no puede quedar al margen de estos procesos. Si bien su participación ha sido diferente en cada uno de los contextos y sectores, queda claro que el sector público tiene un rol importante como promotor directo o indirecto del desarrollo de nuevas exportaciones, ya sea facilitando la coordinación entre privados, removiendo obstáculos al desarrollo, brindando información valiosa, apoyando la investigación, entre otras acciones. El éxito de las intervenciones públicas dependerá, en gran medida, del diálogo y la colaboración que exista entre el sector público y el sector privado. Esto facilita el diseño de programas y estrategias orientados a atacar directamente las necesidades de las empresas.

Finalmente, creemos conveniente terminar haciendo una distinción entre los conceptos de “promoción” y “desarrollo” de exportaciones. Si bien a lo largo de nuestro análisis hemos empleado indistintamente ambos términos, su diferenciación resulta muy relevante luego de haber identificado los diferentes niveles de intervención pública. Mientras que la “promoción de exportaciones” se refiere más a la ampliación de los mercados como mecanismo para aumentar las ventas al resto del mundo y colocar los productos en otros mercados el “desarrollo de exportaciones” esta asociado a fortalecer la competitividad de las firmas nacionales y su capacidad de exportar, contribuyendo a mejoras en la calidad de los procesos y de los bienes producidos, facilitando la operatoria de las empresas etc.

BIBLIOGRAFÍA

Agosin M. R. y C. Bravo-Ortega (2006) "The Emergence of New Successful Export Activities in Latin America: The Case of Chile" BID

Airbus (2006), "Global Market Forecast: the future of flying, 2006-2025".

Álvarez, Roberto (2004); "Desempeño exportador de las empresas chilenas: algunos hechos estilizados"; Revista de la CEPAL 83, Agosto.

Alvial, A. y F. Bañados (2006) "Desafíos en la Consolidación del Cluster del Salmón Chileno: Contribución del Programa Territorial Integrado"

Artopoulos, A., D. Friel, S. García-Dastugue, J.C. Hallak (2006) "The emergence of new successful export activities in Argentina" Octubre, IADB.

Bonelli, R; Cautelar Pinheiro, A. (2006), "New Export Activities in Brazil: Comparative Advantage, Policy or Self-Discovery?" FUNCEX - BID.

Bordeu, E. y G. Vargas (2003) "Prospectiva en la Industria del Vino Fino. Competitividad y Desarrollo para Chile 2010". Mimeo

Bressiani, Carlo Enrico; Moslares García, Carlos; Turmo Garuz, Joaquín (2004); "El comercio exterior brasileño, 1950-2003" Boletín Económico del ICE N° 2813 Agosto/Septiembre.

Carnevia, D. (2006) "Análisis de las oportunidades de cultivo de especies acuáticas en Uruguay" UDELAR Diciembre.

CEFP (2004) "Evolución del Sector Manufacturero de México, 1980-2003" Centro de Estudios de las Finanzas Públicas. Cámara de Diputados. Diciembre

Cuddington, J.; Ludema, R.; and Jayasuriya S. (2001), "Prebisch-Singer Redux", mimeo Georgetown University.

Economist Intelligence Unit "Country Profile: Uruguay and Paraguay". United Kingdom. 1996

Economist Intelligence Unit. "Country Profile: Uruguay" United Kingdom. 2007

Economist Intelligence Unit. "Country Profile: Uruguay" United Kingdom. 2001

Federal Research Division (1990) "Uruguay: A Country Study". Library of Congress. Edited by Rex A. Hudson and Sandra W. Meditz. <http://memory.loc.gov/frd/cs/>.

Ffrench-Davis, Ricardo (2002); "El impacto de las exportaciones sobre el crecimiento en Chile"; Revista de la CEPAL 76, Abril.

Flores Nava, A. (2006) "Propuesta de Política Nacional para el Desarrollo Sostenible de la Acuicultura en la República Oriental del Uruguay", Proyecto FAO-TCP/URU3101

Fundación Exportar (2004), "Análisis de la tendencia del mercado internacional de frutas finas frescas y de las exportaciones argentinas"; Informe N° 20.

Fundación Exportar (2005) "Informe Exportar N°25"

Gobierno de México (2002), "Programa para la Competitividad de la Industria Electrónica y de Alta Tecnología" Secretaría de Economía, Gobierno de México, Octubre.

Goldstein, A (2002), "Embraer: From national champion to global player"; CEPAL Review 77; Agosto.

Hausmann R and Rodrik D. (2003), "Economic Development as Self-Discovery," Journal of Development Economics, vol. 72.

Hausmann, R.; Panizza, U. y Rigobón, R. (2004), "The Long-Run Volatility Puzzle of the Real Exchange Rate." NBER Working Paper No. 10751.

Hausmann, R; Rodríguez -Claire, A y Rodrik, D (2005), "Towards a Strategy for Economic Growth in Uruguay", Economic and Social Studies Series RE1-05-003, Banco Interamericano de Desarrollo.

Imbs, J. and Wacziarg R., (2003), "Stages of Diversification," American Economic Review, 93(1), March, 63-86.

INTA (2000) "Plan Estratégico Argentina Vitivinícola 2020".

Lagace, Martha (2000), "From Emerging Economies to the Global Market: The Case of Embraer"; Harvard Business School.

Lederman, D. and Maloney, W. (2003), "Trade Structure and Growth" Office of the Chief Economist for Latin America and the Caribbean. The World Bank. Washington, DC. November.

Lopez (2007) "Complementación productiva en la industria del software en los países del MERCOSUR: Impulsando la integración regional para participar en el mercado global".

Mendiola, Gerardo (1999), "México: Empresas maquiladoras de exportación en los noventa"; Serie de Reformas Económicas, CEPAL; diciembre.

Ministerio de Economía (2003) "Plan Estratégico de SSI 2004-2014"

Muller, K. (2004) "Chile Vitivinícola en pocas palabras", Universidad de Chile

Nahirñak, P., (2006), "Los primeros resultados de la Ley del Software -Una industria que avanza a paso firme pero que puede dar mucho más-", Revista Novedades, IERAL, Fundación Mediterránea

OECD (2006), Information Technology Outlook, OECD, París.

Partida, Raquel (1996), "Reestructuración productiva e industria electrónica en Guadalajara"; Espiral, Estudios sobre Estado y Sociedad, Vol 2, N° 5.

Pietrobelli C., Rabellotti R., (2004), Mejora de la competitividad en clusters y cadenas productivas en América Latina. El papel de las políticas. Serie de buenas prácticas, Departamento de Desarrollo sostenible. BID Washinton, D.C.

Quiroz, J. y Consultores Asociados (2006) "Informe Económico Salmonicultura 2005"

Richard Luco, Oscar Proessel, Roberto Bahamonde (2003) "La Acuicultura en Chile" Mimeo.

Rodrik D. (2004), "Industrial Policy for the Twenty-First Century" Harvard University. Paper prepared for UNIDO, September.

SAGPYA (2006), "Informe Sector Frutícola"; Dirección Nacional de Alimentos; Abril.

Salmonchile. (2006), "Informe Económico Salmonicultura 2005".

Sanguinetti, C y P. Azar (2001); "La Economía uruguaya a finales del SXX e inicios del SXX"; Universidad de la República, Uruguay.

Snoek, M., C. Casacuberta, R. Domingo, H. Pastori, L. Pittaluga (2007) "The Emergence of New Successful Export Activities in Uruguay" IADB Project. Latin America Research Project.

Torres, C. (2006), "Development of Technology intensive suppliers in natural resources based economies: the case of aquaculture in Chile". Universidad de Leipzig. Disertación para la obtención del grado académico de Dr. Phil.

Ulloa, A., (2005), "Diseño de un sistema de información sobre variables e indicadores al interior del cluster del salmón" Documento de Trabajo. Departamento de Ingeniería Industrial. Universidad de Chile.

Von Bernard, Tamara; Obschatko, Edith (2003); "Fortalezas y Debilidades del Sector Agroalimentario, Documento N° 8: Frutas Finas"; IICA-Argentina; Marzo.

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