Modes of Internationalization of Two Argentine Pharmaceutical Companies in Historical Perspective: The Cases of Bagó and Sidus

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Abstract

Internationalization is not a simple decision but rather a complex strategy that requires the presence of tangible and intangible resources that, in the case of a family firm, call for careful analysis. To understand this process, the present study reconstructs the historical trajectories of two important Argentine laboratories, Bagó and Sidus, in historical perspective, using the stage approach of the Uppsala school (U-model) and the perspective of resources and capacities (resource-based view). The findings suggest that internationalization took place in evolutionary stages, with prior construction of intangible assets on the local market.

Keywords: Internationalization; pharmaceutical industry; business groups; Argentina.

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Siglas usadas

ALADI	Latin American Integration Association (Asociación Latinoamericana de Integración)
ALALC	Latin American Free Trade Association (Asociación Latinoamericana de Libre Comercio)
BDA	Berries de Argentina, S.A.
CEEED	Center for the Economic Studies of the Enterprise and Development, University of Buenos Aires (Centro de Estudios Económicos de la Empresa y el Desarrollo)
CEMLA	Center for the Study of Latin American Migrations (Centro de Estudios Migratorios Latinoamericanos)
CILFA	Argentine Association of Pharmaceutical Laboratories (Cámara Industrial de Laboratorios Farmacéuticos de Argentina)
DNA	Deoxyribonucleic acid
FDA	Food and Drug Administration
GMP	Good manufacturing practice
HHT®	Biosynthetic human growth hormone produced by Biosidus
HPV	Human papillomavirus
IBI	Bagó Research Institute (Instituto Bagó de Investigaciones)
ICT	Information and communications technologies
MSD	Merck, Sharp & Dohme
PAMI	National Institute for Social Services for Retirees and Pensioners (Instituto Nacional de Servicios Sociales para Jubilados y Pensionados)
PTH	Teriparatide hormone
R+D	Research and development
Sacifams	Sociedad Anónima Comercial, Industrial, Financiera, Agropecuaria y de Mandatos y Servicios
SENASA	National Service for Public Health and Agri-Food Quality (Servicio Nacional de Sanidad y Calidad Agroalimentaria, Argentina)
UBA	Universidad de Buenos Aires
UBACyT	UBA Science and Technology
UNIDO	United Nations Industrial Development Organization
VEGF	Vascular endotelial growth factor

INTRODUCTION

The acceleration of the process of globalization of markets in recent decades has increased the opportunities for business in foreign markets, with consequent effects on both family and non-family businesses.

Despite the fact that the market and the world context provides important stimuli, internationalization is not an easy or immediate decision but rather one of the most complex growth strategies that an enterprise can undertake, and therefore requires the concurrence of tangible and intangible resources and of capacities and competencies which, in the case of the family firm, require particular consideration.

This article reconstructs the trajectories of two Argentine laboratories founded in the 1930s, which have developed different modes of internationalization in a sector as competitive as that of pharmaceuticals:[1] Laboratorios Bagó and Instituto Sidus. In this paper, analysis employing a historical perspective will reveal changes and continuities over a period of four decades and permit a comparison of motivations and achievements.

This study is part of a broader project about business groups and their importance in the evolution of late-developing countries. Both companies studied started out as individual firms but then diversified and became family economic groups that play an important role in the Argentine economy. They transferred the characteristics of a family property and management system to the new business structure (Leff 1978; Khanna 2000; Khanna and Yafeh 2007; Guillén 2000; Guillén and García-Canal 2010; Granovetter 2001a; Gersick *et al.* 1997; Jones and Rose 1993; Colli and Rose 1999).

To understand how these organizations overcame the difficulties of entering foreign markets, the study employs two approaches: the resource-based view, which emphasizes resources and capacities; and the approach-based stages or models, i.e., the Uppsala or U-model, including its revisions.

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1. Although an analysis of its development goes beyond the objectives of this study, the importance of this sector, as Porter (1991) notes, has been a relevant factor in the construction of competitive advantages in the cases presented here. The chemical-pharmaceutical sector was internationalized early, at the end of the 19th century, as a result of scientific exchanges that occurred between public and private sector research teams in Europe and the United States, advances in chemistry and biology, and the development of process industries, as discussed by Galambos and Sewell (1995) and Chandler (2005). The two great centers where this expansion took place were Germany and the U.S. In Germany and Switzerland, pharmaceutical companies were established as divisions within existing chemical companies, while in the U.S. independent pharmaceutical firms were established from the beginning.

On the one hand, we will take into account that most companies entered the global market by exploiting their own resources and capacities, which were forged on the local market and could be turned into competitive advantages on other markets. In this sense, possession of capacities that developed internally and were difficult to copy or be substituted by other companies, as indicated in the resource-based view, is a necessary condition for internationalization (Barney 1991; Grant 1996; Nonaka and Takeuchi 1995; Tallman and Fladmoe-Lindquist 2002). For a family company, these intangible assets[2] that are difficult to imitate by other companies can constitute a source of competitive advantages on other markets, depending on how they are combined with other factors described in the literature as strengths or weaknesses of the family firm (Fuentes *et al.* 2007). The principal limitations can include the matter of succession, lack of financial and management resources, resistance to change and to delegating functions, as well as aversion to risk. On the other hand, long-term commitment, reputation, shared values, leadership, and flexibility to respond to changes rapidly are among the most important strengths of these firms and constitute intangible assets that are difficult to imitate by other companies, and thus can be a source of competitive advantages (Jones and Rose 1993; Fernández and Nieto 2005; Gallo *et al.* 2004; Fuentes *et al.* 2007; Puig and Fernández 2009).

Furthermore, internationalization strategies require the overcoming of obstacles caused by a lack of information about how other markets operate.[3] In order to reduce risk caused by unknown factors, companies may try to advance sequentially, step by step; this approach was modeled by the Uppsala School, which characterized the internationalization strategies of companies as a process of incremental commitment to learning and investment in foreign markets (Johanson and Vahlne 1977, 1990, 2009; Johanson and Wiedersheim 1975; Alonso and Donoso 1998). Later, some researchers added some revisions to the Uppsala model and noted that, in addition to the "traditional gradual process," other paths had been taken which they called "born global" or "reborn global"; this characterization turned out to be very rewarding in the analysis of the cases studied (Knight and Cavusgil 2004; Bell *et al.* 2003; Graves and Thomas 2008; Nieto and Fernández 2008).

The central idea in this study is that in both cases, internationalization was an early strategy, which was implemented even before diversification, when the companies had expanded their own activities or developments or detected market opportunities that they could take advantage of. Thus, when Argentine government policies promoted exports, they were ready

2. Grant's (1991) classification of these resources is used here. They include the human, organizational, technological, and relational assets of the firm.
3. This was an issue until at least 1990, when such information became available to companies thanks to information and communications technologies (ICT) (Nieto and Fernández 2008: 80-82).

to take advantage of these opportunities. In this process of growth, they annexed new businesses and internationalized, interweaving a multi-firm culture until they achieved a relatively stable entrepreneurial structure. Within this framework of complex organizations, strategic decisions by the leading firm in the group affected the whole group and developed intra-and inter-firm relations in the local environment that later influenced the behavior adapted during internationalization. The findings of this case study suggest that while the process took place in evolving stages, certain resources and capacities characteristic of the family firm such as generational commitment to internationalization,[4] attitudes regarding risks in obtaining financial resources, and the capacity for developing the necessary level of organization, as noted by Graves and Thomas, were a source of competitive advantages during this process (2008: 157).

The cases studied are part of new wave of local business groups that developed from the 1970s onwards, although both were established as medium-sized companies decades before.[5] During the import substitution stage, starting in 1960, industrial policies favored the creation of new local groups through industrial promotion programs, implemented by both civilian and military governments, which provided fiscal and financial benefits to local companies that created new firms in areas of strategic importance for the development of the country.[6]

The period of development of both conglomerates spans four decades of Argentine history (until 2010) and constitutes a complex and changing scenario of economic policies during which populist, developmentalist, Keynesian, and liberal measures alternated as did orthodox and heterodox stabilizations, all framed by phases of closed economies with intermittent episodes of market openness. Democratic instability was one of the constant characteristics

4. In accordance with the literature consulted, the degree of internationalization was measured, on the one hand, by taking into account intensity, which was calculated based on the ratio of exports to total sales as well as whether or not they had manufacturing facilities outside of Argentina; and, on the other hand, amplitude, in terms of the size of the presence on external markets. The generational issue was also considered by examining which generation promoted and/or sustained this growth (Graves and Thomas 2008: 155).
5. Barbero and Bisang identified evolutionary stages in the formation of groups in Argentina within the framework of economic policies during particular periods. Thus, there was a first stage of formation of groups during the agro-export period, then new conglomerates were created in the import substitution phase, and later, towards the end of the 20th century, this was repeated during the opening of local markets (Barbero 2010; Bisang 1999).
6. In emerging economies, government policies that promote development tend to lead to the creation of conditions that restrict the competitiveness of new actors on the local market, favoring preferential access to intangible resources by some firms and also favoring the creation of groups (Guillén 2000: 365). This argument that there is a link between the formation of groups and taking advantage of promotional benefits provided by governments can also be found in Schvarzer (1978, 1987, 1994).

of the 1960s and the 1970s. This gave way to a period of system consolidation in the 1980s, when non-economic phenomena proliferated and conditioned the economy and delineated a complex scenario for entrepreneurial decision-making. The inflation and indebtedness that the democratic government inherited in 1983 frustrated the multiple efforts at economic correction during this period, and in 1989 hyperinflation developed, leading to an unexpected turn to pro-market economic policy. This totally changed the rules of the game and introduced deregulation, privatizations, and price stability, together with peso-dollar parity. These, then, were the characteristics of the decades during which the groups studied here were created and expanded.

From 1998 on, Argentina entered into a phase of economic deceleration and, in 2002, after a banking crisis that seriously affected private depositors, a crisis of the political and social system developed. The government eliminated peso-dollar parity, devaluated the peso, defaulted on the sovereign foreign debt, and decreed the asymmetric conversion of bank deposits and debt contracted in dollars to pesos. All these measures radically changed the direction of the economy. A feeling that politicians lacked credibility spread throughout the population as consumer prices increased and the purchasing power of the currency diminished. The crisis had a destructive effect on economic activity and resulted in a heavy load of private debt contracted in dollars that firms had to deal with through closures and restructuring.[8]

The new government that took office in 2003 embarked upon the reconstruction of the political and economic system, moving away from the neoliberal tendencies of the 1990s and taking advantage of increasing world food prices. This led to a strong economic recovery with an average 8% growth rate until 2007, based on a commercial and fiscal surplus, the elimination of the foreign debt, and job creation. Nevertheless, in 2008, conditions started deteriorating on various fronts: internationally, the collapse of Lehman Brothers led to the greatest recession in the last 70 years, generating great uncertainty among investors. Surprisingly, however, this crisis prompted a decoupling of the developing countries, which continued to grow despite the unfavorable conditions in the developed countries. In the case of Argentina, its isolation from international financial markets had the positive effect of reducing the impact of the external crisis, though the lack of foreign financing led the government to increase the sources of the financial resources needed to cover its expenses. At the same time, an increase in these expenses and in family consumption triggered an inflationary spiral that had a negative effect on

7. A detailed analysis of this period can be found in the study by Roberto Cortés Conde (2003: 762-767). Carrera compares the changes that took place during those decades with a roller coaster because of the competitive and anti-competitive shocks (Carrera *et al.* 2003).

the competitiveness of Argentine exports, particularly in the industrial sector, weakening job creation. The boom cycle that started in 2003 appeared to end in the second half of 2009 when the first decline in investment of the Kirchner government took place, and the prices of raw materials declined on the international market the following year.

From the 1970s on, the pharmaceutical sector in Argentina had certain specific characteristics. Its principal advantages were the existence of high import barriers together with the lack of a patent law and a high return on investments. These factors did not favor genuine innovation but rather a market of brands in which foreign and domestic firms competed. The main disadvantage was dependence on imported active ingredients and equipment, but this was offset by a precise knowledge of private and social channels of distribution as well as intensive promotion in hospitals and medical offices. In this way, despite the high costs of production due to the imported active ingredients, by the end of the 1970s the sector had a high return on investment, which, in most cases, led to reinvestment of income to expand facilities and acquire new equipment. It was not common in Latin America for a pharmaceutical company financed with local capital to successfully compete with foreign laboratories. This was an achievement of local pioneers who knew how to take advantage of the opportunities that the industrial environment provided.[8]

In the sections that follow, the trajectories of the Bagó and Sidus family enterprises will be reviewed in order to highlight the importance of family and technological and organizational factors as well as political conditions in the construction of competitive advantages. Then, the principal strategies that allowed for the creation of each conglomerate will be analyzed along with how and why their interest in internationalization developed and turned into a commitment. Finally, the evolution of the two cases in recent decades will be compared, and the paper will conclude with a reflection about the processes analyzed.

The data used were obtained through in-depth interviews and reports about entrepreneurs and high level executives of firms in each conglomerate. In order to confirm this information, the companies' own documentation (institutional and commemorative publications) was reviewed as were public documents pertaining to the groups available in the General Inspectorate of Justice (Inspección General de Justicia) (business archives, annual reports, and balance sheets); this allowed for an understanding of the point of view of the actors regarding the general economic situation, the company, and the

8. One example of this is that Laboratorios Bagó and Roemmers – both companies with local capital – led in pharmaceutical sector sales from the beginning of the 1970s. During this period, the number of local companies that were among the 20 top firms on the local market increased from seven to ten (Campins and Pfeiffer 2002: 45-51).

results obtained. This information was complemented by a review of universal probate proceedings available in the Palace of the National Courts (Palacio de Tribunales de la Nación) and in the commercial courts. Since the General Inspectorate of Justice does not have a complete set of balance sheets in one case and balance sheets from several years in the 1980s have been lost in another, it was necessary to complete this information by consulting specialized journals – *Prensa Económica, Mercado*, and *Fortuna*. In addition, the invaluable contribution made to this study by very diverse actors - through information posted on the internet - has to be acknowledged.

FROM MEDIUM-SIZED COMPANY TO ECONOMIC GROUP

The case of Bagó

A. Family aspects

The first legal name of the laboratory was Sebastián Bagó y Cía. Sociedad Colectiva, a family firm established by the brothers Sebastian and Ana Bagó. In 1953, this became Laboratorios Bagó S.R.L. In 1967, the laboratory changed its name to Sociedad Anónima Comercial, Industrial, Financiera, Agropecuaria y de Mandatos y Servicios (Sacifams), which encompassed the different activities of the Bagó family. Finally, in 1974, the name was simplified to Laboratorios Bagó S.A., and since 1994, it has called itself Organización Bagó.

The Bagó family – originally from Llers in Alt Emporda (Catalonia, Spain) – arrived for the first time in Buenos Aires in 1907, seeking a better life. Their son, Sebastian, was educated in Buenos Aires and finished his high school studies at the Carlos Pellegrini School. Years later, the family decided to return to Spain as a result of their economic prosperity, though they kept their residence in Buenos Aires (Rocamora 1992: 93).

Sebastián Bagó, despite not having studied pharmacy or biochemistry in Germany, as his father wanted, started to work in the Cusí laboratory in Figueras (Catalonia), specializing in ophthalmological products. In time, he moved up through positions in the commercial and medical sales area; the latter was a new practice among Spanish laboratories, copied from the German model (Puig 2006: 176).

In 1930, Sebastían Bagó accepted Mr. Cusí's offer of a transfer to Buenos Aires to establish an office representing the laboratory. The world crisis had produced a foreign currency shortage that affected imports, resulting in unsatisfied demand on the internal market that opened up opportunities for new entrepreneurs to produce locally. Thus, in 1933, Sebastían Bagó resigned from his position as a representative of Cusí products and decided

to establish his own independent company to produce pharmaceutical products. The following year, together with his sister Ana, he started the family company, Laboratorio Sebastián Bagó y Cía. After some time, this **sibling partnership** (Gersick *et al.* 1997: 48) was transformed into the flagship of the group, Laboratorios Bagó S.A. The first company was created by siblings Sebastián and Ana Bagó, incorporating other shareholders – whose share was very small – related to the founders through links of kinship or affinity. Decades later, these minority shareholders had disappeared and the firm remained in the hands of the father and his two children. Of the founding partners, Ana retired at the beginning of the 1970s and died without descendants at the end of that decade. The two sons of Sebastián – Juan Carlos, a pharmacist by profession, and Sebastián (junior), with a professional degree in Management – joined the board during the 1970s after having completed an internal learning process in the company.[9] Thus, the founder's offspring were learning entrepreneurial capacities from their father from the first years of the 1970s, which meant that by the time of his death in 1982, the second generation was already prepared.[10] From then on and up to now, the two brothers continued to head the Organización Bagó, which had diversified its activities and internationalized as a **sibling conglomerate**. With the death of Ana Bagó, female family shareholders disappeared - a dynamic that still holds true in the third, and current, generation. In the 2000s, the new succession process was underway with the appointment of two male cousins – Juan Pablo and Sebastián (grandson) – to administrative positions in the group, thus continuing the culture of succession along the male line. In 2010, the Bagó economic group decided to reorganize, separating the companies controlled by the Bagó family from the rest of the linked investments.

Thus, some of the characteristic weaknesses of the family firm seem to have been overcome by a succession process that was planned and without conflicts; that is, concentration in a single family line in order to avoid the dispersion of social capital and the professionalization of the heirs in different areas. The commitment to internationalization stemmed from the experiences of the founder in his youth and was always part of the family heritage in the framework of a paternalistic culture. This was implemented by the second generation that headed the group and was continued by the third, strengthened through the new heirs' graduate studies abroad.

9. Interview with Carlos Chávez del Valle (May 6, 2010, Buenos Aires), and the act of constitution of the corporation, the financial report for 1967, and the Minutes of the Board of Directors for 1973.
10. Díaz Morlán states: "Succession is not a specific moment in time but rather a process that is the result of business decisions whose objective is the continuity of the work of the entrepreneur through successive generations" (2011:3); translation by *Apuntes*.

Technological aspects

The interest in expanding the business led the board to prepare a strategy of investment in the development of its own knowledge to enable the construction of techno-productive capacities. As a result, by the beginning of the 1970s, the company was first among locally-based laboratories. This process led to a long-term strategy implemented in three stages.

The first stage began in 1947 when it was decided to create the Bagó Research Institute (IBI), dedicated to scientific research and the development of new therapeutic options through drugs bought from third parties. By the middle of the 1950s, the laboratory was producing antibiotics and vitamins in a sterile zone dedicated specifically to their preparation and fractionation.[11] It could be said that these drugs were responsible for the company's growth during the early years and led to the initial accumulation of profits and techno-productive capacities.

The decades after 1953 saw the company expand greatly. It accumulated profits year after year and reinvested them to increase capital (Laboratorios Bagó 1953-1967). The data are impressive: the company went from a national ranking of 46th in its sector in 1964 to first in 1972 and its share of the local market went from 1.1% in 1966 to 5.63% in 1979, where it has remained ever since. This was not unrelated to the company´s obtaining credit on very favorable terms from the Banco Nacional de Desarrollo and the entry into the board of Luis Baliarda, a prestigious professional linked to the long-standing Catalan social networks in the pharmaceutical sector (Campins and Pfeiffer 2011) who shared his ideas on the strategic role of investment in R+D with the Bagós.[12]

Within the framework of the import substitution model and driven by the accumulation of capacities forged in the previous decade, the company embarked upon the second phase of technological development in the 1970s. On the one hand, it commenced vertical integration, starting the production of pharma chemical inputs by chemical synthesis

11. In Argentina at the time, there were two other laboratories (Instituto Massone and Laboratorios Roux-Ocefa) that experimented with the process of fermentation on the surface for the production of penicillin. In 1947, Squibb & Sons entered Argentina with the new technology of submerged fermentation; it was taking advantage of the incentives that the government of the day provided for industries that were declared to be "in the national interest."
12. Luis Baliarda represented the interests of local pharmaceutical businessmen in committees advising the national government in 1967 on the drafting of Law N° 17,189, which benefited the sector by authorizing increases in the prices of drugs after a long period in which they had been frozen. This defense of the sector not only represented corporate interests but also promoted the development of government scientific research as a strategic project for the country, fixing financial support by the private sector as a percentage of the sales of pharmaceutical products (Baliarda 1972: 41-45).

in a new plant built in City Bell for the production of raw materials;[13] on the other, it advanced in the production of knowledge towards economies of scope with the creation of two divisions within the "mother" laboratory: one dedicated to animal health through the production of an anti-foot-and-mouth disease vaccine; and another specialized in the industrial pharmaceutical technology, Tecnobagó, which used its own knowhow and resources in industrial technology to enter into the area of designing, constructing, and exporting turn-key plants.

The third stage in this construction of productive capacities began in 1974 when Laboratorios Bagó for the first time joined the quest for primary molecules, of which they selected three: talniflumate, talmetasina, and talosalato, active ingredients with anti-inflammatory properties used in the production of high-demand drugs.[14] From this stage on, the company significantly increased its registered patents to a total of 71 in 2010.[15] As a result of these decisions, in recent decades the City Bell plant has been producing semi-synthetic antibiotics in bulk, B series vitamins, and enzyme inhibitors, and synthesizes various bile acids for companies within and outside the group.

In the mid-2000s, Bagó opened its Special Division for Oncology and Biotechnology and signed agreements with transnational firms for the local distribution of oncological products that are not produced in Argentina.

At the same time, since the creation of three linked companies – Promofarma, Biogénesis-Bagó, and Sinergium-Biotech – the group started to develop and prepare vaccines and oncological products by employing biotechnological platforms.

This overview demonstrates the importance that long-term family commitment as well as belonging to such an exacting sector can have in the development of technical competencies in the framework of an entrepreneurial culture that emphasizes quality and innovation. This company's trajectory also demonstrates – in contrast to what is affirmed in Fuentes *et al.* (2007: 82) – that family enterprises are capable of generating technical contributions in highly competitive sectors, innovations that can serve as the basis for competitive advantages in new markets.

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13. In 1971, Laboratories Bagó was the first in Latin America to produce the semisynthetic penicillins ampicillin and gentamicin, developed by their Center for Scientific and Technological Research (Centro de Investigaciones Científicas y Tecnológicas).
14. The increase in life expectancy increased demand in this submarket and significantly increased investment in R+D of anti-inflammatories in the most developed countries.
15. In previous years, the company was already developing patents: two in 1950; five in 1982; and 52 in 2002.

B. Organizational aspects

The accumulation of earnings, knowledge, patents, and productive and management capacities over three decades bore fruit, allowing Laboratorios Bagó to begin a process of diversification both related and unrelated to pharmaceuticals, the area in which the group got its start. This process began in the 1970s with the creation of the Tecnobagó and animal health divisions. At the same time, diversification was achieved through a horizontal integration strategy, acquiring prestigious pharmaceutical companies on the local market in order to Bagó increase its market share. In addition, the creation of Disprofarma in the 1970s started the process of vertical integration, as the group entered the area of commercialization and storage of medicines.[16] Later, the company turned its attention to complementary areas such as insurance and information services, with the creation of Llers and the purchases of Seguros Victoria and Data. Additionally, at the end of 1970, Laboratorios Bagó expanded its business in the veterinary area with the purchase of the well-known Laboratorio San Jorge, which absorbed the personnel and capacities of the previous animal health division (see Figure 1).

In the mid-1990s, the group created Promofarma S.A., a company providing financing services and financial activities related to medical and botanical activities.[17] Later, at the end of the same decade, Laboratorios Bagó and Promofarma entered into the area of distribution of biosimilar medications[18] with the acquisition of the Uruguayan laboratory, Gautier, which the group renamed Bioprofarma in 2003.

Since the beginning of the 21st century, the Organización Bagó has participated in the recent move by laboratories into pharmaceutical commercialization, an activity promoted by the government following the promulgation of the decree deregulating the sector; it became associated with Mandataria Farmalink, acquiring a minority share of this company that plays a crucial role in the intermediation between the National Institute for Social Services for Retirees and Pensioners (Instituto Nacional de Servicios Sociales para Jubilados y Pensionados, PAMI) and laboratories.

16. Disprofarma was created as a corporation that held a 25% market share in storage and distribution of pharmaceuticals in the 1970s and 1980s. In 2007, Disprofarma received the capital of the Sielecki and Gold families, pharmaceutical entrepreneurs with whom the Bagó brothers were associated in Biogénesis Bagó.
17. The financial activities mentioned exclude the provision of credit to companies.
18. Biosimilar medicines are generic biotechnological drugs; they are similar but not exactly identical to the referenced products and, until recently, they were also called biogenerics based on their similarity to traditional synthetic drugs.

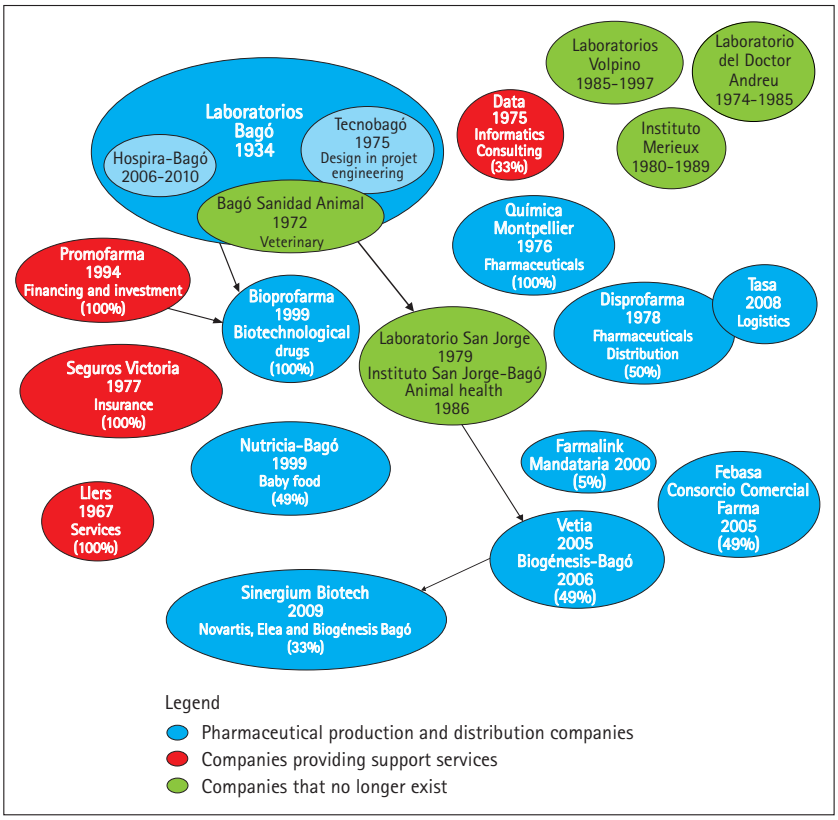
Since 2000, the Bagó family has decided to associate itself with leading companies such as Nutricia of the Netherlands; Biogénesis, owned by Sielicki-Gold family; Elea, owned by the Sigman family; and Novartis Argentina, a branch of the prestigious Swiss pharmaceutical company of the same name (see Figure 1). With Nutricia, a producer of baby food, the Organización Bagó established a joint venture that later led to the creation of a new firm in the group – Nutricia-Bagó S.A., with a plant in Garín, a province of Buenos Aires. Bagó joined with the leader company in animal health, Biogénesis, for the production of vaccines and biotechnological medicines, creating Biogénsis-Bagó S.A. in the locality of Escobar. Finally, in 2009, the Sinergium Biotech consortium was created for the production of vaccines for the H1N1 virus in association with three companies with expertise in this area: Biogénesis-Bagó, Elea, and Novartis Argentina. The organization structure of a consortium allows for cooperation among companies in the same sector to carry out joint activities while preserving their legal independence from one another. With this project, the Organización Bagó and its partners achieved synergies to take advantage of economies of scale in the production of vaccines to respond to the global pandemics currently faced by the world. This type of cooperation also increases efficiency by combining complementary resources from each of the companies.

While the Bagó group does not include banks or financial institutions, Llers[19] and Seguros Victoria are engaged in the insurance industry, while Promofarma provides financial services for medical and botanical products. These could be considered as cases of firms in the group that are linked to this financial activity since they have liquid capital that is available to finance new undertakings (see Figure 1).

During the period studied and as the organization grew and became more complex, the group established coordination between the functions of R+D, production, distribution, and financial activities of the various companies in order to optimize resources and avoid duplication. The administrators from the family knew how to internally generate capacities or acquire those necessary to integrate and coordinate resources that were converted into value intangible assets. Despite the complexity of the organization, decision-making was kept centralized and capital outside the family was never incorporated into the hard core of the organization although, from the 1980s, and very actively after the 2000s, strategic alliances were established for new projects with expert partners, thus assuring the maintenance of family commitment.

19. Currently inactive.

Figure 1
Diversification strategy of the Bagó group in Argentina, 1975–2010



C. Internationalization strategy

At the same time that it pursued a conglomerate strategy on the internal market, Laboratorios Bagó started a process of internationalization in the 1950s, exporting antibiotics and raw materials to Latin American countries (*Revista Bagó* 1950). This initiative was strengthened when the City Bell pharma chemical plant was opened, enabling self-sufficiency in inputs that were previously imported and increased exports in the region (Laboratorios Bagó 1971). The policies of the Minister of the Economy, Martínez de Hoz, were "oriented towards achieving rapid and increased efficiency in industrial sectors"[20] (Laboratorios Bagó 1980) and promoted the renewal of technology through management of currency exchange rates and opening up the internal market to foreign competition.

20. Translation by *Apuntes*.

However, these policies did not favor exports and thus Laboratorios Bagó had to adopt aggressive policies, as well as representing the sector in the preparatory meetings of the Latin American Integration Association (ALADI).[21] The first results of these decisions became evident at the beginning of the 1980s with an increase in the exports of products and industrial technology through the installation of turn-key plants produced by the TecnoBagó Division.[22] The significant growth of foreign sales in the 1990s and the following decade reflected expansion in Latin America, first, and then in the distant markets of Asia and Eastern Europe. The increase in exports as a percentage of Laboratorios Bagó's total sales went from 2.8% in 1980 to 15.4% in 2010.

More than 20 years ago, the process of internationalization added another company to the group: this time it was Biogénesis-Bagó, a company that exports veterinary medicines to different livestock-raising countries in the region and around the world.[23] As a result of the quality of its products, in 2006, Biogénesis Bagó – with the guarantee of the National Service for Public and Agri-Food Quality (Servicio Nacional de Sanidad y Calidad Agroalimentaria, SENASA) – was selected in an international competitive bidding process to provide antigens to the North American bank responsible for the provision of anti-foot and mouth vaccine in the United States, Canada, and Mexico.[24] In addition, from 2008, Química Montpellier – part of the Organización Bagó since 1976 – also entered international markets, announcing that the search for new markets at this stage would include the group's newest members.[25]

Another form of internationalization took place with the creation of branches in Latin America, starting in 1972. This made it possible to position both the Bagó brand and the national pharmaceutical industry as an intermediate provider of pharmaceutical products, active ingredients, and technology in the more developed countries, as well as

21. In 1979, the directors of the laboratory participated directly in the business negotiations when ALADI (ex ALALC [Latin American Free Trade Association]) was created, and that same year received a visit from representatives of the FDA (Food and Drugs Administration) of the United States and a commission of the United Nations Industrial Development Organization (UNIDO) interested in promoting the transfer of industrial technology to developing countries (Laboratorios Bagó 1980).
22. One of the first measures taken by the democratic government was to promote exports through the "Law for the Promotion of Exports" (Law N° 23,101/83) that in its Article 14 establishes a special reimbursement for exports of engineering services such as the installation of new industrial plants in foreign countries.
23. In 2010, Argentina exported a total of US$ 99 million in veterinary products, of which US$ 27.5 million were from Biogénesis-Bagó (*Revista Veterinaria Argentina* 2009, 2010).
24. *Revista Veterinaria Argentina* (2011).
25. To this end, Química Montpellier, member of the Grupo Bagó, announced in 2013 that it would increase its areas of production through the participation of Polo Farmacéutico of Buenos Aires. However, as at 2015, the Polo Farmacéutico of Buenos Aires project had not been implemented.

those countries where this industry was relatively less developed (Campins and Pfeiffer 2002: 57-64). From 1972 to the end of the 20th century, Laboratorios Bagó expanded its direct foreign investments in eleven Latin American countries, building production plants in seven nations and a plant to produce active ingredients in Mexico (see Table 1). This strategy of "Bagó plants, Bagó brand, and Bagó patent"[26] led the company to build the intangible assets of quality, responsibility, and commitment over five decades and position the laboratory in 10th place in the regional market at the end of 2000, competing with large international laboratories and asserting the competitive advantages that the company possessed on the local market.

Table 1
Direct foreign investment, Organización Bagó

Año	Latin America
1972	Mexico(1)
1978	Bolivia(2)
1981	Honduras(2) and six Central American countries
1992	Uruguay(2), Paraguay
1992	Ecuador
1993	Chile(2)
1994	Peru
1997	Colombia(2)
1999	Brazil(2)
2000	Cuba
Año	Asia, Eastern Europe, Africa
2003	Russia, Ukraine
2003	Sri Lanka
2006	Pakistan(1) (3)

Notes
(1) Plant producing active ingredients
(2) Pharmaceutical plant
(3) Biotechnological plant

Taking into account the economic adjustments which took place in Latin America at the end of the century, market adjustments, the 2001-2002 Argentine crisis, and the difficulties due to the costs and regulations involved in entering the pharmaceutical markets in the United States and Europe, the management of the company reoriented their international interests toward emerging markets, this time those that are "psychologically distant" from

26. Translation by *Apuntes*.

Argentina. From then on, making using of capacities acquired initially on the national market and later on the regional one, its investments grew year by year in Eastern Europe, Asia,[27] and Africa. By 2009, the Organización Bagó had added a plant in Pakistan in a joint venture with that country's Ferozons Laboratories for the treatment of oncological pathologies and hepatitis C, and embarked on another joint venture with the Grupo Chemo - owned by the Sigman family - to enter the Russian market, where it obtained a patent for production.[28] Through the strategic placement of a plant in Lahore, Pakistan, the company hoped to supply the local pharmaceutical market and, from there, export to different markets in Asia, Europe, Africa, and the rest of the countries of the region (*Consultor de Salud* 2009), reaffirming that "it is impossible to grow abroad without a production plant."[29] In 2010, the Organización Bagó had eight plants outside Argentina and 22 branches and a presence in more than 40 countries.

The internationalization of the group was a learning process favored by new inter-company links initiated in the 1980s, the economic openness of the 1990s, and the entry into force of the patent law in 2000, which allowed the Bagó group to become a leader and a strategic partner of some of the most important pharmaceutical companies in the world. In 1995, it already had 15 licensing agreements in place with international companies to prepare, import, and commercialize products and, in 2010, the number of agreements had increased to 25, including commercial alliances and joint ventures both on the local market and to enter new markets. Bagó's most recent internalization activities, in Pakistan and Russia, confirm Gallo's ideas about the importance of strategic alliances as an initial step in overcoming the uncertainties of entering international markets (Gallo *et al.* 2004: 12-14; *Consultor de Salud* 2009).

In short, internationalization in all the forms described above - the export of products and technology, direct foreign investment, inter-company linkages, and patent registration – allowed the Bagó group to achieve great efficiency, taking advantage of economies of scale at the same time as it constructed strategic assets. In 2009, ProsperAr published a ranking of Argentine multinationals that put the Bagó group in fourth place, taking into account its foreign assets, and fifth place in the transnationality index.[30] The group's total sales were US$ 713 million (ProsperAr and VCC 2009: 11), of which US$ 329 million were

27. China has become the principal foreign market for Trifamox IBL, the most recognized combination antibiotic with an enzyme inhibitor, which was developed by Laboratorios Bagó in order to provide high efficacy with fewer contraindications.
28. The company Bagó Pharma was established in Russia.
29. Interview with Carlos Chávez del Valle.
30. In the preparation of this index, ProsperAr took into account the principal variables abroad: assets, sales, and employees.

in international sales, including its own development of active ingredients in its pharma chemical plants, veterinary vaccines, finished medications, turn-key plant technology, and baby food.

The shareholding of the group's branches abroad has varied during the last decade and is always associated with the local licensees in charge of management. They receive professional visits from the mother company to coordinate and control the quality of the products, and to ensure that the influence of the Bagó brand, technology, and shared values reinforces family control in the branches.

It should be taken into account that, since 1996, Laboratorios Bagó has carried out hemispheric strategic planning meetings with managers and technicians in the Farma Internacional division. Through these exchanges, all the group's companies and branches reaffirm common shared values that reinforce family control in all the entities.

The reorganization of the conglomerate in 2010 divided it into two groups of companies, reflecting the impact of its international strategy on the organizational structure of the group: one a more traditional subgroup, a nucleus of family companies where property, management control, and central authority are concentrated; and the other a more modern subgroup with the participation of highly professional partners, in which different quotas of property and management are combined with more shared control. This subgroup is made up of firms of which most were created as a result of internationalization.[31]

The commitment to internationalization started with the founder of the company who knew how to transfer this commitment to his children and they, in turn, to the leaders of the third generation.[32] In this way, they were able to fuel the growth of the conglomerate and successfully evolve internationally, overcoming the most frequent limitations of the family firm such as scarcity of resources, risk aversion, and resistance to delegating functions; on this path, they maintained constant rates of reinvestment of earnings and formed alliances with partners outside the family and in various cultural environments (Gallo *et al.* 2004; Puig and Fernández 2009). At the same time, the establishment of branches and construction of plants abroad necessitated the creation of an organizational structure and procedural norms that required relations of trust with partners and foreign managers to

31. This subgroup includes firms in which the Organización Bagó participates with other groups, creating local branches controlled by these partners (with Nutricia-Danone and Ferrer), as well as established groups, such as Biogénesis and Sinergium, in which property and management are professionalized.
32. Gallo *et al.* (2004) argue that the level of entrepreneurial commitment to internationalization explains the success or failure of this strategy and defines the rhythm with which it takes place.

whom knowhow and daily operations were delegated, while the parent company retained control functions for itself. This "slow but sure" (Gallo *et al.* 2004) process over more than 60 years required the learning of new practices and adaptation to new environments, something which likely was not alien to the founder's experience of immigration.

The Sidus case

A. Family aspects

This company started in 1938, when brothers Antonio and Miguel Gusano Argüelles, together with Estaban Grau Carrió, founded Instituto Sidus in the city of Buenos Aires. It was a small firm located in the center of the city that produced medicines that were used widely and had little added value, such as calcium, expectorants, and laxatives. It can be assumed that during the first decade, production was small and was carried out in rooms near the administrative offices; this changed in the 1950s, when the company bought land for the construction of their own production plant in Bernal (Province of Buenos Aires).

Miguel and Antonio Gusano Argüelles immigrated in 1927 from Barcelona, following in the footsteps of their father who had arrived one year earlier to become the manager of the Andrómaco laboratory in Buenos Aires. Originally from León, the Gusano Argüelles were "Catalan by adoption," since the first member of the family arrived in Barcelona seeking better economic opportunities. This was not a typical family of poor and uneducated immigrants; they possessed certain resources of their own, as is evident from the profession of the head of the family and his children as listed in the records of the customs house in Buenos Aires.[33] Miguel and Antonio finished their high school studies in Buenos Aires and later went to work with their father at the Laboratorio Andrómaco, as the medical representative and traveling salesman, respectively. In 1938, they decided to create their own company together with a fellow employee, Estaban Grau. Andrómaco was an early Catalan pharmaceutical multinational famous in Spain at the beginning of the 20th century and with a presence in more than 20 Latin American countries. It was as part of Andrómaco's international expansion that the Gusano Argüelles acquired pharmaceutical skills and learned the business.

During its existence, the Sidus laboratory was organized according to a variety of legal forms and modified its structure of capital ownership. At first, it was Instituto Sidus de

33. The archives of the registers of the National Office of Migrations (Dirección Nacional de Migraciones), entries at the port of Buenos Aires (Center for Latin American Migratory Studies – Centro de Estudios Migratorios Latinoamericanos [CEMLA]).

Grau, Gusano Argüelles y Cía., a partnership at will created with identical investments by the three founders, who 11 years later changed the company name to Instituto Sidus S.R.L., with a new investor, Fernando Rubió i Tuduri, from one of the Catalan pharmaceutical networks in Argentina in which the partners participated (Campins and Pfeiffer 2011).

In 1959, the firm transformed itself into Instituto Sidus ICSA, maintaining the same investors but once again increasing its capital. Later, in the 1970s, the two members who were not members of the Argüelles family left the partnership: Fernando Rubió i Tuduri and Estaban Grau,[34] and the company became a **sibling and nephew partnership** (Gersick *et al.* 1997: 18) in which the share capital was concentrated in the Argüelles family (they stopped using the paternal family name – Gusano), with six of its members on the board, including the complete first and second generations.[35] In 1977, the change from first generation to the second took place when Marcelo Argüelles joined the board. He was the only son of Antonio Argüelles and had a professional degree in marketing. His entry into executive positions coincided with the firm's renewal project.[36] When, in the mid-1980s, the members of the first generation passed away, their widows inherited half of their shares and took their place on the board until 1999, when the widow of Miguel Argüelles gave her shares to her two daughters while she was still living.

Though at the end of the 1990s the Sidus group called itself "The Sidus Group of Pharmaceutical Companies" (Grupo de Empresas Farmacéuticas Sidus), it already was evident in the previous decade that it had a diversification strategy for new businesses. Utilizing profits from the family firm, it converted itself into a **conglomerate of uncles and cousins** (Gersick *et al.* 1997: 48). The women in the family – wives and daughters – only appear as shareholders in the various firms of the group but do not sit on the boards, whose members have been the male members of the family and in-laws. The process of succession of heirs started with their holding positions as assistants before moving up the ladder to higher administrative positions according to the background of each. They might rotate through different firms of the conglomerate, reaching positions on the boards of the small companies and moving up to be part of the management of the group. Since each branch of the family contained several children, from 1990 on entry into the conglomerate was regulated by a family protocol created that year that made it difficult for the third

34. Register of General Proceedings, file 56760, Palace of the Courts of the Nation, Argentina (Registro de Juicios Universales, legajo 56760, Palacio de Tribunales de la Nación, República Argentina).
35. The total social capital was distributed in equal parts among the two branches of the families of Antonio and Miguel; the founders received 25% each and, since both had two children, they each received 12.5%.
36. When Marcelo Argüelles joined the board of Sidus, the laboratory ranked 38th on the national pharmaceutical market; in 1988, it occupied 22nd place and, from the signing of the agreement with Merck until it expired in 2000, it was in 3rd place in these rankings.

generation to enter the group (Hatum 2007: 65-66). Finally, at the end of the 2000s, the group was divided into two subgroups, corresponding to the two branches of the founding family: the descendants of Antonio and the descendants of Miguel.

Thus, while the founders provided both the initial effort as well as invaluable social networks and a commitment to building a solid organization that would outlast them, it was the strategic vision of the second generation that guided the company during its most successful period. The shift from the first to the second generation of cousins and sons-in-law was an anticipated and secure succession process that was not repeated in the same way during the transition to the third generation, since one can infer from the need to sign a family agreement that there were some internal discrepancies regarding the existence of so many candidates among the cousins and nephews. This conflict continued and was finally resolved by the division of the group into two branches. But this did not affect the initial commitment to internationalizing the group since this process went back to the first and second generation, of the firms leadership, and continues to influence the evolution of one of the two branches.

B. Technological aspects

According to its annual reports, during the 1970s, Instituto Sidus engaged in the creation of conditions for future growth. In 1974, there were plans to construct a plant for organic synthesis in Gualeguaychú (Entre Ríos), taking advantage of the industrial promotion policy of 1973. Although the project came to nothing, it marked an important search for new sources of growth, with the company opting for a strategy of investment in the production of its own knowledge and hiring personnel with university and technical qualifications in order to advance toward a vertical integration that would reduce the burden of importing inputs (Instituto Sidus 1973-1980).

While until 1976 the company found itself in difficulties due to the severe currency devaluations and price freezes that affected the costs of its inputs, from that point on the laboratory's sales calculated in dollars began to grow. Then in 1980, it announced that it was launching, in what it called a "world premiere," InterA11. According to that year's annual report, this was an absolutely original drug that was offered on the international market by Instituto Sidus.[37] From then on, the possibility of occupying the biotechnological niche awakened the interest of Marcelo Argüelles, who, in 1980 and using his own resources, founded the Area of Biotechnology in the existing plant in Bernal and the Plenaria S.A.

37. InterA11 was developed by the Inmunoquemia company and was a variety of interferon, a new active biological ingredient with potential anticancer properties, which created great expectations both in the scientific and the industrial realm, where a new "star drug" was envisioned (Aguiar 2011: 9-12).

company[38] with the purpose of registering and exploiting invention patents for future discoveries by his companies. The procedure used to start the new area was the cooptation of highly qualified human resources from the Inmunoquemia company (Aguiar 2011: 18). They were trained at the University of Buenos Aires and national scientific research institutes and possessed the necessary knowhow for the production of interferon.[39] In 1983, the Area of Biotechnology was transformed into BioSidus S.A., a standalone company linked to Instituto Sidus, which was its source of investments and would commercialize the products developed. The growth strategy for the biotechnological area was a long-term investment that drew on the company´s own resources and bank loans, amounting to a total of US$ 25 million over 15 years. As a result, by the mid-1990s, four recombinant proteins were developed for use in healthcare (Jeppesen 1996: 320). Three years after its creation, BioSidus marketed its first product, leukocyte interferon, and in 1991, it developed an innovative version of interferon using a recombinant methodology, with which it became a leader on the local and regional biotechnological markets.[40]

As a result of this process, during the first decade of the 21st century, BioSidus S.A. produced six human proteins through recombinant DNA technology and had five new projects in development: the pharmaceutical milk farm,[41] the hormone teriparatide (PTH),[42] applied research in genetic therapy,[43] the blank genome,[44] and the vaccine for the human

38. The creation of this firm implied the recognition of the importance of patents as a motor of pharmaceutical activity, a conflictive issue for the local business community which was accustomed to development through reverse engineering, which explains the tension between Argüelles and the Argentine Association of Pharmaceutical Laboratories (Cámara Industrial de Laboratorios Farmacéuticos de Argentina, CILFA). Years later, this tension led to the entrepreneur leaving the organization, despite his being one of its founders.
39. Interview with Dr. Marcelo Criscuolo (Buenos Aires, May 5, 1997): "The people from Sidus understood this and gave their support to the internal development in biology because they thought this was the way of the future." (Translation by *Apuntes*).
40. Sales reflected explosive growth starting in 1993 when BioSidus introduced erythropoietin on the Brazilian market, increasing foreign sales by 3,161% and assuming control of 75% of the local biotechnological market. It was the only company internationally that produced this product in lyophilized (freeze-dried) form, which eliminated the problems of inefficiency in the chain of refrigeration in developing countries (BioSidus 1994)
41. Since 2002, BioSidus has obtained the human growth hormone through transgenic cloned calves, called Pampa, and since 2007, it has added a new generation of transgenic cows (Patagonia) to obtain human insulin.
42. A molecule identical to the natural human hormone designed entirely by BioSidus to increase bone mass in individuals with osteoporosis.
43. BioSidus obtained permission to carry out clinical tests for genetic therapy for revascularization - vascular endothelial growth factor (VEGF) – for ischemic patients who have no therapeutic option; it received the 2009 Innovar prize for this project.
44. A microorganism from Antarctica capable of living in frozen Antarctic waters. The project, wholly Argentine, was a joint venture between BioSidus, the National Office for Antarctica (Dirección Nacional del Antártico), and the Argentine Antarctic Institute (Instituto Antártico Argentino). For the first time

papillomavirus (HPV).[45] The policy of constructing one's own knowledge was new to the Argentine techno-productive realm, which was characterized by production and export of goods with low aggregate value. This process was carried out in various stages: the first was characterized by the production of traditional medicines from imported drugs; then, from the beginning of the 1970s, BioSidus coopted capacities needed for the production and development of an active ingredient in international demand – interferon. From then on, it positioned itself as a local pioneer in biotechnology through the development of various innovative biotechnological projects. Finally, vegetal biotechnology paved the way to important applications for the development of phytopharmaceuticals and vegetable transgenics. Thus, the decision to invest in biotechnology that was taken at the end of the 1970s formed the basis of the capacities developed in the following decades.

C. Organizational aspects

The entry into the board of Marcelo Argüelles (who had a professional degree in marketing) in 1977 coincided with the beginning of a company renewal project that adapted the enterprise to new technologies for processing living matter and established new links with transnationals in the sector.

During the 1980s, in a context of sales that were erratic due to currency devaluations and price controls, the company stayed afloat thanks to its traditional line of products and the promotion of the new antivirals. But at the end of the decade, Sidus took a commercial leap forward. In 1988, the company signed a technical-commercial agreement with Merck, Sharp & Dohme (known as MSD outside the United States and Canada), which had decided to leave Argentina. The signing of this agreement with Merck included a drug production plant that the company owned in the Parque Industrial de Pilar. This alliance allowed Sidus to take advantage of opportunities stemming from the technological gap between the two companies, since this modern plant employed good manufacturing practices (GMP). The result was the early internalization of these practices by Sidus. The advantages of this operation were endangered when the hyperinflation of 1989 drove Sidus to the brink of bankruptcy. It managed to recover thanks to the renegotiation of its financial debt with Merck.[46] While the Merck contract signified a qualitative and quantitative leap forward that allowed Sidus to move from 22nd to 3rd place in the national rankings, it was clear that when the 12-year agreement expired, Sidus would find itself in a very vulnerable

in Argentina, a microorganism that had not been previously described was mapped genetically; it has promising industrial applications.

45. BioSidus signed an agreement with the University of Denver, Colorado (United States) and obtained a grant from the Bill & Melinda Gates Foundation to develop a vaccine to prevent the contagion of the virus.
46. Interviews with managers, doctors Juan Carlos Iglesias and Marcelo Criscuolo and with Carlos Melo (Buenos Aires, May 8 and May 5, 1977 and November 21, 2003, respectively).

position (Hatum 2007: 54) if it did not take advantage of those years to transform itself into a company with its own value proposition.

The group's entry into the biotechnological-pharmaceutical niche with BioSidus would become the key to its success and conditioned the future structure of the organization, as suggested by Chandler (1962: 13-14). Shortly thereafter, this strategy led to the creation of Bio Arg S.A. and Tecnoplant S.A. in 1986. From then on, the Sidus group developed a subspecialty in vegetal biotechnology,[47] agribusiness, and development of original analytic methods for measuring the biological activity of recombinant proteins. To this end, it created the Centro de Diagnóstico Molecular S.A. in 1996, Biopork S.A. and Biovacs S.A. (later BioSidus AG)[48] in 1998, Tecnovital S.A.[49] in 1999 and, completing its integration into agribusiness, it created Vitalpack S.A. in 2002 and Berries de Argentina S.A.[50] the following year.

The Sidus group also entered into the generic drug business with the creation of Lasifarma S.A. in 1995 and with the acquisition of the Medex brand. Lasfarma operated as a generic and dietary supplements laboratory in addition to producing various licensed lines of products. However, this project was not successful because Lasifarma did not expand (Hatum 2007: 51-52) and in 2000, in a context of economic difficulties, aggravated by the expiration of the licensing agreement with Merck, the Argüelles group decided to carry out the first reorganization of the group in order to achieve greater efficiency in expenses and cost reduction. As a result, Lasifarma, whose main asset was the Bernal plant, was absorbed by BioSidus (BioSidus 2000, 2001).[51]

The economic deregulation of the 1990s transformed the structure of the Argentine pharmaceutical sector and the differentiated functions of laboratories, pharmaceutical wholesalers and pharmacies disappeared. In this context, the group decided on forward integration, carried out in two stages: the first, in 1990, promoted distribution with the creation of the SD company. Later, in 1998, the group made a very aggressive play in the

47. For the production and propagation of transgenic plants, production of high-value biomolecules, and recovery of economically valuable native species that are becoming extinct.
48. Biovacs was created to buy, fractionate, sell, import, and distribute vaccines against AIDS and all other products to be developed in the future by the French firm Neovacs S.A., a spin-off of Pierre and Marie Curie University in Paris, which since 2010 has been listed on the stock exchange in that city. In 2004, Biovacs changed its name to BioSidus AG S.A., whose principal declared activity was financial and investment services.
49. A producer of blueberries; 99% of its sales are on foreign markets and it competes in the offseason with Chile, Australia, and New Zealand.
50. The statutes of Biopork S.A. were changed and the name became Berries de Argentina S.A.
51. During the 2000s, the plant – one of the oldest assets of the group – was transferred two more times between Sidus and BioSidus in the framework of the second reorganization of the group in 2010.

pharmaceutical market by acquiring the seven pharmacies of Better Pharm S.A.[52] and 30% of the shares of another chain of pharmacies with the purpose of learning new ways of managing self-service pharmacies from the inside (Hatum 2007: 65). The completion of this stage gave rise to the Negocios Farmacéuticos company, whose function was distribution and services to pharmacies.[53]

The strategy of diversification toward distribution was an ambitious and risky play by Sidus since it meant venturing into territory that was unchartered by any other local company (Hatum 2007: 59, 60) at a time of cleavages in national economic policy, which made the process even more difficult. By 2000 – when its agreement with Merck expired and because several of its biotechnological patents were also expiring – the group was preparing to face this new situation by expanding its distribution activities, as already explained, and by entering the new market of biosimilars. To this end, in 2008, it acquired the firm Delta Farma S.A.[54]

The Sidus group did not own companies included under the Law of Financial Entities (Law N° 21,526), nor did it enter into strategic alliances with banking institutions. Nevertheless, three businesses belonging to the group had been engaged in investment activities and financial assistance since 1998 – Negocios Farmacéuticos, HIAM, and BioSidus AG. These firms helped the companies in the group with the provision of funds throughout the following decade.

In 2001, the group was affected by yet another economic crisis, this time due to its large bank debt. The crisis of that year endured throughout the decade and, in 2007, Sidus made important announcements regarding its intention to list on the stock exchange and to bring in a Latin American partner to carry out projects on the international market, but the offers received did not convince the Argüelles. Finally, in 2010, a decision was taken to reorganize, dividing the companies between the two branches of the family descended from each of the founders – Antonio and Miguel.[55]

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52. Better Pharm brought the European-owned Vantage pharmaceutical franchise to Argentina at the beginning of the 1990s and later, in 2005, it primarily provided services to the pharmacies in the franchise. After the reorganization of the company in 2011, it came into possession of the intellectual property of the pharmaceutical milk farm project, the bovine growth hormone, the VEGF project, and the blank genome, which were transferred to it by BioSidus.
53. In 2005, Better Pharm transferred the Vantage brand name to the firm Negocios Farmacéuticos (Better Pharm 2005).
54. In 2008, Sidus also acquired 100% of the companies ABG S.A. and Bossarg S.A., which it renamed Delta Farma.
55. It should also be kept in mind that, when family-owned companies increase the number of family members involved, internal conflicts start to break out. In these cases in Argentina, it is common to use a legal provision that permits reorganization through a split which leads to tax neutrality when this measure is declared to be for commercial purposes (AFIP 2008).

The schism left the majority of the companies on the side of Marcelo and his sister Silvia Argüelles – children of the founder, Antonio, the former being the group's one-time leading light – with few biotechnological projects. On the other side, his cousins Estela and Irma – daughters of the other founder, Miguel – together with Santiago García Belmonte, Miguel's grandson, found themselves in the most innovative sector, since they had BioSidus in addition to three biotechnological R+D undertakings in the United States. This allowed them to preserve most of the intangible assets of the group and a leading international role together with the business of distribution and services to pharmacies.

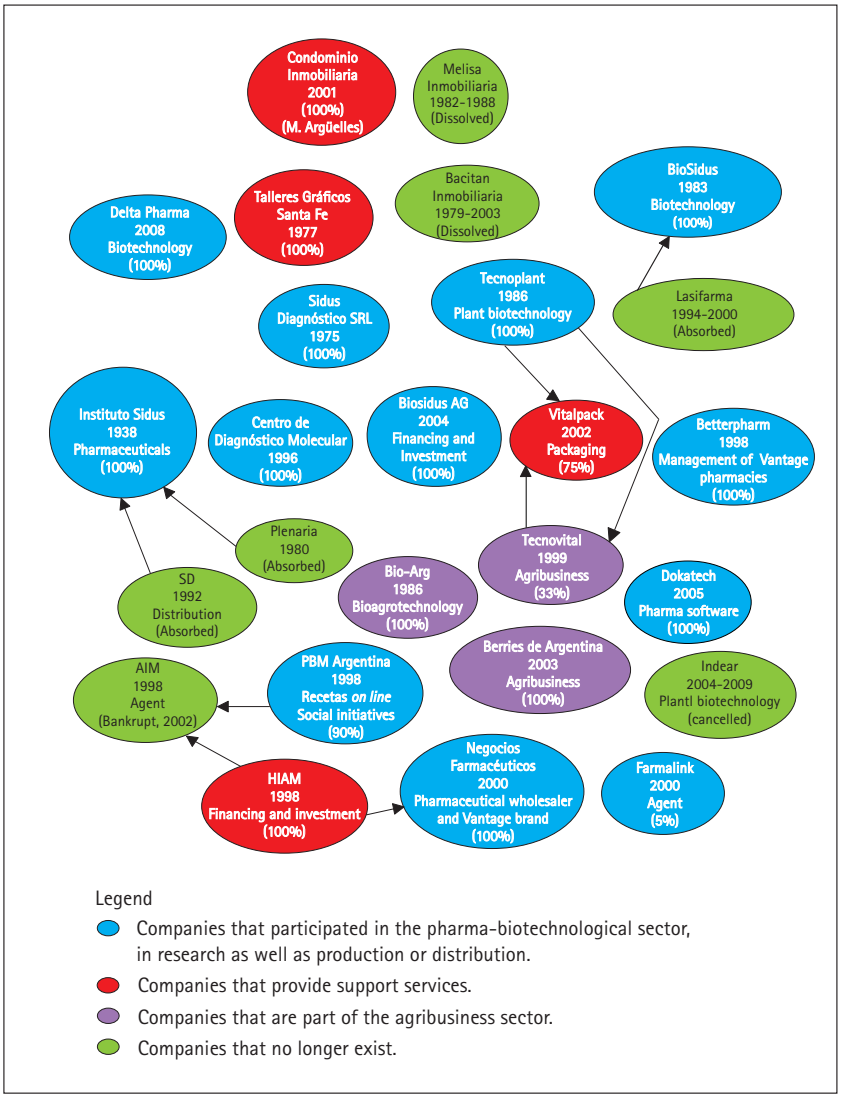
Sidus was a constellation of firms in which the organizational structure was marked by a style of leadership that was paternalistic, creative, associative, and ambitious, capable of generating high levels of confidence and loyalty. The advances achieved in biotechnology increased the company's reputation for innovation; it was considered the "NASA of Argentina"[56] and attracted a nucleus of expert professionals on this basis. As its organization became more complex, it advanced in the coordination of its R+D, production, and distribution functions across the firms in the group, but the need to strengthen family control, incorporate new relatives, and avoid bringing in external partners oriented the organization towards creating companies in order to start new businesses that had differing levels of success. Together with its organizational aspects and the image of the Argüelles, both the brand and the reputation of Sidus-BioSidus were converted into fundamental intangible assets in the process of internationalization (see Figure 2).

D. Internationalization strategy

The presence of Sidus on external markets started slowly in 1980 when InterA11 was launched. This was the laboratory´s first innovative product, as discussed above. At that time, Sidus did some exporting to Uruguay and Paraguay. The fact that this was not mentioned in the following annual reports, until 1992, suggests that these exports were not continuous. From 1993, growth in exports primarily consisted of the distribution of biotechnological medications made by BioSidus, which had created its own Department of Foreign Trade. The primary objective was to enter the Brazilian market and this was achieved through a joint venture with Brazil's Biosintética. From 1994 on, exports continued both through Sidus and BioSidus, reaching the new markets of Russia, Korea, Pakistan, Turkey, India, Thailand, and China.

56. This expression was used to describe the performance of the company by the development manager during our interview.

Figure 2
Diversification strategy of the Sidus group of pharmaceutical companies in Argentina, 1977–2010



Combining experience and innovation, the Sidus Institute distributed traditional products that were already on the local market to nearby markets, as well as distributing the first own-brand BioSidus biotechnological innovations to bordering countries. Then, it began to construct a network of laboratories under license from BioSidus, first in Latin America and later in the emerging markets of Africa and Asia. A small group of people oversaw international trade: the commercial manager, the executive director, and the president, who constantly traveled in order to streamline this process.[57] Sometimes, Sidus signed licensing agreements with foreign multinationals to produce locally, and in exchange the foreign corporation would sign an agreement with BioSidus to enter new markets. This was the case of the agreement with Laboratorios Schwartz of Germany in 1998, which permitted BioSidus to enter the complex market of China.[58] This *quid pro quo* strategy was key to sorting out the difficulties created by a lack of knowledge of the mechanisms of local registration and distribution of medicines on new markets. Thus, at the end of the 20th century, BioSidus was transformed into the engine of the group's external expansion, each year adding new contracts and licenses with local laboratories and multinationals. While the exports of Instituto Sidus ranged between 1.7% and 2% of total sales in the 1990s and the following decade, BioSidus' exports grew spectacularly during this whole period, going from 4.7% of total sales in 1994 to 71% in 2010.[59]

Outside of the pharmaceutical sector but related to biotechnology, through Tecnoplant, the group created a nucleus of integrated companies related to blueberries that rapidly internationalized (Tecnoplant S. A., Tecnovital S.A., and BDA S.A.). With this nucleus of biotechnological-agricultural companies that exported more than 90% of their total productions to the United Kingdom, United States, and Canada, the Sidus group positioned itself in a very promising niche of elite fruits and in recent years has come to lead this submarket, achieving a 27% share in these exports in 2010 (Trade.Nosis.Com n.d.).

Another mode of internationalization used by this group is direct foreign investment through branches: Instituto Sidus has had a presence in Uruguay and Paraguay through commercial representation since 1993 and created its own branches in 1999;[60] in the same year, it established a BioSidus commercial office in Asia to take charge of regional operations, and planned the construction of plants in Brazil and Canada (*Revista InfoSidus* 1999). To this

57. Interview cited above with Dr. Marcelo Criscuolo from BioSidus.
58. In this interview, Criscuolo provides several examples of this strategy that allowed for negotiation on equal terms with powerful partners. Hatum argues that the group created this "tit for tat" strategy (2007: 58).
59. With a total of $US 33.4 million billed, exports reached $US 23.5 million (a historical high in June 2010).
60. Sidus Uruguay S.A. and Sidus S.A. Paraguay were the result of the acquisition of part of the shares issued that year; in 2008, they were completely incorporated into the group.

end, it signed a joint venture with Biosintética of Brazil and founded Biolatina, but the project was not carried out as a result of the economic and political crisis in Argentina in 2001-2002. Its plans for expansion in North America led to the creation of three controlled companies dedicated to R+D in biotechnology in 1999: Sterrenbeld Biotechnologie NA Inc., Biovacs Inc., and BioSidus NA Inc., which were registered in Delaware. This U.S. state has become a high technology center because it does not tax earnings obtained by companies outside the state and companies are not required to physically operate in the United States (Pico 2010). Locating in Delaware was part of BioSidus' strategy, which included the establishment of a plant in Canada, thus taking advantage of the opportunities for biotechnological research and manufacturing provided by Canadian patent law. Canadian product certification and the establishment of a branch in the United States would open the door to the difficult markets in that country and in Europe.[61]

Inter-enterprise relations were another mode of internationalization employed by the group. These played an important role after the agreement with Merck in 1988, which introduced GMP to the Argentine team. This method took on ever more importance in entering external markets as well as local ones. As a result, in 2008, Sidus and BioSidus generated total sales of US$ 88 million and had a presence in 30 countries and had signed 29 international agreements. Many of these were licensing agreements for the production and distribution of its pharmaceutical products. In the case of the following biotechnological products: the biosynthetic human growth hormone (HHT®), Neutromax, Hemax, and Bioferon, the licenses only permitted registration and distribution under different commercial names because BioSidus only exported the finished product so as to guarantee its quality (*Revista InfoSidus* 2000). In 2009, the Sidus group was 19th in ProsperAr's rankings, which only mentioned BioSidus as a company forming part of the group and did not refer to its branches in the United States.

Finally, another form of internationalization developed by the group were agreements for R+D and applications signed with foreign foundations, institutes, and universities. These projects were not aimed at immediate monetary gain, although they did construct intangible assets through the production of knowledge.

The achievements and learning accumulated by the organization prompted tepid internationalization by Instituto Sidus in 1980, in what was a slow process that started through exports, initially to countries that were psychologically similar and with sales of existing products. The traditional mode of internationalization, following the Uppsala

61. Interview cited above with Dr. Marcelo Criscuolo; see also Hatum (2007: 59).

model, changed the moment that BioSidus produced lyophilized erythropoietin in 1993, which allowed it to position itself on the Brazilian market through a joint venture with BioSintética and from there, move into other markets. It could be said that this was a "critical incident" that led to the "global rebirth" of Instituto Sidus (Bell et al. 2003: 174) and the development of its "highest velocity" project starting in the 1990s, as it incorporated the different innovations it produced (Gallo *et al.* 2004: 10-11). The acceleration of the process led BioSidus to begin exporting the following year, and during the decade it went on to enter markets that were both geographically and culturally distant. Later, starting in the mid-2000s, Tecnovital and BDA became suppliers of blueberries to Anglo-Saxon countries, to which they send 90% of their production.

This was possible due to the strong commitment to internationalization by the Argüelles family at the time the first generation was being replaced by the second. If the younger generation contributed its vision of renewal by focusing on biotechnology, we can assume that the founders were not reluctant to face the challenges of beginning to do business on foreign markets thanks to their previous migratory experience. This family consensus must have facilitated the success of the second stage of internationalization, when the group went from sporadically exporting products to the establishment of strategic alliances and the creation of branches with foreign partners for the export of traditional medicines and biotechnological products.

The originality of this case is that the sustained expansion into foreign markets was achieved through the youngest company, which advanced rapidly as it produced innovative products. In this sense, the Sidus group was helpful to BioSidus which benefited from its financial resources and the local reputation of the Sidus Institute. Consequently, it was possible to overcome the limitations of the family firm in relation to processes of growth, such as internationalization, as described in the academic literature. The Sidus group operated by constantly reinvesting and delegating the functions of manufacturing, registering, licensing, and distribution through alliances and association with companies both inside and outside the family group. All of this was facilitated by the provision of expert entrepreneurial and management leadership under *quid pro quo* arrangements.

Until the conglomerate was split in two, internationalization was concentrated in the export of products, the establishment of commercial branches, and signing co-marketing and R+D agreements. However, there were no direct foreign investments in production plants abroad; this simplified the operational structure between headquarters and the branches, which included only the managing offices of Commercial Development and Special Projects and Regulatory Matters. These departments exercised control functions over the branches and agencies.

COMMON STRATEGIES IN THE CASES STUDIED

In the analysis of these cases, it was observed that the two economic groups were formed through similar strategies that focused on the construction of intangible assets. The capacity to accumulate family experience and leadership together with the commitment to techno-productive development in both cases generated organizational capacities in the specialty of the original company and promoted a reputation for quality. This combination of resources and capacities favored the design of medium and long-term strategies, one of which was internationalization.

When it comes to the formation of companies, two modes can be observed within the groups. First, new activities started as a department within an existing firm and, after a time, reached the capacity to function autonomously and separately from the parent company to form a company-child of the group.[62] Second, companies were created with local or foreign partners, or companies with recognized brands were acquired. While in the first mode the companies were controlled from the beginning, in the second, changes were observed in the level of control depending on the strategic objectives of the group (which could vary between cooperation, participation, and control).

The opening up to foreign markets emerged as an early strategy for both groups, starting when they had achieved advancements of their own, because they needed to take advantage of economies of scale or perceived opportunities in unsatisfied markets that could be exploited. Thus, by the time that national political policies were implemented that promoted exports, the groups were ready to take advantage of them. Bagó exported its antibiotics to the region starting in the 1950s, active ingredients from 1971, and industrial technology from 1981. Sidus did the same with InterA11 starting in 1980, and continued with erythropoietin, the human growth hormone, recombinant interferon in the 1990s, and in the 2000s, with a variety of products obtained from animal transgenics such as the growth hormone and human insulin, among others.

Without doubt, the conditions of the sector on the local market where they competed with transnational companies constituted learning platforms for these laboratories which, in the second stage, went on to establish branches and sign various manufacturing and

62. Tecnobagó is an exception. It remained an internal division in the style of a Chandlerian multidivisional company. Tecnobagó has a confusing identity within the group given that in various of its publications it appears as corporation or a company that is part of the Bagó group, which it is not. The other exception is Hospira-Bagó, a branch of the expert U.S. firm dedicated to medical technology, which functioned as an internal division of Laboratorios Bagó until 2010, when it became an independent company under the name of Hospira Argentina S.R.L.

provision contracts abroad. Internationalization started with the pursuit of culturally understandable markets and thus the groups developed strength in Latin America. Later, they reached developing markets where, thanks to their local partners, they could compete under conditions of parity with large world players. It is true that Bagó was one of the pioneers of local industry in the exploration of other markets and carried out more complex activities, including direct foreign investments through commercial branches and productive plants while Sidus did little of this. Nevertheless, the most important difference between the two cases discussed here lies in the modes of internationalization, which can be traced to the relationships of authority and family leadership that each group had previously constructed on the local market. In the Bagó group, there was a hierarchy with the laboratory that bore its name at the top followed by the rest of the companies owned by the family. It was this laboratory in which all the group's R+D activities were concentrated until 2006, and which had priority in international expansion for decades. In the case of Sidus, this relationship was more horizontal and although the Institute initiated internationalization first through exports and the creation of commercial branches in nearby markets, at the same time it provided support in the financing of BioSidus' biotechnological project and, in the form of its leadership and reputation, to the later commercial expansion of its biotechnological products both on markets that were nearby and those that were far away and complex. Thus, while Laboratorios Bagó was the only entity in its group to carry out foreign activities until the mid-2000s, Instituto Sidus had ceded its role as the flagship in those markets to BioSidus. As a result, in 2010, the export leader in each group – the Bagó's semisynthetics plant and the BioSidus laboratory – exported 70% of their production.[63]

The three determinants put forth by Graves and Thomas (2008) to explain consistency in the strategy of internationalization – family commitment, provision of financial resources, and the capacity to create the necessary organizational structure for this purpose – also were observed in both cases discussed here.

First, long-term family commitment existed in both cases, resulting in investment over decades in developing R+D projects, infrastructure, and organizational changes, all of which later supported internationalization. These investments led to an expansion into new markets and increasing exports for both groups. In terms of sources of financing, the Sidus group at various times resorted to bank and private loans on the local market, with their associated risks, and as a result, the 1989 hyperinflation and the end of the fixed exchange rate put the group in difficulties. On the other hand, Bagó was decisive in turning

63. In the case of Bagó, exports include intragroup operations for the preparation of its final products.

to the reinvestment of earnings and was less inclined to go into debt in Argentina; it did, however, take advantage of credit on foreign markets on various occasions, where it was accessible and secure, and in order to finance the installation of production plants. Finally, neither of the two groups brought external partners into the hard core of companies in the conglomerate, but both were very efficient when it came to establishing alliances for projects with expert partners or entering new markets or ventures and were ready to bring in the necessary managerial capacities from outside the family to improve production and distribution conditions.

When it comes to which generation promoted internationalization, in both cases it straddled the transition from the first to the second and it was the latter that consolidated the strategy, although one could assume that the support of the founder(s) helped in the creation of the family consensus necessary to sustain the long term investment that internationalization requires. Family structure provided an advantage to Bagó, since the second generation was small (two siblings versus four cousins in the other case). Thus, an association was formed as a conglomerate of siblings in which centralized and vertical authority was useful in sustaining the compromises that were reached. The passage from the second to the third generation increased the number of descendants in both cases. However, the Bagó family did not change the property structure of its companies, which retained their previous organization with only two sibling partners who alternated each year as president, and assigned their successors a certain degree of control on the board and in the management of companies in the group. In the case of Sidus, the horizontality mentioned above was replicated in the conformation of the association as a conglomerate of uncles and nephews, and we can suppose that this made it more difficult to maintain consensus on strategies and investments.

As noted above, this study was completed in 2010, when both groups had already finished their reorganizations: in the case of Bagó, by a split that was justified in terms of improving the efficiency of investments, and, in the case of Sidus, in the reassignment of assets to preserve the continuity of the companies involved.

CONCLUSION

To internationalize is not an easy or an immediate decision but rather a complex strategy, as is evident in the cases studied, and their analyses justify the combination of the two approaches used.

In the first place, we asked how family companies are able to overcome the pitfalls inherent to their status and decide to enter foreign markets. The case studies demonstrate that it

was necessary to have a nucleus of intangible resources that were difficult to imitate by other competitors, as the resource-based view postulates. These resources were transformed into a source of sustainable competitive advantages on different markets according to how they were combined with other factors described in the literature as strengths and weaknesses of the family firm (Fuentes *et al.* 2007). In the cases studied, there existed an ability to turn weaknesses into strengths, as occurred with the scarcity of financial resources and resistance to change and the delegation of functions. Proof of this can be found in the permanent reinvestment of earnings, the incorporation of professionals from outside the family, and a willingness to establish alliances with expert partners. In addition, maximum advantage was taken of strengths such as the image of company, its centralized organizational structure, experience, and paternalistic leadership to promote rapid and centralized decision-making regarding new markets. Thus, the family's commitment to internationalization – aided by a succession process that was planned and without conflicts – was the principal intangible asset, combined with the availability of resources and the capacity to construct organizational capacities (Graves and Thomas 2008).

It is important to note that the economic groups studied – because they are family conglomerates – do not fit into the category of organizations that operate in traditional sectors with little use of high technology.[64] In both cases, the parent companies were established as medium-sized family firms which, because they operated in the knowledge-intensive sector of pharmaceuticals, had to compete with international laboratories. Thus, in order to expand, they needed a product strategy and this implied – at the very least – adaptive research and technological development, including pilot plants - factors that are very positive for the industrial evolution of developing countries. The companies were able to take advantage of government aid provided through laws promoting exports, prizes, guarantees, and funds for development, to the extent that both already had projects underway and were prepared to engage in strategies for entry into foreign markets. While both advanced in the process of diversification and internationalization, Sidus has more R+D innovations than Bagó. Both groups, when they discovered that their technological resources could be a source of advantages on new markets, decided to enter new territory about which they lacked information during the first decades and, consequently, they moved forward by employing idiosyncratic modalities derived from their organizational culture. Thus, the findings of this study demonstrate once more the importance of constructing intrafirm intangible assets but also reveal, as Michael Porter affirms, the importance of the sector in which a company operates and its exacting competitors, suppliers, and

64. The groups studied differ from Schvarzer's characterization, which contrasts local groups' preference for rentist investments with the investments in technology that are taking place in the newly industrializing countries of southeast Asia (1994).

clients in stimulating the construction of the competitive advantages that strengthen development (1991).

Secondly, in order to respond to the question of how these groups expanded into new markets, the employment of Uppsala's sequential model was useful. The Bagó group, which initialed its process in the 1950s, corresponds to the idea of the traditional way that family companies internationalize, advancing step by step, as Gallo notes, towards foreign markets following conventional methods of entry (experts, representatives, branches, their own plants). In general, its expansion was due to the appearance of opportunities on other markets or the need to prolong the lifecycle of a product. Later, the group moved into nearby markets and took advantage of this experience to expand to markets that were further away – this also corresponds to the sequential model. Further case studies need to be done on companies that are different in size and organization and that were established more recently, during a period of globalization of information, in order to test whether the Uppsala model is still useful or if the sequence has changed in these new cases.

The Sidus group is harder to classify. While the Instituto Sidus also started with a sporadic and gradual strategy of incursion into foreign markets, this changed radically from 1993, when BioSidus became internationalized as a result of what we can consider a "critical incident": the successful launch of erythropoietin on the Brazilian market, which was thereby reborn global, as affirmed by Bell et al. (2003). Since then BioSidus has kept financial assistance, distribution, and promotion on the internal market and in bordering countries in the hands of Sidus, and created its own structure which concentrated on the international expansion of its products in several markets at a time-taking advantage of the conglomerate's existing commercial networks and constructing others through scientific and business agreements with representatives of the biotechnological sector on the international level. This tradition and "rebirth" coexisted in the same group until 2010, when the family conglomerate split, dividing the essential assets that had been constructed by the business as a whole.

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