THE EMERGENCE OF NEW SUCCESSFUL EXPORT ACTIVITIES IN COLOMBIA

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TABLE OF CONTENTS

FIGURES AND TABLES

1 Introduction

Recent research in economics has associated the discovery of new tradable industries with high growth episodes. It has been argued that larger economies export more thanks to a higher variety of goods exported, and that richer countries export more thanks to the increase in the quality of exports. Moreover, there is robust evidence that for low-to middle-income countries, economic growth entails diversification rather than specialization. In consequence the process of coming up with new varieties or higher-quality versions of old varieties of exports -the process of discovery- is crucial for export growth and it is necessary to understand it better.

This research makes part of a larger initiative lead by the IADB Research Network to explore export discovery and diffusion processes through an in-depth revision of particular cases of successful emergence of export activities.

We revise four cases of export success in Colombia, three of which emerged during the nineties -underwear, confectionery products, paper sanitary products- and one in the late sixties -fresh cut flowers. In each of these cases we analyze how different discovery processes took place, the nature of the discovery and the events that triggered it. We also explore how first movers managed to overcome uncertainties they faced -particularly the incomplete appropriability of rents - as well as coordination problems that arose in the initial stages. We also review the diffusion process that followed discovery, highlighting its speed and intensity, the nature of externalities enjoyed by followers, the mechanisms through which diffusion happened, and the costs or benefits for incumbents and for export success as a whole. We finally evaluate the role played by the government in the discovery process, not only in providing adequate conditions and supportive initiatives for exporting, but also in helping exporters to overcome market failures and resolve coordination problems.

This study is divided into six chapters. Following the introduction, the second chapter presents the theoretical framework and discusses the concepts of discovery and diffusion, the third chapter reviews Colombian export activity and the environment for exporting, the fourth chapter lays out the criteria used in sector selection, the fifth chapter contains the four case studies, and the sixth chapter presents the lessons that can be gathered from the case studies as well as our policy recommendations.

2 Theoretical Framework

The theoretical framework for this research about discovery, diffusion processes, and spillover effects applied to small open economies is Hausmann and Rodrik (2003). We also followed alternative export discovery definitions, such as those developed by Vettas (2002) and Granslandt and Markusen (2000), as illustrated in Klinger and Lederman (2004).

A key element that stands out is that the concept of “discovery” differs significantly in practice between industrialized countries and developing economies, and takes different

forms. First, in broad terms, in industrialized economies discovering the costs of what a country is good at producing means creating a new technology that enables investors to produce a new product. In contrast, in developing countries the process of learning what can be produced at low cost involves adopting and adapting an existing technology, which allows investors to produce a "standardized" good. This assessment assumes that the production function of the existing good is not common knowledge and technology is "tacit" and not easily applied (Hausmann and Rodrik, 2003).

Second, the main uncertainty faced by potential entrepreneurs in discovering the costs of producing is that rents of the required investments may not be fully appropriated. Thus, as the rent appropriability problem becomes stronger, the incentives to discover are reduced. However, entry barriers created by government policies and regulations can mitigate this uncertainty. For instance, in advanced industrial countries innovation is highly protected through the creation and enforcement of intellectual property rights, thus creating entry barriers, which guarantee that rents of first investors are fully appropriated. This situation creates incentives to discover and delay in imitation and diffusion. On the contrary, when new investments are not government-protected, such as in developing countries, rents are not fully appropriated by pioneers. The free entry speeds up diffusion; however, by eliminating all excess profits it discourages discovery processes (Hausmann and Rodrik, 2003).

Appropriability problems are present even when adopting alternative discovery process approaches. For instance, Vettas (2002) suggests that in the export discovery process of entering foreign markets, the initial investment required to penetrate a new market will also suffer from incomplete appropriability, as imitators can free ride. Granslandt and Markusen (2000) argue that in the discovery process of redesigning a product to meet foreign trade regulations (e.g. foreign trade safety standards), first investors can also suffer from free riding.

The elements mentioned above are crucial for understanding and applying export discovery and diffusion processes in developing countries.

2.1 The discovery process

In developing countries discovery means efficiently adopting an existent technology for producing a good that is not new, and adapting it to local economic and institutional conditions (Hausmann and Rodrick, 2003). Its success involves combining processes in the right manner, developing capabilities in areas such as product design, industrial planning, production engineering and organization, and carrying out technological efforts of raw material control, product and process quality control, repair and maintenance, and changes in production mix. In sum, discovery requires investment in learning, in order to internalize the "tacit" component of standardized technologies. However, in some cases, predicting comparative advantages, such as natural endowments and favorable economic conditions, also plays an important role in the decision to invest at the initial stages.

Besides creating an appealing product for international markets, exporting success involves a learning process for entering new foreign markets. According to Vettas (2002), penetrating a new market is part of the discovery process. This includes developing knowledge of the markets' potential size and of consumers' characteristics, finding ways of stimulating demand, and creating appropriate transportation means as well as distribution and commercialization channels. In this context, redesigning a product in order to comply with foreign trade regulations (Granslandt and Markusen, 2000) or to satisfy consumers' needs is also considered an export discovery process. Moreover, as products change constantly and processes are continuously modified - often in order to overcome arising difficulties -, discovery may become a dynamic process.

In sum, in developing countries export discovery can be understood as a process by which a potential investor/entrepreneur learns the costs of developing an export activity or product that is new for the country (as "exportable"), which can consist in introducing changes to an existing product. The investor successfully adopts and adapts existing technology, and develops new processes and methods for entering foreign markets.

In the discovery process potential investors face several uncertainties regarding the true costs of new production under local conditions. Indeed, overcoming those uncertainties is a crucial element for success. Uncertainties are of different kinds: i) what can be produced –modified- in the country at low cost to be sold in foreign markets; ii) how the existing technology to produce certain goods can be adopted and efficiently adapted to local conditions, iii) how external markets can be accessed to become a supplier to foreign consumers; iv) what the investment benefits are given that the discovery may not be government protected and rents of first players may not be fully appropriated.

For the purpose of this study, discovery is understood as accruing when a new product is produced for export, when an existing product is modified for export, or when an existing product is exported, as long as exporting requires significant investments and investors face uncertainties about success and appropriability, which are significantly different for the followers. In practice, developing such a "new" export product is a process that involves several elements: adopting and adapting technology, design/research, transportation, commercialization and distribution, and development of skills and labor capabilities.

2.2 The diffusion process

In the context of discovery, diffusion is the process by which a first mover is imitated/copied by later investors. The imitation process occurs when costs of the new activity/product become common knowledge. Diffusion is easier and accelerated when discovery is not protected, so that entry is easier.

After a pioneer succeeds in a new export activity, and when he cannot appropriate his entire discovery, he is followed in this activity by new investors who may copy the product and/or processes. Followers face fewer uncertainties and therefore fewer risks

than the incumbent, and in most cases they are able to obtain similar benefits - followers are to some extent free riders in the discovery process.

At first glance, pioneers are negatively affected by diffusion through rent dissipation from increased competition. Hausmann and Rodrik (2003) suggest that innovation can be appropriated by the innovator through the existence of temporary monopolies or the issuance of patents. However, discovering the costs of producing/exporting is usually unprotected so that the discoverer cannot fully appropriate the benefits. This situation discourages the incentive to invest in discovering a country's capability of producing a new product.

Under certain circumstances, nonetheless, rent loss from competition may be lower than benefits from scale economies achieved through exports. In some industries, infrastructure deficits are costly and cannot be overcome by a single firm. Economies of scale may also exist -the emergence of followers can reduce the costs of raw material imports and further technological development, or generate country recognition in international markets– so that initial diffusion becomes desirable for pioneers. Whatever the case may be, after a given level of diffusion –a critical number of players- profits for the first players are reduced by new entrants, and incumbents will try to deter further entrance.

Diffusion, consisting of transferring the successfully adapted technology, occurs through different mechanisms. It takes place through the transfer of pure technology, and knowledge can be spread through the movement of workers from the pioneers to new entrant firms.

3 Brief overview of Colombian exports and environment

3.1 Evolution of exports

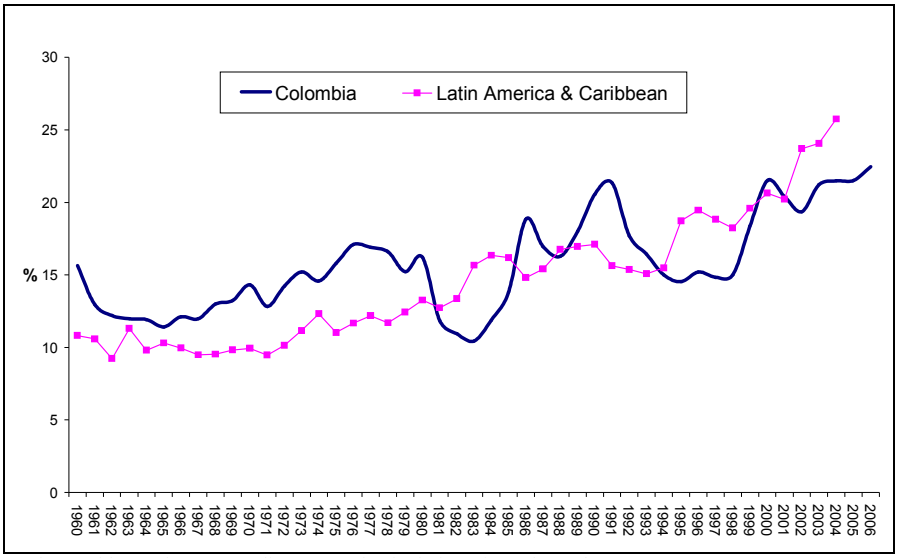
In spite of commercial policies, such as the liberalization put in place in the nineties and trade agreements, the Colombian economy is still relatively closed. Current export activity is smaller than that prevailing in the fifties and sixties, when trade policy was dominated by protectionist approaches.

Colombian exports of goods and services as a share of GDP were above the Latin American average between 1960 and 1980. This trend, however, was not sustained in the years that followed. Exports fell significantly between 1981 and 1983, when they dipped to their lowest level of the last forty years, and recovered between 1984 and 1992, with only a short interruption in 1988. Growth was, however, not sustained in the 1990s and after 1995, exports/GDP fell again below the regional average.

Exports were also more volatile in Colombia than in the rest of Latin America during the 1980s and 1990s: the share of exports in the economy almost doubled between 1983 and 1991, going from 10.4% to 21.3% as a percent of GDP, dropped to 15% between 1992 and 1998 and grew again to 21% in 2000. High volatility can be explained both by the

share of traditional commodities such as oil and coffee in Colombian exports, and by exchange rate instability (see Figure 1).

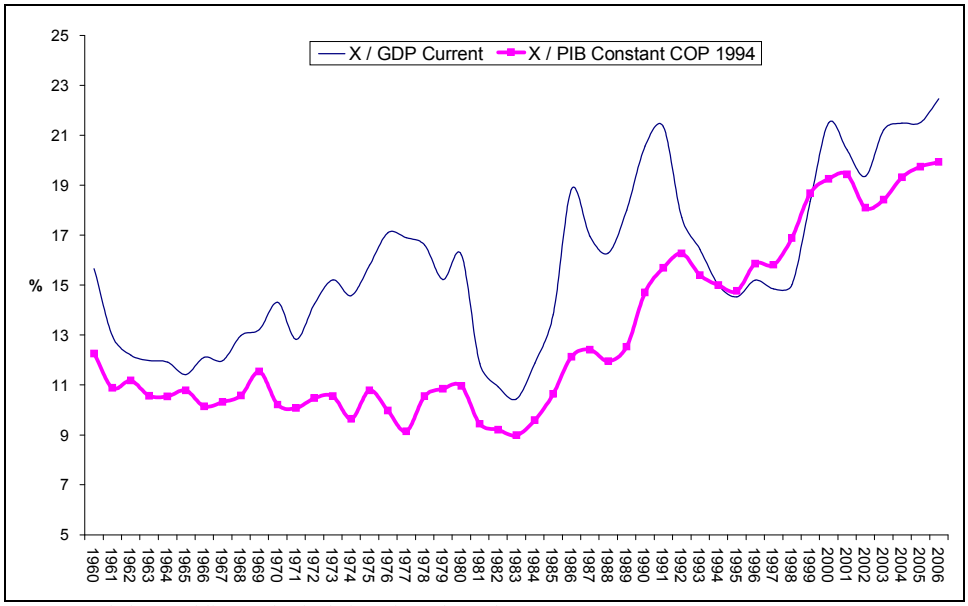
Figure 1: Exports of Goods and Services, 1960-2006 (% of GDP)



Source: World Bank, World Development Indicators, and calculations from the authors

Figure 2 shows exports as a share of GDP in constant local currency. As far as fluctuations of relative prices are isolated, the export activity proves to be less volatile. Exports/GDP stagnated in the sixties and seventies, and started recovering from 1983, except between 1992 and 1995 and 2002.

Figure 2: Exports/GDP, 1960-2006 (constant 1994 COP)

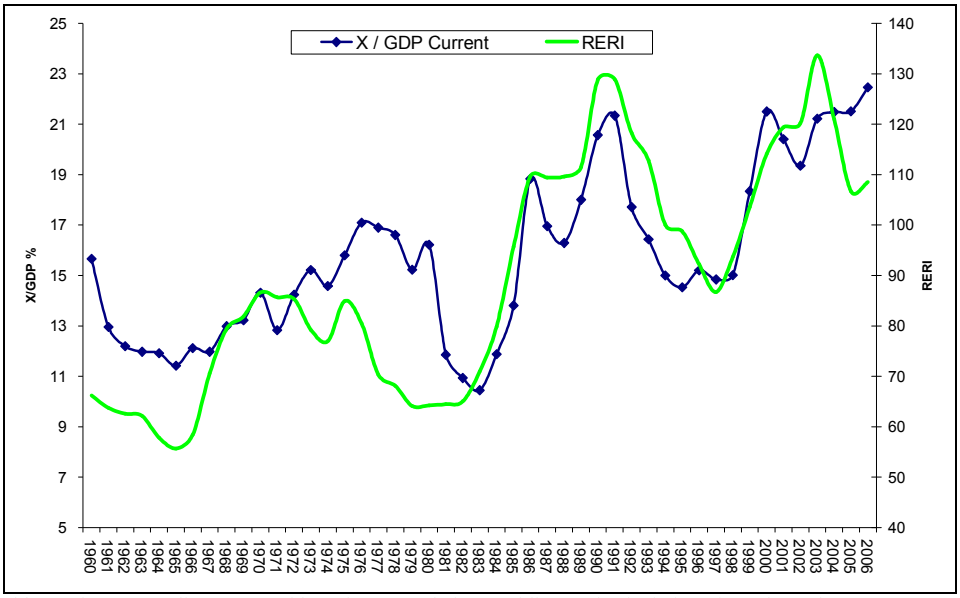


Source: Greco, Banco de la República, and calculations from the authors

In spite of the openness of the economy, the nineties was not a positive decade for Colombian exports: exports grew at a real average annual rate of almost 7% in the 1980s, 5.5% in the nineties and 4,6% between 2000 and 2006.

To a great extent this performance has been associated with an unfavorable exchange rate, although other variables such as terms of trade, labor productivity, and foreign demand, among others, have played a key role[1] (see Figure 3).

Figure 3: Exports/GDP and Real Exchange Rate, 1960-2006



Source: World Development Indicators, World Bank, Banco de la República, and calculations from the authors

The composition of exports has also experienced interesting changes over the period (see Table 1). Food exports became less important in the 1990s - their participation dropped from an average of 53% in the 1980s to 18.3% in 2000-2004 -, while the share of exports of manufactures grew from 20.9% in the 80s to 36.9% in recent years, and the share of fuel exports increased from 19.5% to 38.6%. Therefore, food exports were largely replaced by fuel sales, mainly due to the oil export boom of the mid 1990s, and to a lesser extent by manufactures. However, the share of manufactures in Colombian total exports is still below Latin America's -36.9% in 2000s and 57.2%, respectively. The region's average participation has increased almost 30 percentage points since the eighties, while Colombia's has increased 16 points.

[1] See Villar & Esguerra, 2005 and Echavarría, 2003.

Table 1: Exports' Composition

	Agricultural Raw Materials Colombia	Food Colombia	Fuel Colombia	Manufactures Colombia	Manufactures Latin America & Caribbean
1960s	4,3	73,9	14,3	6,8	12,9
1970s	5,7	68,3	6,7	18,6	22,3
1980s	5,0	53,1	19,5	20,9	28,1
1990s	5,5	31,1	30,1	32,7	53,4
2000-2004	5,3	18,3	38,6	36,9	57,2

Source: World Development Indicators, World Bank, and calculations from the authors.
Food corresponds to the commodities in SITIC: food and live animals, beverages and tobacco, animal and vegetable oils and fats, oil seeds, oil nuts and oil Kernels. Agricultural raw material corresponds to crude materials except fuels, crude fertilizers and minerals excluding coal, petroleum, and precious stones, and metalliferous ores and scrap. Fuels correspond to mineral fuels. Manufactures correspond to chemicals, basic manufactures, machinery and transport equipment, and miscellaneous manufactured goods.

The United States has traditionally been the most important market for Colombian exports, its participation increasing from an average of 26.7% in the 1980s, to 35.8% in 1992, and to 48.6% in 1999. Exports to the Andean Community grew in the eighties and then kept stable during the nineties at a share of around 14%. The rest of ALADI has received on average only 5% of Colombian exports. Europe currently represents 15% of Colombian exports after having received 37.8% of Colombian exports in the 80s., and Asia has a minor participation of near 4%.

Food, minerals and agricultural raw materials are mainly exported to the U.S. and Europe. The Andean Community, the U.S. and the rest of ALADI are the major importers of Colombian manufactures, participating with 36%, 29% and 12%, respectively.

To sum up, the nineties was not an active decade for Colombian exports compared to the eighties, and exports started increasing only in 1999. However, the share of manufacturing exports in total exports grew, although less dynamically than fuel sales. This process was accompanied by an export diversification, mainly towards the U.S. and Latin American markets (different from Andean Countries).

In spite of the average trend of exports, the 90s was a decade in which successful exporting activities in manufactures emerged and other existing exports were reinforced (flowers, for instance), sectors that nowadays are significant in Colombian export figures. Four of these successful cases are studied in detail in this paper.

3.2 Macroeconomic environment and government policies

Favorable macroeconomic conditions, particularly the stability, predictability, and adequate level of exchange rates, are crucial elements for emerging export activities. Even though stability does not guarantee exports, instability is an important deterrent. Evidently, the impact of the real exchange rate – its level and volatility - varies among sectors, and non- traditional exports respond more to exchange rate incentives than traditional ones.

Further, export promotion strategies may also be a determinant in propelling exports of new products, although the effectiveness of different strategies of export promotion is not guaranteed.

Since 1960 Colombia has had two prolonged periods in which macroeconomic conditions and government policies were favorable for general exporting activity - 1) 1965 to the mid-1970s, and 2) 1990 to the present - although some years within these periods were more positive than others.

- 1960s until late 1970s.

Colombia, as well as many other Latin American countries, implemented import substitution as an economic growth model during the Second World War's era of shortages of imported products. In the 60s, import substitution was complemented with export incentives in order to further develop local industry. High tariffs meant expensive raw materials and machinery, causing local industry to be non-competitive in international markets. In order to allow local industry to have access to imported inputs at international prices, the Plan Vallejo went into effect in 1962[2]. This was a mechanism for tariff exemption and the removal of other restrictions on the import of raw materials and capital goods to be used in the production of exports. In 1966 the government also introduced direct subsidies for non-traditional exports through a savings tax scheme, the "Certificado de Ahorro Tributario" (CAT), which in 1984 became the "Certificado de Reembolso Tributario" (CERT). In 1967, an export promotion fund, "Fondo de Promoción de Exportaciones" (PROEXPO), linked to the Central Bank, was created, which canalized subsidies through credits. The fund was transformed into the Banco de Comercio Exterior (BANCOLDEX) at the beginning of the nineties that still operates. However, exchange rate instability, shortage of foreign currency, and strong protective tariff measures restrained export initiatives during this period.

In the mid 60s, exchange and import controls became particularly restrictive. However, in 1967 the government issued the Law-Decree 444 (Estatuto Cambiario), which defined in a more systematic way the exchange control scheme that prevailed until 1991. In the same year, Colombia put in place a policy of mini-devaluations, (*crawling-peg*), that was also maintained until the nineties. These two policies promoted a much more stable environment.

In fact, between 1966 and 1974, macroeconomic conditions were stabilized and import restrictions were gradually reduced, making incentives effective. Also, export promotion was enhanced and incentives were expanded to agricultural products. Even though the policies proved to be effective, from 1974 onwards real export incentives were reduced in order to stabilize public finances, while dealing with a coffee boom.

[2] It was created in 1959.

During the 1980s, manufacturing exports almost disappeared. The fall of international coffee prices, the international financial crisis, and the level of government debt led to a package of stabilization measures - fiscal austerity, higher exchange rate control, higher tariffs, and other trade barriers - that did not contribute to export expansion. This policy package lasted until 1989 when the country entered an economic liberalization process that would consolidate in the following years.

- 1990s-onwards

In 1989, the government decided to gradually liberalize the economy. The economic liberalization process consisted in removing quantitative restrictions on imports and reducing tariffs[3]. In practice, liberalization occurred faster than originally planned so that by1990 almost all quantitative restrictions had been eliminated, and by 1991 the level of tariffs had been lowered to an average of 11% from an average of X% in the previous decade. At the same time, the country underwent profound changes and reforms, including the enactment of a new Political Constitution in 1991 that brought about structural reforms in labor, financial, fiscal and commercial policies, a new Trade Ministry, government decentralization, and central bank independence, among other things. The exchange rate regime changed to a more flexible band system, and the capital account was liberalized as well. As a consequence, increased trade openness coincided with significant appreciation of the real exchange rate, which partially restricted the impact of the policy.

Economic regional integration was reactivated, various commercial agreements were signed or reinforced, and unilateral trade preferences were obtained, with the aim of rapidly inserting the Colombian economy into the international markets. The Andean Group (Venezuela, Colombia, Ecuador, Peru and Bolivia) reoriented towards a more open-door integration model (1989-1993) and brought about the adoption of a common external tariff system by 1995. In the mid nineties, Colombia signed commercial agreements with Mexico (the G3), Chile, and the Caribbean, among others. Finally, unilateral preferences were granted to Colombia by various countries, the most significant being those granted by the United States through ATPA, enacted in 1991, and extended through ATPDEA in 2002.

While creating new opportunities for domestically manufactured goods in international markets, liberalization gave way to further competition in the domestic market,. Productive local firms which had a firm grip on the local markets, although facing international competition, were able to compete both locally and in foreign markets, while less productive firms had to engage in organizational restructuring and technological upgrades, concentrating exclusively on protecting their share in the local market before entering external markets. Finally, unproductive firms, which were unable to compete, had to close.

[3] Some quantitative restrictions on imports of certain consumption goods would be maintained, and tariffs would be reduced within four years.

Even though the original plan was to pair market liberalization with exchange rate devaluation to make local firms more competitive, and remove positive effective protection tariffs (EPT) to all sectors of the economy, in practice, as stated, local currency appreciated with respect to foreign currency and some goods (specially agricultural goods) remained protected, affecting the industry's ability to compete in the international markets. Under this situation, Plan Vallejo became fundamental for export promotion as it gave the local industry the possibility of lowering the costs of exports.

In order to help competitiveness, a re-discount bank was created in 1992 through which the government assured credits at below-market rates (Bancoldex). Also, in 1996 other export promoting policies, such as the "Strategic Export Plan", were implemented. This plan developed sector agreements for the promotion of competitiveness, propelled trade agreements, and promoted export services.

However, in 1997 the financial international crisis spread from Asia to all emerging economies. Colombia had its own financial crisis in 1999 and internal demand contracted.. Many firms had to close, and most had to restructure. The collapse of domestic demand resulted in excess installed production capacity in the economy. This circumstance, together with substantial depreciation of the currency between 1997-2003, resulted in significant recovery of the exporting activity.

4 Research methodology, data sources, and choice of sectors for case study

4.1 Research methodology and data sources

The general research strategy followed in the remaining of this study is that laid out in the IADB call for proposals, and consists of applying the basic methodology suggested by Rhee and Belot (1990) for studying cases of new export growth. This methodology suggests the detailed analysis of three components of each success story: a catalyst[4], a *responsive Government*, and a process of diffusion.

In order to gain knowledge of the process undergone by each specific sector we combined the statistical data available, using firm-level data whenever possible, with interviews with industry association representatives, individual entrepreneurs, and the government.

Data sources used in the case studies were: 1) The DANE-DIAN database containing the record of exports by NANDINA 10-digit sectors of economic activity from 1991 to 2004; 2) The Custom Registry from DIAN, containing firm-level export records from 2000 to 2005; and 3) The UN COMTRADE database containing detailed world trade data at a similar aggregation level as that available for Colombia, from 1978 to 2004.

[4] A catalyst is "defined as an individual or company (domestic or foreign) or a public agency, or a combination of these, that (a) pioneered the process of development in an outward-oriented direction before anybody else in a sector, (b) packaged the needed know-how with domestic endowments and external financing, and (c) diffused the experience and know-how it learned in that initial development process… The catalyst serves as a creator and transmitter of the supply response" (Rhee and Belot, 1990, pp. 49).

4.2 Choice of sectors for case study

In selecting the export sectors for case study we used the export database from DANE described above, and the following filter criteria: (1) Sectors reporting an annual export growth in USD equal to or above 25%, between 2000 and 2004, or an average annual growth equal to or above 15% from 1991 to 2004; (2) Sectors showing exports at or above 15 million USD in 2004; and (3) Sectors showing a positive change as a share of total exports between 1991 and 2004.

We did not filter for sectors showing zero exports in 1991 because there are interesting export growth dynamics in sectors that started as exporters before that date, and there were data and contacts available at the sector level that allowed us to recover their story. It would have been a mistake to ignore them as interesting cases from which to gather lessons simply because they are less recent new export growth stories[5]. In general, however, by filtering for the sectors whose exports have experienced large growth rates over the years, starting in 1991, we ended up with sectors that were very small or that did not exist at all as exporters two decades ago.

In addition to the filters described, we imposed two restrictions: (1) to consider only sectors in which there is more than one exporting firm, and (2) to consider only sectors in which exports took off after a leading firm made a significant discovery, and whose success was not exclusively due to protectionist policies in place.

5 Case Studies

In this section we present four case studies. We focus on identifying the players that served as catalysts: those that were the first to export a non-negligible amount of the good. We explore what led these firms to do this. In particular, we explore whether the arrival of these firms was induced by subsidies and tax breaks or whether the entrepreneurial initiatives were facilitated through incentives for the establishment of innovative firms, or through other instruments for the promotion of new exports.

We also make an effort to recover the time-line for the early stage of the discovery process. The identification of the pioneer was not difficult in either of the reviewed cases, and the information for the construction of this time-line was obtained through interviews with the pioneer firm itself. However, in some cases we found the existence of two pioneers – firms entering the foreign markets simultaneously - or we distinguished between the first player and the pioneer.

Characterizing the diffusion process was more difficult and the degree of progress varies across industries. Firm-level export data is available for the recent years but not easily

[5] This applies in particular to the "Fresh cut flowers and flower buds for ornamental purposes" sector, which is not only the most important of non-traditional export sectors in Colombia but also one which has received a lot of attention from the Government over the years.

available going back to the time of the discovery, so information on diffusion comes from information available from secondary sources and from interviews.

5.1 Case 1: Fresh cut flowers

5.1.1 Introduction

Flower growing is one of the most successful cases in Colombian export activity due to its export performance dynamics and the export processes that have taken place during the last decades. Discoveries - carried out by first movers -, diffusion, and spillover effects are key identifiable elements of the exporting process. Colombia is the world's second largest fresh cut flower exporter, and in the last three decades no other product in the country has managed to gain such a position in external markets, without receiving subsidies[6], while becoming an important source of employment and foreign currency.

Extensive flower growing in Colombia began in 1965, and rapidly started conquering international markets. In 1968 the value of the first exports of cut flowers was US$20,000. Twenty years later, exports reached US$500 million, and registered US$700 million in 2005. Currently, cut flowers' percentage share of total Colombian exports is 13% (56% for Holland's exports). Colombia is the leading supplier of fresh cut flowers in the U.S. market – around 60% of U.S. total imports[7] - and the fourth provider in the EU. On a nationwide basis, flower growing is the leading agricultural non-traditional exported good, and has contributed to important economic and social benefits for the country. The cut flower industry is labor intensive: in 2005 it generated around 95,000 direct jobs – of which 60% are held by women - and 80,000 indirect jobs, representing 4.5% of agricultural employment. In 1970 direct employment consisted of only around 1500 workers.

The discovery process began in the mid-sixties when a small group of businessman identified the potential of this activity, thinking exclusively of external markets, with the United States being the core target. In the process, two key elements could be identified: first, the acknowledgement of excellent natural and economic conditions for growing flowers in Colombia – predicting comparative advantages and natural endowments was therefore crucial to the decision to invest-; and second, the entrepreneurial efforts of Colombian businessmen as well as a team of four American businessmen who started growing flowers in Colombia through initial investments of US$100,000 in 1969.

The decision to grow flowers for export was also encouraged by the shift in Colombian government policy in 1967 toward the improvement of macroeconomic stability and the expansion of its trade sector (non traditional exports). The reform package included four main policy actions that favored floriculture: (1) the formation of Proexpo, which financed the working capital needs of exporting companies and, to a lesser degree,

[6] In 1984 flower exporters had to renounce all government support.

[7] According to U.S. customs figures, in 2004 Colombia participated with 60% of U.S. flower imports, Ecuador with 20%, and Holland with 10%. Colombian fresh cut flowers have achieved a very high penetration in the U.S. market.

investments in fixed capital; (2) the creation of Exports Tax Credits (CAT), a bond that was given to the exporter who could use it to pay taxes or sell it in the financial market[8]; (3) the adoption of Plan Vallejo which gave duty exemptions for imports of raw materials and other inputs used in creating goods for export; and (4) the establishment of a policy of mini devaluations (*crawling peg*), by which the peso would devalue continuously against the dollar. These policies provided a favorable environment in which flower exporters´ efforts would be rewarded.

There are several factors behind the exporting success. Since the early stages of production, flower growers – both American and Colombian - have had the characteristics of entrepreneurs and businessman rather than just farmers. This has enabled them to adopt and adapt the technology of a developed country to local conditions and to a changing environment, as well as to fulfill the goal of entering international markets. In particular, their capacity to innovate has equipped them to conquer the external demand for flowers, achieve high quality standards, offer a competitive price, create sophisticated distribution and commercialization channels in foreign markets - a key factor - and develop a complete marketing and publicity package to support production and exports.

In addition, it is remarkable how local producers and exporters have managed to overcome obstacles and coordination problems faced since the beginning of the exporting process, such as those inherent in transporting products from Colombia, obtaining facilities for flowers that reached foreign markets, managing their distribution throughout those countries, and dealing with legal barriers to the sale of Colombian flowers in external markets, especially in the U.S. Coordination and cooperation among participants on key issues of common interest, which have been efficiently organized by the flower growers' association (initially Colflores, then Asocolflores), as well as associations and strategic alliances with American businessmen, were crucial elements in overcoming bottlenecks and in shaping the sector's operation.

Indeed, the need for coordination and combined efforts to overcome obstacles, as well as the ability of "Colombian Flowers" to be recognized and accepted in foreign markets, in an extremely profitable industry, favored a rapid diffusion process. Even though the sector's production is characterized by concentration within a few large companies with a significant export share, it counts on an important number of participants operating in a competitive environment. It is worth noting that the early stages of exporting diffusion were extremely beneficial for pioneers and for the rapid development of the exporting activity. Moreover, it was desirable and even necessary as it solved coordination problems. However, the ease of entry and the huge number of new participants after a certain level started affecting the first movers and the market as a whole.

[8] Initially, the face value of these CATs was established at 15% of the exported value. Over the years, several classifications have been defined. In 1977, most agricultural products received 7% CATs, most manufacturing products received 5% CATs, and some other products not needing this support received 0.1% CATs. Cut Flowers were included in this category in 1974, after the U.S. Treasury determined that, due to the CATs, flowers from Colombia would be subject to an additional countervailing duty of 10.2%.

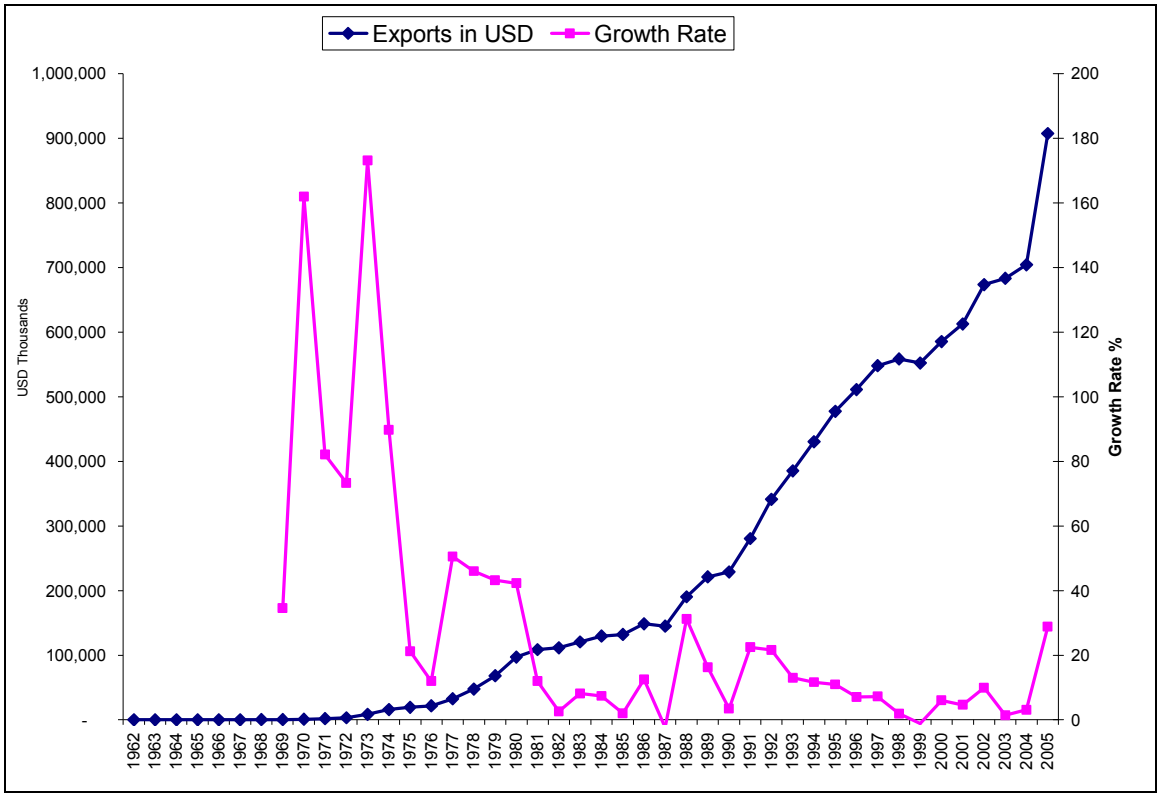
5.1.2 Sector's overview

- Production and exports

Colombian flowers are grown in different regions: la Sabana de Bogota, with 85% of total production grows mainly roses, carnations, and astromelias; Rionegro (Antioquia) produces 12%, mostly chrysanthemums; and Valle del Cauca and Eje Cafetero, produces 5%, mainly ferns and tropical flowers. Product evolution started from the simplest and least technology-demanding crops, like carnations and chrysanthemums. Then, when flower growers gained greater market knowledge and expertise, they began growing roses, which required higher technology investments - in 1996 rose exports surpassed those of carnations. Nowadays more than 50 varieties of flowers are produced and exported, including exotic agrotropical flowers like heliconias and orchids.

Since the beginning of the industry's activity, flower production has been oriented towards exports, so that exports' share of production ranges from 70% to 95%. Since 1970, flower exports taken a consistently increasing growth path. In 1965 Colombia recorded flower exports of US$20,000, and in 1970 –the year of the first exports of one of the pioneers- exports almost reached US$1 million (increasing 120%). From this year on, exports started growing until the present. In 2005, exports amounted US$900 millions (see Figure 4).

Figure 4: Flower Exports, 1962-2005



Source: DANE , UN COMTRADE and calculations from the authors

However, different periods of growth can be distinguished: the seventies recorded the highest growth rates, averaging 75%, while in the eighties and nineties exports grew an average of 20% and 10%, respectively. This performance can be partially explained by some government policies.

The dynamic growth of exports at the end of the seventies was aided by the adoption of reforms aimed at promoting non-traditional exports, such as the reduction of import restrictions, the emergence of Proexpo, the creation of Export Tax Credits (CAT), the adoption of Plan Vallejo, and the establishment of a policy of mini-devaluations. In the mid-seventies, however, due to high fiscal imbalances, the government began to retreat from its policy of supporting exports: the devaluation rate was reduced in order to control inflation, producing a real revaluation of the currency, and the CAT rate was cut to levels that were insufficient to offset the impact of the revaluation. Moreover, in 1974 flower exporters had to renounce these benefits due to the dumping claims made by the U.S. As a result, from 1975 until 1983, exports grew at lower rates. Then, beginning in 1984, the government again adopted favorable policies for exports, such as cuts in restrictions on imports and a devaluation of the currency, and flower exporters responded to these incentives by increasing their activity. During the nineties flower exports continued to increase, although growth rates fluctuated in partial response to real exchange rate movements.

At first, Colombian flowers were exported mainly to Panamá and the Netherlands Antilles, with fewer exports to the U.S. and Europe. Since 1970, to a great extent after the establishment of the American company Floramérica in Colombia, exports have been concentrated in the U.S., averaging 80% of total flower exports. Europe became important in the mid- seventies, but since the nineties its participation has returned to close to 10%. In recent years, Asia has become an important market for Colombian flowers. This pattern is consistent with the industry's goals and profile, since producers have always focused their efforts on the North American market[9]. This, evidently, has to do with Colombia's proximity to the United States, which results in lower transportation costs in relation, for instance, to those of the European market[10] (see Table 2).

However, it is interesting to observe how Colombian exporters have tried to diversify the markets for their exports. In 1970, Colombia exported flowers to 11 countries; this number increased to 39 in 1990, and to 78 in 2005.

Diversification took place especially in Europe and Asia. In Europe, two countries initially imported Colombian flowers (Germany and Spain). In 1985 the number of European countries grew to 13, and in 2005, to 30 In the case of Asia, until the mid-

[9] In the European market flower prices are set through auctions in the Dutch market, while in the U.S. market sale prices are determined in a highly competitive market, with reduced negotiation power for producers.

[10] Besides, it would be an extremely tough task to compete directly with Holland for the European market, due to the clear geographical advantage that this country has in comparison to Colombian exporters.

eighties exports went mainly to Japan and Kuwait, while currently Colombian flowers are exported to 13 countries on that continent.

Table 2: Flower Exports by Destination

	1965	1970	1975	1980	1985	1990	1995	2000	2005
USA	18,9	78,4	67,0	69,1	84,8	81,8	78,0	82,0	81,7
Europe	11,9	0,2	30,3	24,6	12,1	15,2	16,6	10,9	10,0
Asia				0,1	0,2	0,7	1,4	2,2	5,2
Caribbean	30,9	11,2	1,0	1,0	0,7	0,3	0,6	0,3	0,4
Others	0,4	0,1	0,9	1,7	2,0	1,9	2,3	2,1	2,3
Central America	37,9	1,7	0,2	0,1	0,1			0,1	0,2
Mercosur		8,4	0,6	3,2	0,1	0,0	0,8	0,7	0,1
CAN				0,2			0,2	1,7	
# of countries	6	11	24	39	37	43	65	60	78

Source: UN COMTRADE and calculations from the authors

The imported component of production is low, and imports are basically agrochemical products and rootstocks[11]. The latter reflects new market trends (changes in tastes, colors and sizes) and new production trends (resistance to illness and yields), as well as the request for specialized irrigation technology from Holland.

- Industry structure

The sector's organization is characterized by the participation of an important number of firms. The diffusion was extremely rapid: production and exports started in the early sixties with very few producers. By 1969 the number of firms had grown to 50; by 1974 there were 64 flower growers, 130 in 1981 and 450 in 1991. During the nineties the growth rate slowed, mainly because of the high level of the investments required, which were proportionately greater than those of the 70s. Currently, there are approximately 600 firms of different sizes: in 2005, 55% of them were small[12], 30% were medium[13], and 15% were large[14].

Most of the firms are exporters: during 2000-2005 there were, on average, 460[15] exporters (495 in 2005), with steady growth in recent years (25% from 2000 to 2005)[16]. Within the export market, there are a few big firms exporting between US$35 and US$10 million (14 in 2005); a large number exporting between US$10 and US$1 million (185); and the great majority (300) exporting less than US$1 million. The exporting activity involves increasing technological and commercial demands. As a consequence, there are numerous firms of low competitiveness that have been unable to face external shocks,

[11] A rootstock is a piece of stem that is grown in order to propagate the plant.

[12] Covering less than 3 cultivated hectares and employing, on average, fewer than 100 employees

[13] Covering areas of 3 to 10 hectares, with employment levels ranging between 100 and 300 employees.

[14] Covering more than 10 cultivated hectares, and employing between 300 and 1000 workers.

[15] According to the Export Customs Register of DIAN.

[16] There were 395 exporter firms in 2000, 426 in 2001, 453 in 2002, 491 in 2003, 510 in 2004, and 495 in 2005.

and that have had a poor experience in the flower business in their efforts to coexist with large technologically advanced firms.

In spite of the large number of firms of different sizes participating in the industry, the market has been concentrated. Concentration was especially high during the initial stages of production and export activities. However, over time, the increase in diffusion and in the number of followers has been accompanied by a small reduction in the levels of concentration. In 1974[17] the six largest firms (9% of total firms) accounted for 60% of total exports[18], whereas in 2000 the same 9% of firms accounted for 45% of total exports[19].

- Industry costs and vulnerabilities

Average production costs are broken down as follows: Labor around 60%; Packing material 10%; Chemical products 9%; Construction maintenance 5%; Consumption materials 3%; Energy and fuel 1%; and Cuttings 12%. These costs are doubled when adding expenses for marketing, finance, transportation, import duties and overhead. According to Tenjo, et.al (2006)[20] flower firms' income is highly affected by sales volume, climatic and phytosanitary issues, agrochemical prices, and air transportation cargo freights – which are in turn affected by the international price of oil -, and the exchange rate. Indeed, the flower business's profitability is correlated with the evolution of the exchange rate.

What about land?

As a result, major vulnerabilities are associated with the real exchange rate revaluation as well as the currency mismatch - incomes are in foreign currency while costs, which have a high national component, are more closely linked to the inflation rate and with fluctuations in international prices, particularly those of oil.

5.1.3 The discovery process

5.1.3.1 The history of discovery

Cut flowers and flower buds present a clear discovery case, not in the strict sense of discovering the costs of producing a new product, but rather in the sense of discovering the costs of growing flowers in a technically advanced manner, with the clear objective of exporting flowers to the United States. As was previously mentioned, flower growers

[17] These figures are from the Colombian Ministry of Agriculture, as illustrated in Harvard Business School, (1992). The 2000-2005 comes from the Export Customs Register of DIAN.

[18] Also, the largest 15 firms (23% of total firms) accounted for 80% of total production.

[19] However, in 2005 this percentage returned to 52%.

[20] See Harvard Business School (1987), and Tenjo et al (2006). Calculations correspond to a sample of 146 firms, for 2000-2004, reporting financial information and balance sheets (from Superintendencia de Sociedades) and exports by firm (from Administrative Export Registers, reported from Dane to the Banco de la República).

started extensive production during the late 60´s; prior to that date there was no production of this kind, and only small farmers grew flowers.

The Colombian floriculture industry and export discovery have their origin in – and are the result of - U.S. flower production evolution. For instance, flower growing is a labor- and land- intensive activity, which involves high natural costs. In addition, the production of flowers of good quality requires long sunny days, high light intensity, and moderate temperatures. In the 40s, the production of flowers was concentrated in the Northeast of the country, mainly in Massachusetts, Pennsylvania, and New York. The only advantage for producing flowers in this region was the proximity to the bigger consumption centers. However, the Northeast was an inadequate place in which to grow flowers: days were short, light intensity low, and winters strong. As a consequence, natural elements had to be artificially created at high cost. Greenhouses were expensive - the materials for guaranteeing airtightness had to be of consistent quality -, and heating and fuel costs were extremely high. In addition, labor in this region was costly due the scarcity of immigrants, and land prices were high on account of the proximity to big urban centers.

The extremely high production costs in the Northeast, together with the development of air transportation in the 50s, led to a shift in production to the southern and western regions of the country, particularly to California, Colorado, and Florida, where land and labor were cheaper and more abundant, and climate was more favorable. The first flowers produced were carnations and chrysanthemums. However, costs of maintaining crops and greenhouses in adequate conditions were still high, mainly due to poor luminosity and temperature changes.

The shift of flower production from the U.S. to Colombia was an extension of the regional movements that occurred in North America during the 50s. In fact, in the mid sixties it was known that Colombia had optimal conditions (even better than in the West and South of the U.S.) for growing flowers and exporting them to the U.S., and these were enhanced by the development of commercial air transportation in the country.

Therefore, flower export discovery in Colombia was driven by the search by American businessmen and flower growers for lower production costs. However, discovery also took place in the early sixties in Colombia when an old-time Colombian floriculturist learned how to produce flowers at an industrial level in order to export them to the U.S.

Supporting these efforts and the discovery process were the results of a study carried out at Colorado State University about the meteorological conditions necessary for the cultivation of carnations. This study was disseminated among American flower growers and businessmen and Colombian floriculturists.

In 1966, being aware of the high costs of producing flowers in the U.S., David Cheever[21] wrote his thesis at Colorado State University on the issue of what would be the best place

[21] David W Cheever attained a B.A in floriculture at the University of Massachussets, and in 1965 went to Colorado State University for a post-graduate research degree in floriculture.

in the world for growing flowers (carnations) and selling them to the United States, taking into account climate conditions, soil quality, labor and land availability and costs, and the proximity to the U.S. market. He found that la Sabana de Bogotá was the place of the future, with low costs of labor and land, and the proper climate. This made clear that Colombia was the solution for American businessmen, and these findings became a crucial element in their decision to start businesses in Colombia. At the same time, these results encouraged Colombian floriculturists to start extensive and technical flower production with the aim of exporting to the U.S[22].

In fact, Colombia was endowed with favorable conditions: i) natural conditions such as fertile soil, flat topography, adequate temperatures and luminosity during the whole year, existing in the regions surrounding Bogotá and Antioquia; ii) economic conditions related to land and labor abundance at relatively cheap costs, as well as low road transportation and warehousing costs due to the proximity to the shipment ports (El Dorado and Rionegro airports); and iii) convenient geographical location for reaching the U.S market.

As a result of these natural conditions, high quality flowers can be grown year-round without expensive greenhouses – using wood and plastic[23] instead of glass - and without incurring costs for heating, cooling, and artificial lighting. The ability to produce commercial quality flowers year-round also means that Colombian growers can continue producing during the winter months of the United States, during which the U.S. demand is highest (due to the large number of holidays such as Valentine's day, Mother's day, Christmas, and Easter), while environmental conditions make it difficult or highly costly for local growers to keep producing during these months.

In addition, Colombia is abundantly endowed with natural fertile land, which during the sixties and early seventies was being used in low-value activities. In fact, in the 70s and 80s land was important. At the beginning of flower production, companies owned the land, which was important for getting resources as the land could serve as collateral. However, land prices started increasing wherever flowers were produced, and from the 90s growers started renting the land.

In addition, Colombian was abundant is low-skilled - largely female - labor. This meant that wage rates in Colombia were significantly lower than comparable rates in the U.S. According to Urrutia (1985)[24], in 1966 the average daily wage for production workers in agriculture in Colombia was US$.82, while in the U.S. the equivalent wage ranged between US$16 and US$20. As a consequence, Colombian production costs were almost 50% lower than U.S. costs. Moreover, the labor and fuel cost advantages were not offset by the high cost of shipping flowers to the United States; even after deducting shipping costs, Colombian production costs were still 31% lower than U.S. costs. These great cost

[22] En 1966 David Cheever went to the Colombian Embassy in New York to show the paper. It was sent to Miguel de Germán Ribón and Edgar Wells, Colombian pioneers.

[23] High quality flowers are grown year-round in the Bogotá area and in Medellín, in simple structures of wood and plastic.

[24] In Méndez (1991).

advantages meant that the profitability of selling Colombian flowers in the U.S. market at U.S. market prices was enormously high. I In the early seventies, flower growers could earn profits of around 57% of sales value, realizing a 600% return per year on their initial investment (see Mendez, 1991).

Finally, in addition to the favorable natural and economic conditions, a Colombian advantage was the quality of its businessmen. The country had people who had been educated abroad, which favored the learning process as well as the initial development and diffusion of the industry[25].

To summarize, it can be stated that the discovery process in Colombian flower exports began in the mid-sixties when floriculturists and businessmen (American and Colombian) identified the potential for this activity, thinking exclusively of external markets, with the United States being the core target. They visualized the likely gains of this business on the basis of two facts. First they identified the competitive advantages of Colombia in this sort of production, meaning natural, geographical and economic conditions, and second, they recognized the size of the potential external demand – in particular, the American demand. However, beyond these facts, the challenge for new investors was learning how to exploit those natural and competitive advantages in the service of an unsatisfied U.S. demand, and how to expand the consumption of flowers , which until the mid-sixties was considered a luxury good.

Once growers managed to ship Colombian flowers and store them in good conditions, develop adequate distribution and commercialization channels, learn what should be produced to meet U.S. demand and what kind of technology should be used, Colombian exports started growing dramatically. For instance, in 1973 they grew 374% and by 1980 the industry had become the world's second largest exporter of flowers.

Nevertheless it is worth noticing that first exports were encouraged by favorable macroeconomic conditions and government export promotion policies. As was mentioned in section 3, the end of the sixties was a period of macroeconomic stabilization, and export incentives were enhanced and expanded to agricultural products. For instance, the real exchange rate, a key variable for flower exporting, was stable from 1965 until the first five years of the 70's, through the crawling peg regime. This situation helped first exports enormously, since it gave the necessary stability to an incipient industry. This favorable environment also allowed export promotion policies, such as Plan Vallejo, to have a greater impact.

5.1.3.2 Pioneers

5.1.3.2.1 Group of Colombian businessmen

[25] According to Cheever (one of the pioneers, violence encouraged people to seek education abroad. In addition, businessmen had excellent relationships with workers, which was very important for the cultivation of flowers as long as the industry remained labor-intensive.

In the early sixties, Edgar Wells, an old-time Colombian floriculturist, visualized the great opportunity for Colombia to grow flowers in a more sophisticated way and to export them to the United States, recognizing the potential level of American consumption of flowers. In 1962 he went to the United States to learn about new techniques of growing flowers at an industrial level. He also made contacts with experts in the commercial exploitation of flowers in the U.S., who could provide vegetal material for carnation growing. Upon returning to Colombia, he joined a company that had been recently founded to serve the local market. At the same time, he persuaded Colombian farmers dedicated to extensive agriculture and livestock to start growing flowers, and they began to diversify their activities.

Edgar Wells, Miguel de Germán Ribón - from Flores La Conchita - and Gabriel Restrepo - from Flores Colombianas -, led the first growing and exporting project (at the time, they knew the results of David Cheever´s study). After overcoming a great number of technical difficulties, involving improvisation and experimentation, Wells managed to persuade one of the U.S. wholesalers to by a trial shipment. The first shipment to the U.S. was sent in 1965 and had a value of US$20,000. In the following years exports remained small. Dynamic exporting activity started in 1969 with the creation of the firm Floramérica.

At this time, when Colombian floriculturists were trying to penetrate foreign markets, American flower producers were concerned about the increase in production costs, particularly land and oil prices.

5.1.3.2.2 Floramérica

The creation of Floramérica was based on David Cheever´s study. In 1968 William Mott, an economist employed by Rockefeller, was in charge of searching for development projects. His firm's interest in growing flowers in California led to a feasibility study that showed that flowers had no future there. Mott knew about Cheever´s study and contacted him. After reviewing the results, both agreed to seek investments for opening a business in Bogotá, and began looking for the team. They met an American entrepreneur, Thomas Kehler, who was already working in Bogotá, and Harmond Brown, a Californian flower grower. The group evaluated the viability of establishing a flower exporting business in Colombia and carried out feasibility studies. After obtaining positive results, each of them invested US$25,000 to create a new flower growing firm in Colombia, Floramérica, in 1969[26]. Kehler was the General Manager, Cheever the Technical Manager, and Brown the Marketing Manager[27]. Floramérica exported for the first time in 1970 for Mother´s Day, with Sunbursts, at the same time as Flores de los Andes.

The creation of Floramérica in Colombia was made possible thanks to a policy exception made by the Colombian government. At the time, foreign capital in companies was

[26] The same year, Flores de los Andes started growing flowers.

[27] Most of these statements are taken from David Cheveer´s interview.

highly restricted, and Floramérica was the only project that the National Planning Department accepted as being funded 100% with foreign capital. This was consistent with an export promotion program put in place by the government.

Given their previous knowledge and expertise in growing flowers, the company started using sophisticated techniques in the whole production and distribution process. In fact, they adapted to Colombian conditions the technology used in growing flowers in the United States.

In particular, Floramérica introduced innovations in four areas: (1) production technology which involved rootstocks and greenhouses; (2) distribution channels; (3) changes and adaptation to the product to satisfy the U.S. demand; and (4) training workers and work organization.

First, the company started importing rootstocks in order to get different flower varieties and qualities, and those varieties were planted at different times to get different colors. In addition, it started building greenhouses without separations between them - as was done in the U.S. - which was much more efficient as it allowed them to save productive land, and facilitated the maintenance of adequate temperatures. They also began using wider plastics in greenhouses, of 3.5 meters.

Second, from the beginning Kehler and its team internalized the need for establishing efficient systems for sales and distribution of flowers in the U.S. market. A wholly owned importer-distributor company was the solution, as it allowed them to eliminate third-party brokerage houses and to control the marketing of their product. Consequently, the group set up the first brokerage office in the U.S. – located in Miami - for Colombian flower exports (Sunbursts Farms).

Third, Floramérica put in place different mechanisms to adapt to U.S. demand and requirements, as well as to be able to compete with the quality in the U.S. market. For instance, wholesalers wanted flowers of very high quality, and Floramérica invented a new grade, “the selected grade”, which consisted of producing longer flowers. This created an extra quality, superior to the American competition. In addition, wholesalers wanted assorted flowers of seasonal color packed in smaller boxes. Floramérica introduced changes to the product and packing in order to satisfy carnation buyers´ requests.

Fourth, the company started training people and introduced new methods for organizing work. One example was the hierarchic structure and the creation of specialized areas managed by people with specific skills.

Finally, as is explained in detail in the next section, Floramérica provided the right combination of skills to overcome the many obstacles to exporting.

Floramérica played a crucial role in the history of the Colombian floriculture industry. First, its success was dramatic - in 1970, the company accounted for nearly all of

Colombia´s flower exports[28]. Second, and more important, were its effects on the Colombian industry. In fact, many Colombian companies copied their production and marketing methods (greenhouses, methods for planting rootstocks, packing, training people, and distribution channels, among others).

Floramérica was also responsible for the rapid diffusion, which took place through different channels: Colombian companies often hired Floramérica´s staff, David Cheever left Floramérica in 1971 and became an independent advisor on technical issues to a great number of Colombian companies, and at the same time two members of Sunburst Farms - Floramérica´s brokerage office in Miami- left the company to create their own brokerage firm.

In 1998 Floramérica and its related company, Sunburst Farms, were both bought by Dole, which also acquired other smaller Colombian flower growing firms. Dole became the first flower producer in the country.

5.1.3.3 Main uncertainties and obstacles

Most of the uncertainties and obstacles mentioned in this section were common to the first exporters. However, we mention some uncertainties that were faced specifically by Floramérica[29].

First, potential flower exporters faced important uncertainties that they had to overcome: i) availability of and access to adequate transportation means; ii) finding ways to satisfy U.S. consumers' needs; iii) adopting and adapting to local conditions technologies used in developed countries; iii) training workers; iv) having efficient distribution and commercialization channels to enter the U.S. market and compete with U.S. flower growers; iv) distributing flowers throughout the United States; and v) how to deal with phytosanitary problems (problems of nutrition and disease control) and the poor quality of water.

- Specific obstacles and how businessmen managed them

Phytosanitary problems. These uncertainties were mentioned particularly in the case of Floramérica[30]. Exporters faced three different kinds of problems: nutrition, plant disease, and poor quality of water. How to deal with these issues became important uncertainties for Floramérica. Nutrition problems were related to microelements present in the soil. It was known that soil in Colombia had insufficient boron (BO), which was essential for carnations. This scarcity of boron was resolved by applying a great quantity of magnesium and calcium.

[28] It became one of the major flowers exporting companies in the world. By 1986, the company had $50 million in annual sales.

[29] Devid Cheever (one of Floramérica´s founder) highlighted those uncertainties in the interview.

[30] Those problems were mentioned by David Cheever in the interview.

Flower growers also experienced severe problems regarding plant diseases, some of them being present in the imported rootstocks[31]. At the beginning, plant disease control was partially solved through the advice of some technicians from Israel who came to Colombia and spent months working with local producers. Over time, the role of Asocolflores (in some cases supported by ICA) in continuously finding ways to control plant diseases became crucial.

Finally, another important problem was the poor quality of water. On one occasion, the UK stopped receiving flowers from Floramérica because they found worms inside the boxes, which was directly related to the water in which the flowers were packed. In order to solve this problem of poor quality of water in Colombia, Cheever and other exporters learned about dry packing. Flores de la Sabana started using this method, but knowledge of this method spread rapidly.

Technology. Since the early stages of production, exporters have made large investments in implementing leading-edge technology in the whole production and distribution process. Floramérica was the first company to bring to Colombia production techniques used in the U.S. and to adapt them to local conditions. At the beginning, growers started importing rootstocks in order to get different flower varieties and qualities. They rapidly learned to plant varieties at different times with the aim of obtaining different colors. Regarding greenhouses, two issues were relevant: (1) greenhouses of the first Colombian flower cultivations were had separations between them. Growers adopted a new technique (taught by Floramérica), consisting of putting greenhouses together - as was done in the U.S. -, which was much more efficient given that it allowed them to save productive land, and facilitated maintaining an adequate temperature; and (2) growers began using wider plastics in greenhouses, of 3.5 meters.

In addition, since the early exporting phases, growers and transporters (both land or air) have managed to maintain a "cold chain," from the moment the flower is first cut to the time it is delivered to the final client, thereby guaranteeing the flower's security, quality, and freshness.

Transportation[32]. This is one of the most important issues in Colombian flower exporting, as cargo companies play a crucial role in its success. At the time of the first exports, Colombia had few airlines and few piston-engine airplanes. Aerolíneas del Cesar and Aerocosta transported cargo inside the country, and only a few shipments were transported to the Caribbean. It was difficult for flower exporters to get to the U.S. in those old planes. Then, Aerocondor started transporting Colombian flowers, but the company was facing serious financial difficulties. To top it all, an airplane crashed into a hill in Bogotá, causing tremendous chaos in the Colombian aviation industry and in its ability to transport flowers. At that time, Captain Gutiérrez appeared with an airline

[31] According the David Cheever, the control of diseases of imported rootstocks by ICA was extremely inefficient.

[32] Most of this history is taken directly from Pedro Narváez´s speech at the celebration of the 30th anniversary of Asocolflores, published in Revista de la Asociación Colombiana de Exportaciones de Flores, Special Edition No. 64, 2003, pp. 38-40. See also Méndez, (1991).

company called ARC. But its airplanes had narrow doors, so that flower boxes had to be put in the planes manually. ARC didn't have an adequate infrastructure, only the desire to ship Colombian flowers to the U.S.

At the beginning, Avianca, the major Colombian carrier, was not concerned about being responsive to flower exporters. The company accepted flower shipments, but refused to make special provisions. Flowers were shipped on regularly scheduled passenger flights and stored with the passengers´ luggage. To overcome this obstacle, some leading companies (Floramérica and Jardines de los Andes) encouraged other airlines to enter the business of shipping flowers. Given that the first company who did so – Aerocosta - failed, they finally convinced Avianca to handle flowers at night and to get new freighters to transport them. Avianca and Sam decided to hire airplanes, but once again, there was a plane crash in Bogotá and the chaos in the transportation of flowers returned. After some time, Captain Gutiérrez bought two airplanes from Alitalia and brought them to Colombia, which allowed exporters again to transport flowers to the U.S. In addition, Jorge Hudson created a cargo company called Tampa, providing solutions to flower exporters, as well.

At that time, Asocolflores (the Colombian Association of Flower Exporters) took an important step. Aware of the need to take Colombian flowers to the U.S. market more efficiently, it decided to hire a charter from Ecuador. The Association brought together exporters, and convinced each of them to agree to send a certain number of flower boxes. Even though nobody met the agreement, this event marked the beginning of the search for method of transporting flowers in mass quantities. That was how Frontier, Challenger and Florida West came to Colombia and started transporting flowers to the U.S.

Transportation to Europe was even more difficult, given that Colombia had commercial flights there only via Caracas or Miami[33]. To overcome this bottleneck, some exporters managed to convince Lufthansa to bring to Colombia an airplane with a widen cabin, a DC-10[34]. The government helped the exporters by allowing the airplane to come and pick up the load, but the plane could not get to either the international gate or the loading gate. As a consequence, the airplane had to park in the middle of the runway to load flowers. After this experience, Avianca got a 747 airplane, half for passengers and half for cargo, which helped to solve some of the problems of transporting flowers to Europe. In addition, the director of Aerocivil invited Asocolflores and some companies to Madrid to contact Iberia, and it was thanks to this meeting that this company started sending a freighter to ship Colombian flowers to Spain.

To sum up, in the early stages of export, growers had to make special arrangements with Colombian airlines to make possible flower transportation directly from Colombia to the U.S. As this scheme was extremely costly, insecure, and inefficient, exporters - supported

[33] Pedro de Narváez, the second President of Asocolflores´ Board, and Ricardo Valenzuela went to Curacao to see if they could nationalize Colombian flowers as Dutch products, and then take a flight of KLM to Holland.

[34] This kind of airplane was unknown to Avianca.

by Asocolflores - hired the services of foreign airlines, which allowed them to have access to the European markets. In this process the government was very supportive. Thus, the overcoming of transportation obstacles was the result of a joint effort by exporters, Asocolflores, and the government. Nonetheless, flower exporters pay today the most expensive freight per mile of any transported load in the world.

Flower reception and storage. Another major obstacle faced by pioneers was flower reception and storage in the foreign country. For instance, when flowers arrived in Miami, the airport did not have facilities for unloading flowers from the airplane. In fact, to unload the boxes companies had to wait until they were provided with an escalator – which could take hours - and they had to hire someone from the airport to unload the flowers from the airplane. In addition, there were no cold rooms to store the flowers, and flowers were left outside at high temperatures waiting for inspection by customs officials of the Department of Agriculture. Customs officers also pricked the boxes to check their contents, and many flowers were thereby damaged.

Once again, coordination among exporters was crucial for overcoming this bottleneck. Through Asocolflores (and financed by Proexpo), Colombian flower exporters established a joint company in Miami (Transcold) that was in charge of unloading the flowers and keeping them in refrigerated storage rooms until inspection by customs.

Distribution and commercialization channels. From the beginning, Colombian entrepreneurs were aware of the need to have businessmen located in the U.S. in order to facilitate market penetration, distribution, and commercialization of flowers. As a result, in 1969 the first flower importing enterprise initiated operations in New York, which were transferred to Miami in 1970 to avoid several obstacles and barriers they had to face in New York. On the other hand, Floramérica found the solution through creating its own importer-distributor company in Miami (Sunbursts Farms), which allowed them to eliminate third-party brokerage houses as well as to control the marketing of their product.

Other exporters rapidly adopted this strategy and at the beginning of the 70s a new distribution and commercialization model began taking shape. Exporters considered it fundamental to have businessmen located in the U.S. market who were educated in the U.S., and who had social abilities and knowledge of the American social and cultural environment. Therefore, exporters started establishing in the U.S. Colombian flower import companies[35], which were supported by associations with sellers in the United States. The role played by these companies and the strategic alliances were crucial for early exporting success. This model was followed by most of the growers, and in the mid-eighties there were more then 100 importers-distributors of flowers located in Miami. Nowadays, these facilities handle over 90% of the imports entering the United States.

[35] Some firms that still operate are Gardens de América, Gelco, Sabana a través de Master Flowers, Continental Flowers and Inversiones Targa.

Distribution of flowers throughout the United States. Another initial uncertainty was how to manage flower distribution inside the country. This obstacle was easily solved, since flower growers tapped into an already well-established system in the U.S. They started working with a trucking company, Armellini, which had originally handled the shipping of chrysanthemums produced in Florida to major consumer markets in the Northeast[36]. The existence of this distribution system resulted in lower transportation costs for Colombian flowers sold in Eastern markets than those for flowers shipped from the West Coast.

The U.S. demand. Knowledge of U.S demand, methods for satisfying U.S. consumers' needs, and methods to compete with local production were important challenges for first exporters. First, the importer-distributor companies in the U.S. played a key role in providing information about the U.S. demand. Second, production (and even packing) evolved and changed to satisfy buyers' requests and consumers' needs.

One way to satisfy consumers' needs consisted in developing new varieties. For instance, product evolution started from the simplest and least technologically-demanding crops, like carnations and chrysanthemums. When flower growers gained greater market knowledge and expertise they began growing roses, which required higher technology investments. In addition, in 1978, other kinds of flowers, such as estatice, gypsophilia, astromelia, gerbera, miniature carnations, daisies, and lilies, were introduced as part of a diversification policy of the sector. In the 80s, there was a reduction of exports of carnations, pompoms, and chrysanthemums, while exports of roses increased. In 1983, 50% of exports were carnations, 20% pompoms, 5% chrysanthemums, 16% roses, and 9% "other kinds". In 1991, the share of the first three types was reduced to 20%, 13.5%, and 1.6%, respectively, while rose participation went up to 23% and that of "other kinds" to 24%. Current production trends involve exotic agrotropical flowers like heliconias and orchids.

Another strategy that allowed Colombian exporters to compete with U.S. flower growers was the improvement of Colombian flower quality and, at the same time, differentiation of the product from that sold in the U.S. market. One example was the new grade ("the selected grade") developed by Floramérica - based in longer flower stems - which did not exist in the U.S. market, and which was of superior quality to the American competition.

Introducing changes in packing was another way to satisfy the U.S. demand. For instance, per the request of wholesalers, Colombian exporters produced assorted flowers of seasonal color packed in smaller boxes. Floramérica introduced the first changes to the product and packing. However, as these smaller boxes had to be transported together with other exporters' products, and boxes had to have the same size, Floramérica persuaded other Colombian exporters to reduce the size of their boxes, requiring them to change the product as well. This is another case in which there was a coordinated solution.

[36] Armellini guaranteed delivery to Eastern markets within two days.

5.1.3.4 The role of Asocolflores

Even though some companies adopted their own solutions for specific uncertainties/obstacles, in general terms the best way that the first Colombian flower exporters found to overcome severe common obstacles was cooperation and coordination among them. In fact, at the beginning of the industry the main uncertainty was related to the infrastructure and logistics required to produce and export a perishable product, especially when volumes were still small, which did not justify large investments. Therefore, there was only one possible strategy that all understood: joining efforts, coordination, and solidarity.

In 1970, exporters decided that it was urgent to have a united association that would represent exporters´ interests both at the national level and before foreign government entities, as well as help them coordinate to overcome obstacles in transportation and communication. In addition, exporters were concerned about the industry's impact on the social welfare of workers and environmental protection. As a result, some exporters got together and created Colflores, which in 1973 was transformed into Asocolflores (the Colombian Association of Flower Exporters), composed of eleven companies[37]. This trade association played a major role in Colombian flower exports, as it shaped the sector's operation.

Some of the main areas of support provided by Asocolflores have been: (1) improving access to international markets; (2) helping exporters to overcome obstacles (e.g. transportation, legal problems); (3) promoting research in order to control plant diseases and improve quality; (4) improving the welfare of the industry's workers; and (5) dealing with environmental protection.

Improving access to international markets has been one of the main targets of the Association. One area of focus has been the promotional activity and the establishment of recognition of Colombian flowers in international markets. As a consequence, the Association has facilitated the efforts of exporters to participate in fairs and exhibitions, a task in which Proexport has played a supportive role[38].

Another major task of Asocolflores has been defending the access of exporters to international markets. For instance, beginning in the 1970's, the high growth of Colombian flower exports to the United States concerned American flower growers who sought legal means to block Colombian flower activity in their country. In fact, through the SAF (Society of American Flower Growers) local growers filed a claim with the Department of Commerce against Colombian flower imports. They claimed that flowers

[37] The eleven companies were: Flores la Conchita, Floramérica, Flores Colombianas, Jardines del Muña, Flores de la Sabana, Jardines de los Andes, Superolores, Flores del Río, Jardines Bacatá, Inversiones Targa, and Flores de los Andes.

[38] Some events organized by Asocolflores are illustrative: in 1987 the First Festival of Flowers in the north of Suesca; in 1988 the First Festival of Flowers in the West of Madrid; in 1991 the Fourth International Symposium of Carnations in Bogotá; creation of Proflora (biannual); in 1997 the International Symposium on cut flowers in the tropics, Bogotá, National University-Asocolflores-ISHS; in 2000 the "Salón de la Floricultura annual, Acopaflor".

coming from Colombia should pay a countervailing duty equivalent to the amount of benefits and subsidies received for flower production and exports in the home country.

In response, Colombian exporters (through Asocolflores) adopted a comprehensive strategy that became fundamental in overcoming future problems in the U.S. market. In 1973 the first missions were to the U.S. to defend Colombian flower exporters. Asocolflores convinced the U.S. Department of Commerce to agree on promoting an alliance between both countries to promote U.S. consumption of flowers. The strategy of Asocolflores was aimed at finding a way to have an entity in the U.S. that was not vulnerable to the North American protectionism for domestic products. Therefore, the Association promoted the creation of the Florida Importers Association. This association was legitimately constituted as an independent American entity with the main objective of protecting commercial flower growers' interests in the United States. It became an extremely useful mechanism for exporters to organize their defenses in different areas, such as the dumping case and the imposition of phytosanitary barriers.

In addition, Asocolflores hired a group of American lawyers and technical advisors, and began to develop a strategy of lobbying American authorities. Since this time, Asocolflores has had a permanent presence in Washington, and has even managed to earn respect and recognition from U.S. authorities and the Congress. This strategy was also very useful in improving access for Colombian flowers, for instance by getting favorable conditions for flowers in the ATPA in 1991 and in its expansion in 2002.

Asocolflores has also served as a powerful means of helping exporters coordinate in order to overcome difficulties that have appeared since the beginning of their export activity. Some of the most critical difficulties have been the lack of transportation means, poor telecommunications, and inadequate road networks. As mentioned before, in the 70s Asocolflores brought together exporters and hired a charter from Ecuador, which marked the beginning of mass transportation of flowers. Another example was that, through Asocolflores, Colombian flower exporters established a joint company in Miami (Transcold) to be in charge of unloading flowers and placing them in refrigerated storage rooms until inspection by customs, a development by which exporters managed to solve problems related to the arrival and storage of flowers in Miami.

Asocolflores was also responsible for research and plant disease control within the industry. Given that these concerns were common to all exporters from the initial stages, they decided to empower the association to deal with these issues instead of dealing with them on their own. Accordingly, the results of the research became common knowledge and contributed to the diffusion process. Asocolflores associated with government entities (ICA) and universities (national and international) to engage in the research task. From the beginning, it has financed research studies, promoted the creation of courses in

Colombian universities, opened its own technical research department, and continuously trained its workers outside the country[39].

Finally, Asocolflores has also dealt with the welfare of the industry's workers and environmental protection. In this regard, it has developed programs to improve the quality of life of workers and their families and communities[40]. Asocolflores has led training programs[41] for workers and has developed methods to improve the social responsibility of the whole sector[42]. Asocolflores has also been active in support of environmental issues, especially in the nineties[43].

5.1.4 The diffusion process

The flower export industry experienced a clear diffusion process with important spillovers. After the first exporters revealed that the activity was highly profitable an increasing number of investors entered the industry. In the early sixties there were very few producers, in 1968-1969 new enterprises emerged in the flower exporting business such as Flores de la Sabana, Jardines de los Andes, Jardines Bacatá, Superflores, Jardines del Muña, Flores de los Andes and Floramérica, in 1974 the number of firms had grown to 64, 130 in 1981 and 450 in 1991. During the nineties the growth rate slowed down mainly due to the high costs of the investments required, which were proportionally over those of the 70s. Currently there are around 600 firms of different sizes participating in the industry, where around 500 are exporters.

This rapid expansion of the sector was triggered by the sizeable profitability of the business. During 1971 Fedesarollo estimated that the profitability enjoyed by a Colombian flower exporter was 57% over the value of its sales, and that the annual return over initial investment was around 700%.

[39] Some events in the 70s 80s and 90s are illustrative. Asocolflores financed different research studies: a first study en 1979 of "Reconocimiento e Identificación de Phialophora cinerescens y Fusarium oxysporum f.sp. dianthi en el cultivo de clavel en la Sabana de Bogotá" by UN; in 1882 a second study about the biological control of the "fusarium oxysporum" in the University of Colorado; in 1983 it promoted the project "Investigación y Diversificación de la Floricultura Colombiana", which proposed the creation of The Colombian Center for the Innovation and Diversification (CINDIF); in 1984 it helped in the creation of a course on floriculture in the Universidad Nacional of Bogotá; in 1985 the Association started its own Technical Department and in 1987 it established its laboratory for diagnostics of plant diseases and pests.

[40] In 1989 Asocolflores established the first center to attend to workers regarding social security issues. In 1998 it created the program "Cultivemos la Paz en Familia" (a mechanism to solve conflicts by nonviolent means), and it also created childhood households. Recently, it created the Floriculture School for Displaced People (supported by the Fundación Panamericana para el Desarrollo, FUPAD, and the USAID). In 2002 it developed the program Asocolflores – es- Hogar which provides housing solutions to 20,000 people..

[41] In 1992 Asocolflores created Acopaflor (Asociación Cooperativa de Profesionales de la Floricultura Colombiana); in 1996 it created the program "Trabajador Calificado en Flores de corte", approved by Colombian authorities; in 1997 it established the special program on Floriculture and Horticulture with University Jorge Tadeo Lozano.

[42] In 2001 Asocolflores created the "Gerencia de Desarrollo Social".

[43] In 1995 it created Ecoflor, in 1996 it created Floraverde (a code of conduct based on international standards), and in 1996 it created the Department of Environmental Issues.

The entrance of Floramérica and its success were determinant in the diffusion process. In 1970, the company accounted for nearly all of Colombian cut flower exports, but by 1986, the share held by Colombian firms had risen to over 67%.

As a matter of fact, at the early stages of exports Floramérica diffused knowledge to other firms, mainly production techniques (copied from U.S.) and efficient systems of marketing, distribution and commercialization. Many initial Colombian companies copied their model.

In particular, Floramérica diffused knowledge in different areas: in using production technology, such as an improved method of planting rootstocks at different times, and a more efficient way to build greenhouses (without separations between them and using wider plastics); in creating distribution channels, as seen when Floramérica, from the outset, created its own importer-distributor company located in the U.S.; in changing and adapting products and packing in order to satisfy the U.S. demand (e.g. smaller boxes with assorted seasonal color); and in training workers and changing work organization (specialized areas managed by people with specific skills).

Knowledge diffusion took place though different channels: (1) technical advice was given by Floramérica's ex-employees; (2) some firms hired members of Floramérica´s staff; (3) pesticide sellers diffused knowledge about, for example, how to handle plant diseases; and (4) other firms engaged in imitation and copying.

The diffusion also took place through copying and imitation. Copying in this industry is considered relatively easy and can be done, for example, through taking pictures of greenhouses. At the end of the sixties most of the local growers wanted to closely examine the greenhouses of Floramerica. In 1969 when the Vaughan family was thinking of entering the flower business, they considered it essential to take a look to the Floramérica farm "La Guanica". The Vaughan brothers got there at 6:05 pm, when the guard could not see them. Once inside Floramérica's facility, they were hounded by two enormous Doberman dogs. Eventually, the Vaughan brothers were invited by the managers of Floramérica to their installations. The advanced technology, especially their structures, impressed them, and his helped convince them to make the decision to invest[44].

At the beginning of the activity, and for several years, the diffusion process inside the flower exporting industry did not mean rivalry among competitors. The size of the American flower demand permitted the entrance of more enterprises without market losses for incumbents.

Moreover, diffusion was beneficial as the emergence of new participants helped exporters to overcome obstacles through coordination and cooperation between them. Flower growers found that they had to combine efforts in order to achieve their goals in the

[44] This anecdote was taken from John Vaughan´s speech at the celebration of the 30th anniversary of Asocolflores. John Vaughan was the first director of the Board of Asocolflores, and one of the owners of Flores de los Andes.

American market. Transportation issues, for instance, required combined negotiations. An airline wouldn't offer a complete cargo airplane just for one producer, so it was necessary for several of them to transport their flowers in one plane. Achievement of suitable trade tariffs and import taxes also required joint efforts. Even some investments followed this pattern, such as those in technology related to the establishment of adequate reception of flowers facilities in Miami. In the distribution and commercialization channels, combined efforts were also desirable. In addition, diffusion and joint efforts helped to position flowers in the U.S. market as well as to gain recognition of the Colombian flowers, with positive effects for the industry as a whole.

Therefore, the diffusion process was favorable during the seventies and the eighties, during which time the exporting process consolidated. Rents appropriabilility problems were highly offset by extremely large profits. However, the expansion continued and the non-existence of entry barriers promoted new entrants – some on them being farmers without knowledge of flowers or the cultivation of any perishable good - until diffusion became harmful for both pioneers (big companies) and the market as a whole. According to some interviewees, the huge participation of carnation producers resulted in a crisis in the early nineties.

5.1.5 Role of the government

The shift in Colombian government policy in 1967, aimed at improving macroeconomic stability and expanding its trade sector, has supported and encouraged fresh flower exporters in Colombia, although not decisive manner.

Five main policy actions that favored floriculture: (1) the formation of Proexpo; (2) the creation of Export Tax Credits (CAT), a bond that was given to the exporter, who could use it to pay taxes or sell it in the financial market[45]; (3) the adoption of Plan Vallejo, which gave duty exemptions for imports of raw materials and other inputs used in producing export goods; and (4) the establishment of a policy of mini-devaluations (crawling peg), by which the peso would devalue continuously against the dollar. These policies provided a favorable environment in which flower exporters´ efforts would be rewarded.

Proexpo started financing the working capital needs of exporting companies and, to a lesser degree, investments in fixed capital. In the case of the flower industry in the early seventies credits grew fast. In 1973 credits to the sector amounted US$1,880,000, and in 1975-1977 they averaged US$5,000,000 per year. Interest rates charged by Proexpo were well below the market rates. As an example, in 1977 Proexpo's rate was 13%, while commercial bank rates were around 32%. Proexpo financed two important projects for the flower growers. The first involved financing a large refrigerated facility in Miami so

[45] Initially, the face value of these CATs was established at 15% of the exported value. Over the years, several classifications have been defined. In 1977 most agricultural products received 7% CATs, most manufacturing products received 5% CATs, and some other products not needing this support received 0.1% CATs. Cut Flowers were included in this latter category in 1974, after the U.S. Treasury determined that due to the CATs flowers from Colombia would be subject to an additional countervailing duty of 10.2%.

that imported flowers could be kept at adequate temperatures while clearing customs and sanitary inspections before being shipped to their final destination. The second involved financing Avianca Airlines for the installation of refrigerated compartments in some of its planes for the transportation of flowers[46].

In addition, the second role of Proexpo, consisting in external promotion, was also helpful. Initially, commercial offices were opened in several cities in Europe, North and South America, and Japan. They were useful in exploring l possibilities for Colombian products, for giving information to potential importers and Colombian exporters, and in establishing contacts between Colombian exporters and local buyers.

Finally, Proexpo, in association with Asocolflores, helped in the international promotion of flowers. This included the provision of technical assistance, participation in international fairs, the distribution of information about foreign markets, and the organization of commercial missions to different countries.

At the time of first exports, the value of the Export Tax Credit bond (CAT) was established at 15% of the exported value. However, in 1974 the U.S. Treasury determined that, due to the CAT, flowers from Colombia would be subject to an additional countervailing duty of 10.2%, consequently reducing the value of the bond for flower exporters significantly. From 1975 to 1980, flower exports did not benefit from the CAT. However, the CAT was reissued for flowers in 1981-1984, although at very low values (4%).

Colombian flower growers have continuously faced protectionist pressures from their counterparts in North America. During the 1980's several threats of compensatory tariffs in the American markets strongly persuaded Colombian flower exporters to reject any kind of fiscal assistance from the Colombian government. In fact, in 1984 and 1985 Colombia signed a series of Benefit Suspension Agreements as a result of antidumping demands made by the United States, caused by the threat represented in the growth of imports from Colombia. When the agreements were signed, Colombia renounced the use of government aid that could be seen as a subsidy under American commercial legislation. As a consequence, Colombian flower growers stopped receiving CAT/CERT for exports made to the United States - subsidies from PROEXPO[47] -, Bancoldex's loan interest rates were tied to minimum rates in accord with international rates, and exporters were allowed to use Plan Vallejo for capital goods.

Other sorts of commercial incentives supported fresh flower exporters in Colombia, encouraging more investors to enter this industry. The ATPA (Andean Tariff Preference Agreement), established in 1991, reduced to zero the tariff applied to Colombian flowers for a period of ten years (renewed in 2002). In addition, in 1990 exports to the European Union were aided by the introduction of a preferential program that reduced import tariffs

[46] Taken from Austin, J. & Encinales, (1987).

[47] A Colombian association designed to promote export activities.

to zero (lasting 8 years). The GAPS (General Andean Preference System)[48] agreement with the E.U. also contributed to the industry. Nowadays, Colombian floriculture greatly depends on the results of negotiations of the Free Trade Agreement with the United States on this issue.

According to different sources of information (including interviews) Colombian flower growers could have competed in foreign markets without government benefits and incentives, but the development of Colombian flower growers as mass suppliers couldn't have occurred as fast as it did without them. That is why flower growers focused on growing as fast as possible, before protectionist pressures from counterparts became stronger.

In addition, although the government helped exporters to overcome some bottlenecks in specific areas (transportation, for instance), the key solutions for success were the result of the strategies adopted by exporters through coordination and cooperation. However, during the eighties and nineties the role of ICA in connection with phytosanitary issues and research of plant diseases, in coordination with Asocolflores, was of great importance.

5.1.6 Later developments of the flower industry

Although this industry is young (35 years old), the Colombian flower sector has rapidly generated a quite important production cluster. This has favored gains in market position by Colombian producers. The sector's advantages have changed through time; we can divide export flower production into two big phases, one from 1965-1990, and one from the 1990's up to now.

Since the early stages of production, it has been known that Colombia had several competitive advantages, residing in its favorable natural and economic conditions. The sector has been dynamic in continuously finding efficient ways of adapting advanced technologies used in developed countries to Colombia´s specific conditions, and in making large investments in technology aimed at improving flower quality and productivity.

Today, some of these facts are still the cornerstone of the industry, such as the existence of efficient distribution and commercialization channels. Additionally, the industry's core success relies on the availability and implementation of advanced technology in the whole production and distribution process, the presence of differentiated products, the empowerment of producers and, especially, the competitive scheme present inside the market (as opposed to paternalistic schemes typical in agricultural exports). On the other hand, low labor costs, decisive in the initial stage, are now a handicap for Colombian competitors. Today, Dutch production relies on significantly lower labor force costs, as found in their Kenyan flower crops.

[48] Valid until December 2005.

Industry's core still depends on the implementation of advanced technology in the whole production and distribution process. Besides developing the efficient cold chain, the sector has been dynamic in developing packaging to fit product characteristics, the distribution system, and the type of client. Colombia has currently started exporting flowers in Proconas, a system that allows flower transportation in containers filled with water. This system guarantees greater product freshness, simplifies its manipulation in supermarkets, extends the life of the product, and satisfies clients' needs[49].

A cornerstone of success is still the industry's efficient distribution and commercialization model. The role played by those companies has been crucial for positive export dynamics. During the sixties and seventies 80% of the flowers were sold in florist shops. In the nineties, Colombian flower exporters extended the base of their clients by means of new distribution channels, along with stable supply, competitive prices, and product variety[50]. Currently, 50% of Colombian flowers are distributed through supermarkets and chain stores[51]. In addition, the introduction of Colombian bouquets to the U.S. market through supermarkets by two innovating firms, Lafloret y Atlantis Bouquets, was made possible by their associated firms, CFX y Continental Farms, located in the U.S.

In addition, flowers have to compete with a series of products designed for holiday celebrations. It is important to develop product differentiation among its substitutes, showing the market the value of flowers and their traditional significance. This needs to be done in a joint effort with local associates in foreign markets (i.e. flower sellers in the United States). Strategic alliances not only favor market development but also support Colombian floriculture by helping them design adequate distribution and commercialization channels.

Stimulation of market demand is also essential for the fresh flower export industry. The U.S. market is characterized by seasonal consumption behavior, with high consumption during special holidays (Valentines' Day, Mother's Day, and Thanksgiving.) A potential demand can be created by modifying consumption patterns. With this objective in mind, Colombian producers created mechanisms of promotion to increase flower consumption in the U.S. Through strategic alliances between Colombian exporters and strong competitors in the U.S., the Flower Promotion Organization (FPO) was created in 1999. The FPO seeks, by means of marketing and communication efforts, to expand the number of flowers sold in the U.S. through an increase in the frequency of current buyers´ purchases. The campaign has been developed on a regional level, focusing on regions

[49] Export flowers grown in Colombia are also subject to quality, ecological and labor standards. The required standards are dictated by organizations such as the FIAN (Food First Information and Action Network) from Germany, the EUREGAP (European Good Agricultural Practices), The Stitching Miliekeur for Holland and the International Standardization Organization. Ultimately Colombian flower quality is guaranteed.

[50] Colombia expanded to more than 50 kinds of carnation and rose varieties.

[51] In 1977 only 13% of supermarkets sold flowers; currently this number stands between 85 and 90%. Total consumption went from US$227.5 million to US$984 million between 1976 and 1995. At thepresent time supermarkets supply about 40% of total demand. Source: American Floral Endowment, NPD Study.

with greater growth potential, taking into account different consumption patterns. The results show that consumers increased their purchase frequency between 20% and 25%, which resulted in an increase in sales of about US$7 million in two years. The first stage of the FPO expired in October 2003, and the second one became effective in 2004.

Concerning transportation, Colombia has today various companies transporting flowers to different markets. Bogotá airport, El Dorado, has the most significant load movement in Latin America. More than 200,000 tons per year are moved, 85% in flowers, and there are approximately 20 to 30 daily cargo flights. However, exporters continue paying the most expensive freight cost per mile of transported load in the world. This is due to the fact that there is no load compensation on the flights sent from Bogota to the U.S. that justifies lowering the tariffs for companies. Jet-fuel prices are extremely high. Despite Colombia's position as a net fuel exporter, fuel prices in the country are among the highest in the world.

Finally, even if revaluation periods, such as the first five years of the nineties and the last three years of this decade, negatively affect flower exporters, the exporters have managed to hedge against exchange rate fluctuations through the Forex market.

5.1.7 Counterfactual 1: Mangos

Mangos, like other fruits that have faced an export failure[52] in Colombia, are a good example of a counterfactual case for flowers. In spite of the efforts made by Colombian perishable exports experts – flower growers, for instance -, exports of mangos have never taken off.

Some figures on mango production and export performance over the last decades help illustrate this statement. Figure 5 depicts exports of mangos as a share of agricultural exports between 1991 and 2004. As opposed to flower exports, which contributed an average of 50% of the sector's exports, mango exports had an extremely small participation. During the nineties, the maximum share registered was 0.12% of the sector's exports, revealing that mangos have never been a significant export within the agricultural sector.

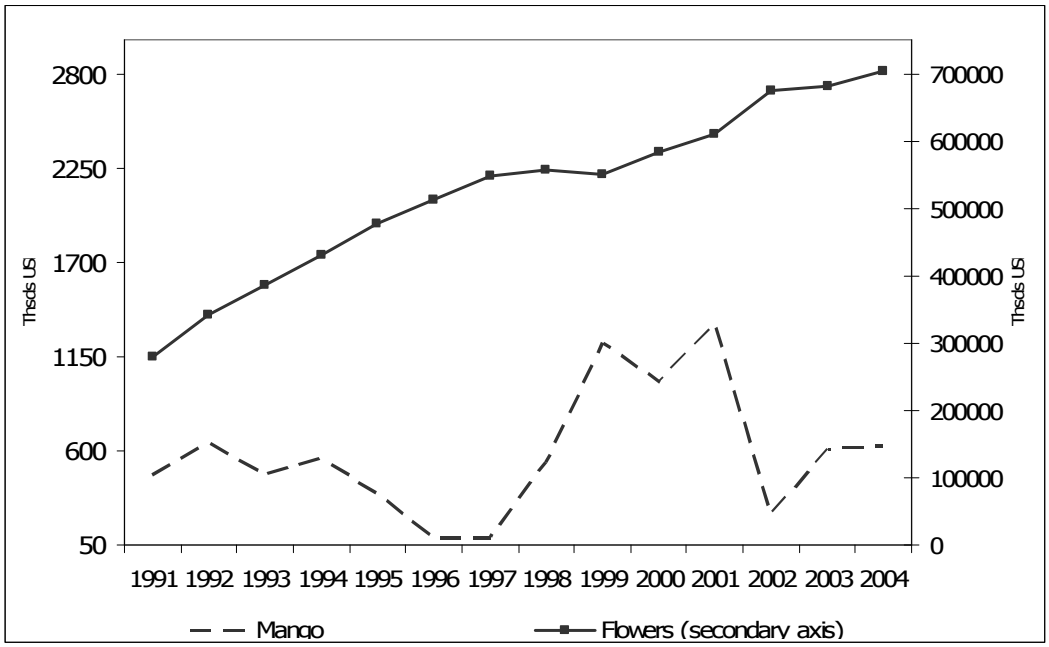
As a matter of fact, mango's activity does not have an exporting profile. The share of mango exports in production has been insignificant, attaining a maximum of around 4%, as in 1992 and 1998, while 1% in 2003. In spite of the efforts to take mangos to foreign markets, the export volatility suggests that the exporting activity has not been sustainable.

The comparison between mango exports and flower exports during the last decade is suggestive. Mangos have never been outstanding in exporting terms - on average, mango exports have been around US$1 million -, while flower exports recorded an annual average value of US$524 million (see Figure 5). It is also important to point out that

[52] Uchuvas and Pitallas, for instance.

mango exports have followed an unstable path, while flower export values have grown continuously.

Figure 5: Mango and Flower Exports, 1990-2005



Source: DANE

It can be concluded that, in spite of the efforts made, Colombian mango growing has not consolidated itself into an export product. The history of this agricultural (perishable) good is useful in understanding the reasons behind this behavior.

The first efforts to export mangos were made in 1985. Before, there was no formal mango growing in Colombia, at least not as an economic activity[53]. The entrepreneurs were essentially flower growers that, having the "know how" to export perishable goods, and seeking to diversify their income source, ventured to produce and export mangos. They were motivated by an initiative of Proexport that promoted Colombian mango exports.

Proexport made available a series of studies about the feasibility of mango growing and exporting in Colombia, following, in part the experiences of Mexico, India, and Brazil which had expertise in this activity. These sets of studies pointed out that exporting mangos from Colombia was an excellent business, with high profitability and expected productivity[54] rates. Proexport also helped entrepreneurs by offering them financial resources (through long-run credit at very low interest rates) and by leading a training program with field trips to crops in Mexico and Brazil.

[53] There was only some growing done on private farms, but none of it was done in a "businesslike" manner.

[54] They expected productivity of 15 to 20 tons per acre, with commercial production available in the third year.

Unfortunately these entrepreneurs failed to succeed. There were two clear sets of causes. The first one was related to institutional issues, and the other to Colombian cargo transportation structures and facilities.

Institutional obstacles were found from the very beginning of the project. Entrepreneurs had to cultivate a specific crop that was not available in Colombia, and had to be brought from Costa Rica[55]. When going through the required customs paperwork they found that there was no customs register in INCOMEX[56] for this sort of import. In an effort to resolve this problem they asked the Colombian Institute of Agriculture (ICA) for assistance, and the ICA gave them a phytosanitary permit for these imports. Also, due to the novelty of the activity, they were guaranteed that they would not have any problem with customs and that these imports would be allowed into Colombia as samples. Apparently having resolved this problem, the entrepreneurs brought their imported eyes[57] from Costa Rica. However, customs did not allow the imported eyes into the country, and the eyes were lost. Finally mango growers found a way to import them.

Other sorts of institutional obstacles resulted from inconsistencies between DIAN[58], ICA, and the Antinarcotics Agency, which made the shipment process at port site difficult. This was a serious issue, since time gaps in the freeze chain of the product simply spoiled it. Continued checking by all of these institutions resulted in excessive openings of each container, causing temperatures inside the containers to deteriorate.

In addition, entrepreneurs had to deal with problems related to transportation and the distances between production and shipment sites. Mango crops are located in central departments of Colombia (Tolima, Huila and Cundinamarca), and they have to be transported by road to Santa Marta's commercial port[59]. Mango temperatures were lowered at the crop site, and then stored in temperature-static containers. Poor road conditions made for a long trip to the port. As the trip time increased, the possibility of maintaining an adequate temperature was minimized. In addition, commercial ports did not have freezing facilities or cold rooms. To make matters worse, at the time there were no cranes for lifting heavy containers (temperature-maintenance equipment was very heavy).

The above-mentioned issues imposed such constraints on mango producers that their projects failed. Many containers filled with mangos were lost at port and in transit. Mango growers reduced their efforts and interest in exporting this good, since they had

[55] Crops were brought from The Agricultural University of Costa Rica.

[56] National Institute of External Commerce, using the acronym in Spanish.

[57] An eye is the top section of a young tree, which can be implanted into the rootstock of a young tree of another variety. This implantation, results in a tree of the variety of the eye.

[58] National Department of Customs and Taxes

[59] Air cargo transport was not possible, because fleet costs were not profitable.

initially made high investments required by the fact that there had been no previous formal mango growing.

In sum, mango growers faced similar favorable conditions for exporting than flowers. Studies showed that Colombia was an adequate place to growth and export mangos. In addition, Proexport offered entrepreneurs financial resources (through long-run credits at very low interest rates) as well as training programs. Producers faced similar uncertainties than the first flower growers, (except for the proximity of crops to the shipment ports) but they were not able to overcome them. Some examples were finding adequate transportation means and technologies to ship mangos, and ways to solve institutional and phitosanitary restrictions. One of the advantages that flower growers had, and which is not as clear in the case of mangos, was that there were numerous businessmen entering the industry at the same time, which allowed coordination and joint efforts to overcome obstacles.

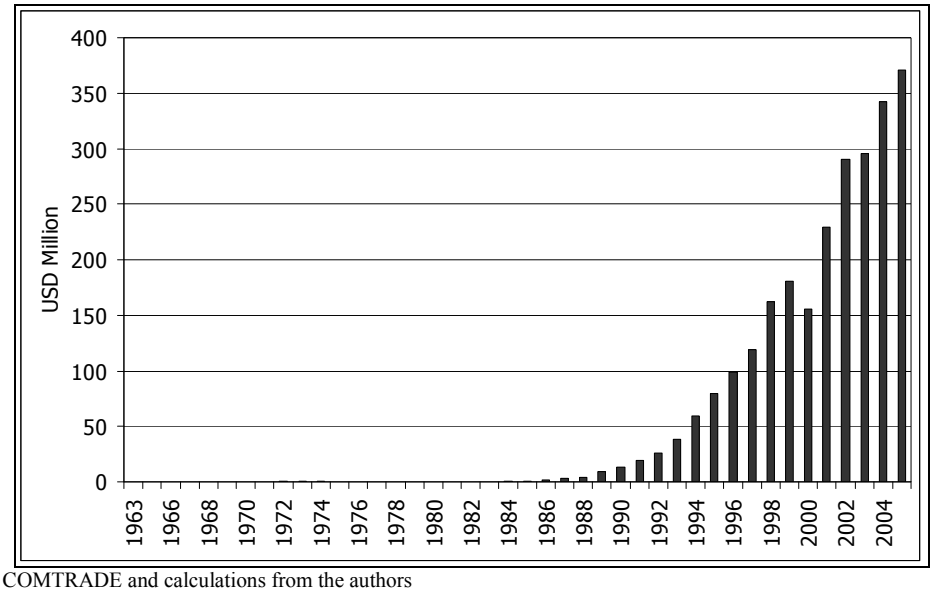
5.1.8 Counterfactual 2: Flowers in Ecuador[60]

Flower production and export in Ecuador involves two stories: an early failure and a later success. The contrast of the two stories allows us to highlight the pivotal strategies in the Colombian flower export discovery.

Ecuador started to export flowers in 1963, and peaked in 1973 with exports of $600,000. During this period Colombia's flower industry also started to blossom. Nonetheless, while Colombian flower exports continued to grow, exports from Ecuador started to decline, almost disappearing in 1977. During this period, there were two failing pioneer attempts to develop an export flower sector in Ecuador: one in the early sixties by "Jardines del Ecuador", and another in 1976 by Florexport. Other entrepreneurs, none of whom lasted until 1984, followed both pioneers. In contrast, in 1983 a new pioneer effort made by Agroflora gave birth to a dynamic exporting industry that has many players, and that has made Ecuador the third largest flower exporter in the world, after Colombia and the Holland.

[60] This section is constructed using the flower case study amply developed by Stratega BDS. All the information about the Ecuadorian experience is taken from this case study, and is analyzed by the authors to better highlight the Colombian experience.

Figure 6: Ecuadorian Flower Exports, 1963-2005



Source: UN COMTRADE and calculations from the authors

Ecuador's present success in this industry shows that natural conditions can be discarded as a reason for initial export failures. Therefore, other reasons must be considered, such as changes in Ecuadorian conditions between the period 1963-1977 and 1983, and the adoption by Jardines del Ecuador and Florexport of strategies that were different from those of Agroflora.

The main barriers to exports before 1984 were restricted air transportation to the US market – the same problem faced by Colombian flower producers - and phytosanitary problems caused by production without greenhouses. In contrast, Colombian flower growers managed to control phytosanitary problems and plant diseases. They did this in part through the construction of greenhouses using wood and plastic, a task that benefited from their previous experience in greenhouse construction for strawberry crop production. Also, in the beginning, the problem of plant disease control was partially solved through the advice of some technicians from Israel who came to Colombia and spent months working with local producers. Over time, the role of Asocolflores (in some cases supported by ICA) in continuously finding ways to control plant diseases became crucial.

These barriers were still present when Mauricio Davalos, Agroflora's main owner, entered the industry. Agroflora overcame some coordination problems in part due to the existence of a well-developed flower sector in Colombia. It used Colombian producers' previous experience to obtain technical assistance through a partnership, and it imported basic supplies from Colombia that were not available in Ecuador, like fertilizers and plastic films for greenhouses. The international buyers of the first shipments of Agroflora's flowers were a Miami importer and Floramerica -- the latter, and probably the former, owed their existence to flower production in Colombia. Agroflora was able to develop without the need to coordinate with other local producers, which was a prerequisite for the Colombian discovery. Once the industry grew, the availability of

flower inputs considerably facilitated diffusion without the need for coordination with, or even acknowledgment by, the pioneer. This had not been possible for pioneers in previous years, when the Colombian sector was only developing, and it had not been possible in Colombia, as no other country in the region had been exporting flowers in a significant manner. The above confirms the importance of coordination for the Colombian story.

The transportation problem has a similar development. Although it was not fully overcome by the pioneer, it was at least reduced, without the need for cooperation with other players, by coordinating with Ecuatoriana de Aviacion (Avianca's counterpart) to set up a flight on a specific day for flower exports, instead of having to wait every day for unoccupied space on passenger planes. By 1990, when the sector had grown considerably, Ecuatoriana de Aviación dedicated a plane exclusively for cargo, and the growth of cargo agencies surged.

An important difference between the case of Ecuador and the case of Colombia is the existence of state financing through Corporacion Financiera Nacional, CFN. This corporation financed both pioneers and followers, and may have been crucial for the development of both, as stated by some presently existing flower companies.

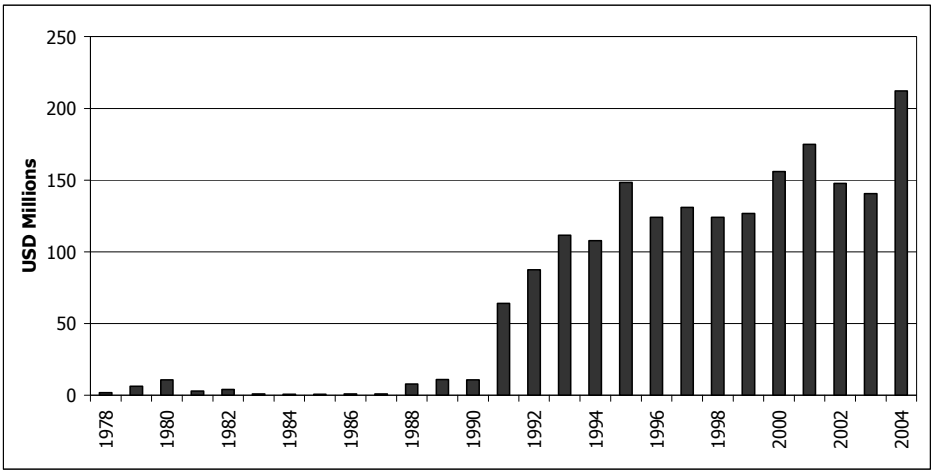
5.2 Case 2: Underwear and swimwear

5.2.1 Introduction

- Exports

While the Colombian Underwear industry dates to the mid 1950s, and the first efforts to access the international markets took place around that time, the industry's exports did not really take-off until 1991 (see Figure 7). All exports previous to that year correspond to Leonisa, the leading women underwear producer, whose early orientation towards the international markets paved the way for what happened later. As will be shown, Leonisa's first exporting efforts happened in a context of export promotion policies. It is yet to be explained, however, why other companies did not follow at the time and what was particular of the early 1990s that motivated the observed export growth.

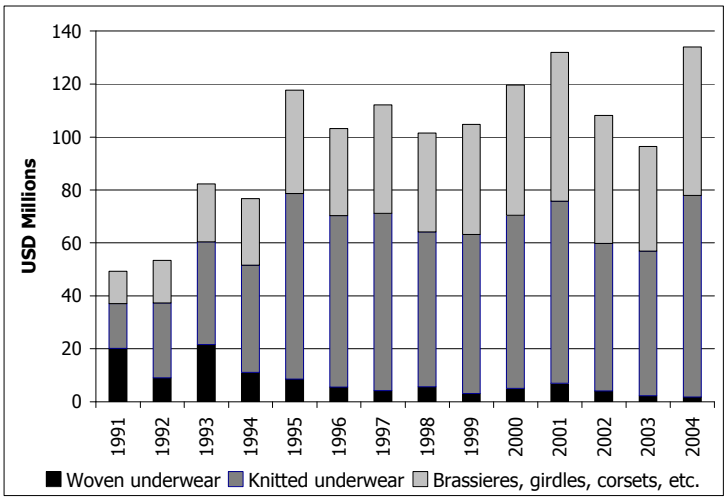
Figure 7: Underwear Exports, 1978- 2004



Source: UN COMTRADE and calculations from the authors. Note: COMTRADE uses the SITC Revision 2 classification. In this coding underwear includes socks and other garments, so underwear exports are overvalued.

Even though the more disaggregated information is only available from 1991[61], Figure 8 starts to shed light on transformations undergone by the industry in terms of its product composition. In particular, Figure 8 shows a gradual substitution of woven underwear exports for knitted underwear exports and brassieres, girdles and other under-garments exports. Knitted underwear exports grew 400% between 1991 and 2004 and brassieres, girdles and other under-garments exports tripled, while woven underwear exports fell to 10% of their starting value over the same time period. Knitted fabrics are characterized by their superior elastic properties and transition of the industry towards them reflects transition towards better technologies and higher quality products and is, as we will show, at the center of the transformation underlying export growth.

Figure 8: Underwear Exports, 1991-2004 (million dollars)



Source: DANE-DIAN and calculations from the authors.

[61] Data of exports by ISIC 5-digit sectors is not publicly available from DANE.

We also find that product re-composition took place simultaneously with geographic market diversification. The redefinition of product lines seems associated to the ability of the Colombian underwear industry, during the 1990s and afterwards, to enter new markets. As Table 3 shows, the number of countries reached by the Colombian underwear industry almost doubles between 1991 and 2004, going from 36 to 61 and countries different than Venezuela and the U.S. –the two main destinations of Colombian underwear exports– show a tendency to increase their participation among destinations of the Colombian underwear exports. Interestingly, the shares of exports going to Venezuela and the U.S. do not display defined decreasing or increasing tendencies but rather fluctuate during the period we observe.

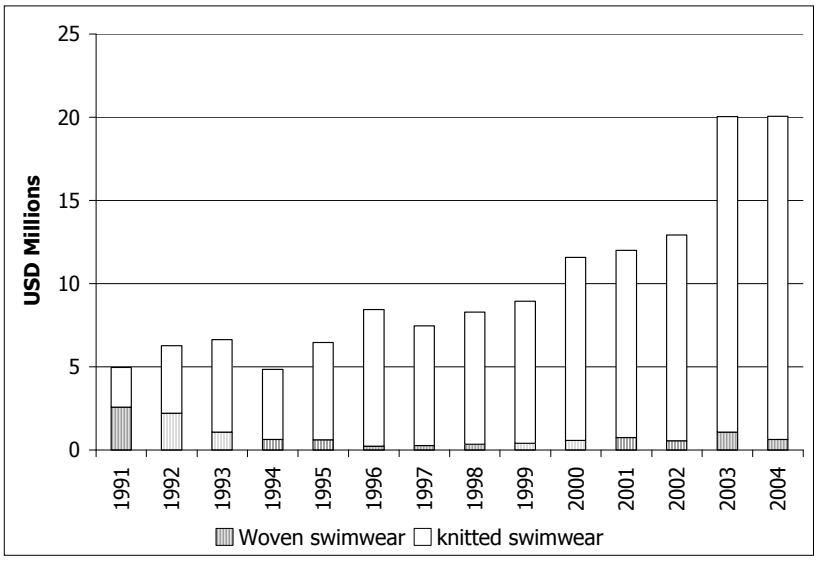
Table 3: Underwear Exports by Destination

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Total exports (in million dollars)	**49.3**	**53.4**	**82.3**	**76.7**	**117.7**	**103.2**	**112.1**	**101.5**	**104.7**	**119.6**	**132.0**	**108.2**	**96.4**	**134.0**
No. of destinations	**36**	**35**	**41**	**45**	**48**	**48**	**44**	**44**	**43**	**46**	**49**	**56**	**56**	**61**
% exports by destination														
Panama	31.5	1.9	2.0	2.0	1.4	2.1	1.0	1.3	1.6	0.9	1.5	1.6	1.2	1.4
Venezuela	22.8	44.7	47.2	28.0	42.3	29.0	27.4	33.1	30.8	46.8	50.6	32.5	16.5	29.2
United States	16.6	21.7	23.8	30.5	29.0	36.0	31.6	12.2	12.2	12.5	13.3	22.4	31.0	19.4
Costa Rica	0.6	2.0	3.4	5.0	4.0	3.4	5.8	18.0	23.1	9.3	5.6	5.1	6.0	4.8
Others	28.5	29.6	23.6	34.5	23.3	29.5	34.3	35.4	32.2	30.5	28.9	38.4	45.3	45.2

Source: DANE-DIAN and calculations from the authors.

We will argue that the Colombian Swimwear industry largely developed as a by-product of the Underwear industry. The Swimwear industry was a neighbor tree, in the sense of Hausmann and Klinger (2006), to which the industry was able to jump thanks to the knowledge and experience acquired from exporting underwear. No wonder that the actors and markets of destination are with few exceptions, as we will see, almost the same in both cases. Although at a smaller scale than underwear exports, swimwear exports show a definite take-off in the recent years (see Figure 9).

Figure 9: Swimwear Exports, 1991-2004



Source: DANE-DIAN and calculations from the authors.

5.2.2 The Underwear and Swimwear industries

- Industry Structure

The Colombian Underwear industry dates to the middle of the 20th century. It is an industry composed of one very large player (the leading firm), a small number of medium size players and a very large number of smaller producers, most of them working as satellites of the larger firms and having their production and export activities coordinated by them. As a consequence it is an industry that tends to be geographically concentrated around the places where the larger firms are located.

Because the production of underwear garments does not require large machinery but is instead intensive in hand labor and in many cases allows for the production of garment pieces at different locations to be later assembled, the industry rests on the existence of multiple micro-entrepreneurs that operate in their households or in small rented spaces and receive training, instructions and inputs from the larger firms organizing the business. The larger firms either outsource from the smaller players or play the role of market coordinators. This model of organization first introduced by Leonisa to overcome capacity restrictions has worked particularly well in terms of facilitating access to the international markets.

The larger firms in the Underwear industry are all vertically integrated upwards to produce the textiles required for underwear (and swimwear) production. They produce these textiles, however, using imported inputs so their costs are affected by tariff-movements, and use them both to directly produce underwear garments and/or to hire the production of garment parts or full garments from others.

As mentioned above, most Swimwear producers are also Underwear producers. Here again Leonisa was the first player. In the more recent years, however, there are a number of new smaller players and there is one in particular -Onda the Mar- that as we will see has played a leading role in the industry. The Swimwear industry has grown under the same industrial organization arrangement described above.

Interesting for the purpose of this paper, information available from the Annual Manufacturing Survey of DANE shows that between 1977 and 2001 average labor productivity more than doubled in the case of underwear, and tripled in the case of swimwear.

- International trade

The Underwear and Swimwear international markets are segmented according to the quality and design of the garments. There is a large market of low-cost / low price products with small value added in which China is the leader producer, and there is an upper tier market of high value added in which design and good quality matter, in which the leading producers are from Europe and the US.

In 2003 world underwear exports went mainly to Europe (33%, when you add the shares of Germany, the United Kingdom, France, Italy and Spain), and the US (26%). On the same year, Continental China and Hong Kong produced 26% of total underwear exports. Turkey (7%) and India (5%) were also important exporters in the low-cost segment of the market. The U.S. (4%), Italy (5%), Germany (4%) and France (3%) were the larger players in the upper tier market.

The international market for Swimwear products is similar. In 2003, 29% of total exports went to the US and 40% to Europe. China is also the largest producer of swimwear exports (24%), this time followed by Mexico (10%), Germany (7%), and Italy (6%). The European and North American producers attend the upper tier segments of the market.

The Colombian Underwear industry is strongly export-oriented. Exports as a share of output were 82% in 2001[62], the last year for which output data are available. In the case of Swimwear, exports as a share of output went from 20% to 37% between 1991 and 2001, showing a clear increasing tendency towards export-orientation. Colombian underwear exports are reaching not only the Latin American and US markets, but also a wide range of countries in Europe. Swimwear exports are also diversified in terms of geographical markets, with the larger export share going to the US market (49% in 2004). As we will see, Colombian Underwear and Swimwear products found a place in the foreign markets by competing in the upper tier segments of both kinds of products.

5.2.3 Pioneer

[62] Export and output data are available in different sector classification codings and this may be inducing an upward bias in the calculation.

In 1956 Julio Ernesto and Joaquin Urrea, the owners of a successful textile factory located in Medellin, created Leonisa, a company that almost fifty years later has presence in 20 countries, exports 32% of its output, and participates every year in the main underwear fashion events that take place in Italy and France.

The first merit of the Urreas was to look towards the international markets since early on. Soon after the company's creation, in 1965, they set up a plant in Costa Rica to supply the Central American countries, and later on in 1981 they opened an office in Chile to push their way into the southern Latin American markets and an office in Isla Margarita (Venezuela)[63]. Most of this effort through direct investments in the objective markets or through sales of products manufactured abroad is not reflected in the industry's exports records.

While previous to the 1990s sales abroad already represented a significant share of the firm's output, products sold in the international markets were very low-value (2 to 3 dollars per unit) and went mostly to Venezuela. These two features, which largely characterized Leonisa's business until 1988, are the ones that underwent the major changes when the company redefined its export strategy.

5.2.3.1 The discovery

The turning point occurred in 1989-1990 when the company transformed its strategy and switched to developing products of greater value added and greater value perceived (20 to 30 dollars per unit) changing its competitors (from China to Italy or France), its market, and its customers.

The key to export success was the development of a product competitive in its quality/price relationship and properly targeted. In the upper segment of demand, Colombian products of US$20 to US$30 compete today with Italian or French products of US$50, while in the lower-cost segment Colombian products of US$2 to US$3 were competing with Chinese products of US$0,8.

Leonisa's president had visited the largest Spanish underwear company. He had asked the president of that plant how many product units it was selling. The answer had been 4 million. Leonisa was selling ten times that much. He had then asked about the company's sales value and found that both companies had comparable sales values. This experience had been key to make him understand that Leonisa had to redirect its business towards higher value products, and the anecdote serves well to place the transformation undergone by Leonisa's business in context.

The strategy to materialize these changes involved coordinated actions in different fronts, ranging from a technological upgrade from US$50,000 looms to US$1 million looms able to produce elastic lace and (later) *magic-up*, to the creation of a company owned

[63] The plant in Costa Rica was similar to that in Colombia and produced smaller volumes.

distribution system and other logistics improvements aimed at putting an end to inventories, increasing delivery precision and lowering delivery times.

A major component of the company's new strategy was the switch towards a demand-oriented production. Leonisa decided to focus on the Latino consumers and started a process of data collection (product references, sizes and colors being sold) from cashier registers in the chain stores that has allowed the company to tailor its production to the tastes of the desired consumers. This has been accompanied by increasing market segmentation by costumer needs and by occasion (women age, pregnancy, sports, work, party) in such a way that the company currently handles about 8,500 different product references.

Participation in international underwear fashion fairs has also been key to learn about world trends in color, texture and design and deliver the adequate products. Evidently product transformation has involved a transition towards hiring professional designers graduated in Europe and the U.S., something that was not considered central for the business before.

The result of all these is that Leonisa was able to reach new markets (Perú, Ecuador, México, Bolivia, Guatemala, Puerto Rico, Portugal, Spain[64] and Italy among others) and became the leading brand in ten Latin American countries at a time when no brand from the U.S. or Europe was leader in more than three.

5.2.3.2 Uncertainties

Some of the uncertainties faced by Leonisa at the time were:

1. Ability to offer products with the adequate price-quality relation to be able to compete in the upper tier of the international markets.

In switching towards high-value added products Leonisa was entering a market in which both consumers and competitors would be new. Its ability to meet the quality standards of this market at a competitive price was central to the success of the firm's strategy. The quality challenge was met by investing in technology and human capital. The price challenge was met thanks to (1) the availability of low labor costs in Colombia relative to those of the competitors; (2) a deliberate effort of the company to reduce inventory costs[65] and, arguably, (3) the incentive policies of the government allowing exporters to import materials at the international prices by-passing the tariffs in place.

[64] A distribution network was set up in Spain to reach specialty stores and chain stores. While entry to this market was not particularly profitable, it was useful to gain recognition and position the brand name facilitating entry into other European markets.

[65] In this business there exist inventories in several stages of the production process -inventories in the cutting plant, in finished products and in distributed products- and the handling of these inventories becomes fundamental for costs. Applying what they call a "constraint theory system" that consists in solving the main bottle necks in production one at a time until all main bottle necks are eliminated, Leonisa managed to arrive to 8 hour inventories in the cutting plant, 3 weeks inventories in production and 45 days inventories in distribution, while similar companies in other countries had inventories of 3 to 4 months.

2. Large-scale orders

One of the obstacles the company had to overcome to access the international markets was the fact that the production capacity was often insufficient to attend large-scale orders on schedule and with standardized qualities. Leonisa faced this uncertainty by developing an industrial organization model in which multiple small players are coordinated and trained by a large firm and capacity increased through outsourcing contracts. This model turned out to be useful also in terms of adding flexibility to the firm's supply (i.e. it facilitated the production of smaller-scale orders of multiple product references on demand). Under these types of arrangements Leonisa is said to be currently generating 5,000 direct and about 20,000 indirect employments.

One of the factors that seem determinant for the success in ensuring product quality under such organization arrangement is the company's full control of all operations -how to cut the garment, what materials to use, how to exhibit it, how to distribute it, and what strategies or modalities to employ in entering new markets.

3. The production of 8,500 product references responding to demand preferences.

This implied for Leonisa the need to optimize production following demand, and not as is commonly done, by optimizing the production process in such way that the machinery never stops. In order to face this difficulty Leonisa started handling volumes by computer.

5.2.4 The diffusion process

The Colombian underwear export industry developed under the hood of Leonisa. While the company's full strategy has to date not been replicated by any other firm, possibly due to its scale and complexity, diffusion has occurred through the replication of dimensions of Leonisa's strategy by other medium and small players, for which Leonisa has been the reference.

Spillovers from Leonisa's activities are of several kinds and range from those reaching the apparel industry as a whole to those reaching the underwear and swimwear industries in particular. Among the first group of spillovers, Leonisa's activity has been key to the development of the Colombian apparel industry for (1) contributing to position Colombia's name in the international map of apparel producers, (2) developing human capital trained in the specifics of the trade, and (3) bringing improved design standards and fashion trends to the industry.

Among the second group of spillovers reaching the underwear and swimwear industries in particular, Leonisa opened the way for other firms to explore the higher value-added products markets by showing that: (1) there is design capacity in Colombia and buyers in the foreign markets for these products, (2) it is possible to develop a brand name and sell it abroad, (3) these products have good profit margins and that there is space for competition. Also in terms of the strategy to follow, Leonisa's experience showed that it

is possible to (1) produce large volumes of high quality / high value added products in a large number of styles competitively, (2) have direct readings of the markets' preferences and use them to develop fashion trends, (3) have own distribution networks, (4) adapt to the different markets' characteristics and tastes.

Firms have used this information in different ways. The result is an industry with a mixed variety of producer types in which some firms are specialized in the production of underwear garments while others are not; some have their own brand-name while some produce full-package for international or local firms and others have a mixed strategy of brand-name and full-package production; and there are large, medium and small firms simultaneously active in the local and exports markets. Finally there are exporters that coordinate production of others and commercialize it in the international markets without directly participating in production.

Perhaps the most direct expression of the diffusion of Leonisa's "discovery" across the industry is in the development of a segment of new small producers of high value-added brand-name products that are selling small-scale orders in the international markets (Touche, Pinel Intimo, Antonella, Gef, Punto Blanco). These are companies competing for market niches associated to product quality. The smaller the firm, the higher the market segment it targets. But Leonisa's influence is also perceived in connection to the larger apparel firms that are now combining full-package production with the development of brand-name products.

Finally, this diffusion is also evident is in the current industrial organization of the underwear exporting industry where a reduced number of players have replicated Leonisa's local "maquila" strategy: they have adjusted their products to target the upper-end consumers in the international markets, and have entered a sort of "full-package" production in which they control all stages of the production process but outsource many of them from small and micro enterprises that exclusively derive their business from their activity. It is this form of organization of a leading firm coordinating the business of the smaller players that are its satellites, what has apparently enabled the industry to overcome the entry barrier imposed by large-scale orders.

5.2.4.1 Followers

- Underwear

The information available from the Custom Registry for the more recent years allows us to provide some evidence about the way in which the underwear exports industry is currently organized. The data fit well with the idea of an exporting sector composed of a small set of large to medium size firms and many very small players (see Table 4).

Table 4: Underwear Exports by Firm

	2000	2001	2002	2003	2004	2005
Underwear						
Leonisa	16.2%	14.8%	17.9%	15.6%	17.9%	17.6%
Dugotex	11.9%	11.1%	8.5%	6.2%	11.6%	12.9%
Codintex	10.3%	7.1%	11.9%	18.2%	10.0%	8.8%
Industrias Integradas	4.6%	4.4%	6.2%	4.7%	3.8%	3.7%
Vestimundo	0.8%	0.9%	1.4%	5.4%	3.2%	2.9%
Emcoltex	0.5%	0.7%	1.0%	1.6%	3.2%	2.5%
Manufacturas Eliot	1.1%	1.7%	1.5%	1.7%	2.4%	2.2%
Balalaika	1.4%	1.6%	2.8%	3.8%	3.1%	2.2%
ST Even	1.4%	1.4%	1.5%	1.6%	1.7%	1.8%
Formas Intimas	0.0%	0.0%	1.2%	1.6%	1.3%	1.7%
Laura	1.6%	1.4%	1.5%	1.1%	1.3%	1.3%
Antonella	3.4%	3.8%	3.7%	1.5%	1.7%	1.2%
MaFemme	2.6%	1.5%	0.9%	0.5%	0.6%	0.5%
Crisa	1.9%	4.1%	1.9%	0.1%	0.0%	0.0%
Other	42.3%	45.8%	38.1%	36.4%	38.3%	41.0%
Number of exporters	**379**	**489**	**555**	**657**	**689**	**551**
Exports (USD Million)	**119.6**	**132.0**	**108.2**	**96.6**	**135.9**	**156.5**

Source: DIAN Customs Registry and calculations by the authors.

While there is no available record of the exports by firm before 2000, as would have been ideal to more properly reflect the diffusion process, through interviews we were able to establish the following:

Dugotex absorbed through a merger three other apparel firms (Inversiones Support, Emcoltex S.A. and Incolmedias S.A.) in 2004. All three of these firms as well as both Dugotex branches in Bogotá and Medellín had been created in the early 1990s. Dugotex object markets are Venezuela and the U.S. In the later years Dugotex has progressed in consolidating its vertical integration, so it now produces its own material and elastics and a wide range of feminine underwear garments that it commercializes under the brands of Diane, Lorena, Anny Body and Color de Rosa, targeting the medium-high and medium-medium segments of the market.

Industrias Integradas is a Cooperative of Associated Workers, born under the name of Talleres Rurales del Valle in 1974. Its headquarters are in Cali, and it has associated plants located in eleven different nearby localities. The Cooperative works as a maquila for local brand-name apparel firms, has an own brand-name line of feminine underwear (Symphony Lingerie), and produces no-brand full-package underwear. It exports these two latter product lines to the United States since 1995 through an intermediary firm, Apparel Contractors, who negotiates directly with thirteen American firms, DKNY among them.

Vestimundo is a producer of both underwear and other apparel. It sells its products under brand-names Gef, Punto Blanco and Baby Fresh, and also produces full-package for Jockey and Ralph Lauren. It makes part of Grupo Cristal, a consortium of apparel

producers (Fábrica de Calcetines Cristal, Bordados Crystal, Sotinsa, Calcetería Nacional, Medias Cristal, C.I. Nicole) and owns plants in Colombia and Costa Rica -this latter to service the Caribbean markets- and retail stores in Colombia and Venezuela for Gef brand products.

Manufacturas Eliot (Pat Primo) also produces a wide range of underwear garments as well as other apparel and sells through its own brand-name stores.

Formas Intimas, vertically integrated upwards, produces its own knitted material Fibrafit as well as elastic lace and ribbon. It sells underwear and other apparel under the brand names of Mile fashion, Nenitas, Dia de Verano and Reno, and works with a system of direct sales.

Balalaika, sells both underwear and textiles. Vertically integrated upwards, this company handles both full-package production for Avalon and Sara Lee and brand-name products (Balalaika, Deseos, Aroma, Greco, Violets, Nene's, Estivella y Venus Victoria).

Antonella produces brand-name underwear and is also vertically integrated upwards with Protela, a textile producer.

The paths followed by these firms illustrate ways in which the diffusion of the model put forth by Leonisa has taken shape. While Leonisa is widely recognized as the sector's leader by all underwear producers, the process by which its discovery that the business opportunity for Colombian firms is in the upper tiers of the market has been internalized by others is not unique and in most cases not conscious. We interpret the movement of the industry towards higher value added products, development and positioning of brand-names and product differentiation to compete for niche markets as manifestations of this diffusion process.

- Swimwear

Leonisa was also the first swimwear exporter. Here we find a good example of a jump to a nearby tree in the terms of Hausmann and Klinger (2006). Its knowledge of the markets and its distribution network allowed Leonisa and the firms that followed to benefit from the Underwear sector's growing international standing to develop a new exporting sector. The discovery that mattered in this case was the same as for underwear: the realization that the Colombian industry was fit to compete in the upper tiers of the international market on the base of high quality, good design and competitive prices. So the swimwear sector as a whole is to some extent a follower.

The largest exporter, Supertex, has grown in the international markets through a strategy slightly different than Leonisa's, by concentrating in *full-package* production for well-established international brands. It produces, for instance, all kinds of garments for Adidas and Nike, and it has a license to produce and export to specific countries under the brand Arena.

Around Leonisa and Supertex smaller companies have gone to international fairs and conquered. Onda de Mar is this strategy's leader. It was the first Colombian firm to have a swimwear stand in an international fair. This effort proved fruitful when Sports Illustrated chose one of its bikinis to make the front cover of its swimsuit edition in 2002. This served to consolidate Colombia's international reputation as a center of design, and motivated other producers to follow.

Onda de Mar had started operations in 1986 with the idea of designing and manufacturing trendy swimwear for high-end customers. Until 1999 its production had been principally destined to the local market. However, through a strict control on design, manufacture and distribution, and using state of the art technology, its swimwear gained international recognition in only 7 years. Notice that Onda de Mar's overall strategy to enter the international markets is not far from that introduced by Leonisa.

5.2.4.2 Barriers to entry

Even though the basic discovery of moving towards higher value added products may be replicable, the complete strategy to produce large quantities of multiple varieties of products with design may not be as easily replicated. The international market for high-value added underwear (and swimwear) products seems, however, still large enough so that new players can enter and grow without hurting the incumbent exporters and, on the contrary, generate positive spillovers for the whole industry.

5.2.5 Role of the government

The government has not directly contributed to solve the particular uncertainties faced by the underwear industry to access the international markets. The firms themselves have orchestrated the coordination across players to respond to the international demand and the internalization of the spillovers from Leonisa's experience is what has been central for the development and growth of an underwear exports industry in Colombia.

There are, however, two areas of policy, none of them specific to the underwear sector, in which the action of the government is recognized by the industry to have facilitated export activities: policies contributing to lowering the final price of the export products in the foreign markets to improve their ability to compete, and policies contributing to reach the potential demand in the foreign markets.

In the first category, preferential trade agreements appear to have played a key role in facilitating competitiveness of the industry's products in the foreign markets. The Textile and Apparel sector as a whole has been affected by (1) the Andean Group's -Colombia, Ecuador, Venezuela, Bolivia and Peru- reorientation towards a more open-doors integration model (1989-1993) that brought about the adoption of a common external tariff system by 1995; (2) the signing of the G3 trade agreement with Venezuela and Mexico (1994) to further the rapid insertion of the Colombian economy in the international markets; and most importantly (3) the signing of ATPA (1991) and later of ATPDEA (2002), unilateral tariff preference agreements with the United States.

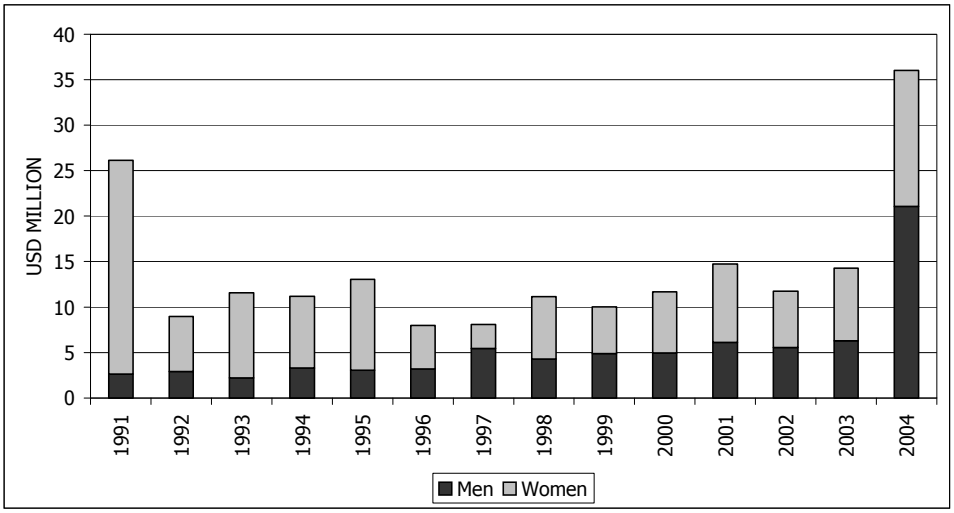
In the same category, Plan Vallejo, a program under which the local industry is allowed to by-pass tariffs when importing inputs to be used in the production of exports, has also contributed to lower export costs. In practice Plan Vallejo not only affects the prices paid for imported inputs but also those of the local competitors selling to exporters. While such program is unnecessary under an open market regime, it has remained useful to the industry as the local market for inputs continues to be protected.

In the second category, of policies contributing to reach the potential demand in the foreign markets, in the recent years Proexport has played a proactive role as trade facilitator through its international offices. In particular it has facilitated the interaction of the potential buyers (department stores, specialty stores and other) with the potential sellers, often represented by the larger underwear Colombian firms. While this is still an incipient effort from the side of the government it is immensely valued by the industry and has apparently proved useful in terms of materializing new business opportunities, particularly in the U.S. market.

5.2.6 Counterfactual: The shirt industry

The Colombian shirt industry has not been effective in growing as an exporter. Even if its export performance in 2004 may signal a more positive tendency in the recent years, the truth is that the market liberalization of the 1990s did not have on this sector the stimulating effect it seems to have had on others (see Figure 10).

Figure 10: Shirt Exports, 1991-2004



Source: DIAN-DANE and authors calculations.

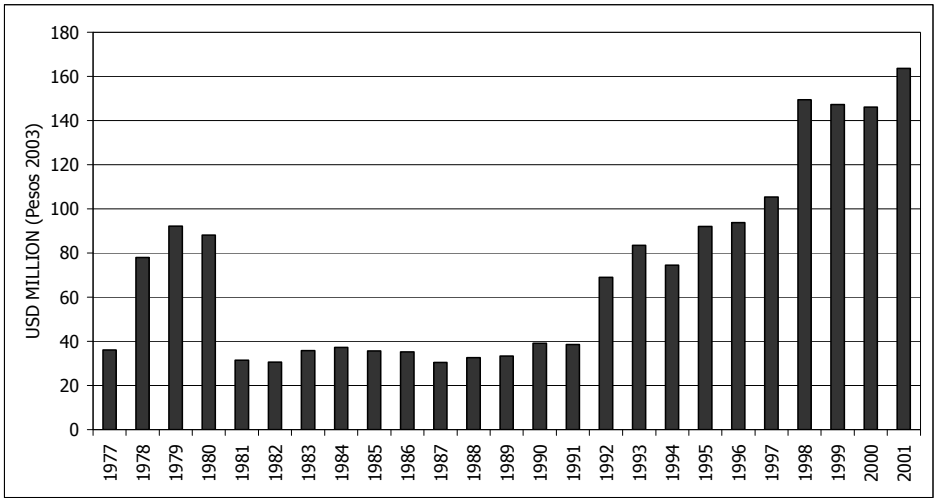
This is intriguing to the extent that the shirt and underwear sectors have been exposed to the same public policies, and share multiple features. Not only do they belong to the same broader category of apparel –which means they use similar inputs and benefit equally from the availability of qualified hand labor– but also they are frequently produced by the

same firms, so one would expect there would be spillovers from knowledge of the markets and lower access costs from shared distribution channels.

The largest shirt exporters in the world market in 2004 were China (23%), Pakistan (7%), Greece (6%) and India (6%), and the largest buyers were the U.S. (29%) and Europe (21% between England, Germany, France, Italy and Spain). Colombia, here again, has to compete against the low-labor costs and scale capacity of China. The apparent inability to do that has resulted until now in an inward looking sector that has been growing more towards the local than towards the foreign market (see Figure 11).

Firms that have succeeded exporting shirts are usually exporters of a wide range of apparel products under *maquila* or full-package arrangements. The larger in 2005 were Vestimundo (US$7.8 million), Supertex (US$7.7 million), Texcauca (US$2.7 million), LTC Colombia (US$1.7 million), Studio F (US$1.1 million) and Manufacturas Eliot (US$0.95 million) -notice the recurrence of names. The only firms selling shirts under a brand name in the international markets are Manufacturas Eliot (Pat Primo) and Studio F.

Figure 11: Shirts Output 1977-2001



Source: EAM-DANE and authors calculations. Note: Data correspond to sector 32206 (ISIC Revision 2, 5-digit sector) and does not include shirt production that may fall in other more general apparel categories, so output value may be undervalued.

The case is interesting because it serves well to emphasize some of the key factors of export success in the underwear sector, and to extract lessons that can be useful in stimulating the export growth of other apparel sectors.

First, the fact that exports did not take off in another apparel sector depending on similar inputs and labor costs and facing the same competitors in the same markets than underwear and swimwear, confirms that competitiveness of these sectors rests strongly on the industry's ability to develop high-value added products and target the upper tiers of the international market at competitive prices.

Second, development of a brand name can be crucial in reaching the appropriate niche markets. Generating brand (and country) recognition has been part of the strategy of

Colombian underwear and swimwear producers to grow in the foreign markets. Perhaps this is the difference between underwear (and swimwear) and shirts that explains the different export performances: while underwear and swimwear are independent apparel category products usually bought through specialty stores and for which consumers develop a brand sensibility, this is in general not true of shirts. Shirts are typically sold along with other types of apparel and rarely identified by a specific brand, so it is harder to position them in differentiated product markets.

Finally, and this may have also been key, in the shirt sector there is no leading firm, like Leonisa, stimulating technological innovation and design development across the industry. The largest exporter, Vestimundo, produces shirts under full-package for renowned international brands and the brand name shirt exporters, Studio F and Manufacturas Eliot (Pat Primo) are relatively small and are not specialized shirt producers but instead sell all types of apparel in the international markets, so their activity does not draw attention towards this particular product and does not encourage its industry-wide development.

5.3 Case 3. Sanitary products

5.3.1 Introduction

During the last decade the paper cluster in Colombia has been particularly dynamic. In 2004 the share of total production was 12.4% and the share of total employment was 7.2%. Exports grew at an average annual rate of 21% during the nineties, and today they represent 2% of Colombian total exports. The paper industry's development has been crucial for the emergence of more sophisticated branches, involving new export discovery processes within the sector.

In fact, the sub-sector of tissues, diapers, and feminine protection pads, a highly specialized and technologically advanced product line, is particularly interesting since it constitutes a clear export discovery and diffusion case, and it leads current export initiatives inside the paper industry - in 2004, 53% of the sector's total exports came from this group. The growth of sanitary product exports has been remarkable, recording an annual rate of 48% in 1990-2000 and 17% in the last four years, at the same time achieving a significant foreign market diversification. Major Colombian companies in this category have clients in Latin America, Australia, the Philippines, South Africa, and Europe.

The export discovery in this sector can be understood as a process by which pioneer companies managed to dynamically export sanitary products (diapers, tissues, and feminine protection pads), which were already produced in the country to attend to the domestic market. The discovery process was supported by the industry's advantages in terms of low labor costs, high quality of products, and a wide production capacity, the latter resulting from the earlier adoption of highly specialized technologies aimed at attending to the local market. In addition, exporting conditions, especially trade

agreements and supportive initiatives such as Plan Vallejo[66], were seen by pioneers as highly favorable.

However, the motivations behind the discovery process were different for each one of the leading/pioneer companies. In the case of the first exporter (Colombiana-Kimberly-Colpapel), the wide production capacity for producing high quality products - which at first led to export production surpluses - triggered the decision to explore and enter new markets. For Familia-Sancela S.A., the second largest exporter, discovery was driven by the concrete objective of exporting products of the paper chain with high value added. Nevertheless, in both cases, availability of inputs, good performance of the paper chain, and previous expertise in exporting paper products were key elements in the decision to invest. Some differences might be explained by the fact that, whereas one company is related to a multinational organization (Kimberly-Clark) and its decisions are partially made by the partner company based on a comprehensive global business plan, the other firm is wholly owned by Colombians, and its strategies are focused exclusively on Colombian production and exports.

5.3.2 Sector's overview

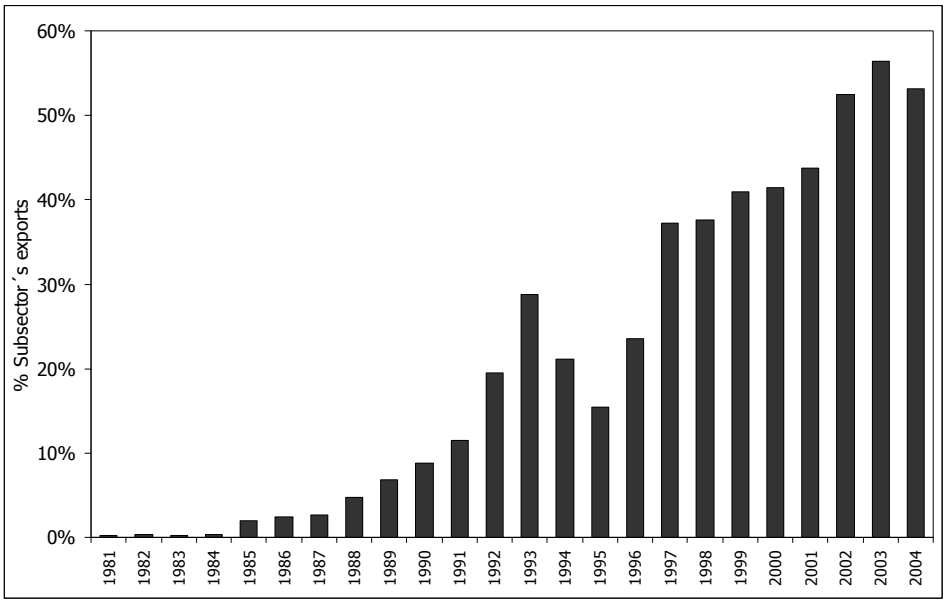
Sanitary articles and paper tissues have gained position within the sector "Paper and paperboard, precut, and products of paper", and have been responsible for the sector's exporting boom during the nineties. In fact, until 1984 the share of sanitary articles and paper tissues in total sector exports was basically 0. Exports started in 1985, sharing 2%, and steadily increased during the nineties[67]. In 1993 the sub-sector's participation reached 29%, and peaked at 53% in 2004 (see Figure 12).

However, the real export orientation of sanitary products and tissues took place in the mid-nineties. Before 1996 only 12% of production was exported; since then the exports' share relative to production has grown fast, reaching 43% in 2004.

[66] Through that Plan, exporters are allowed to temporarily import goods to Colombia with total or partial exemption of customs duties and taxes. The imported goods can be raw materials, capital goods, replacement goods, and intermediate goods that are used in the production of export goods or that are related with services directly linked to the production or export of these goods. Plan Vallejo came into force in 1966.

[67] Still, exports in 1985 were small: US$413,000 for sanitary articles and paper tissues, and US$20 million for the whole sector of "paper and paperboard, precut, and articles of paper or paperboard".

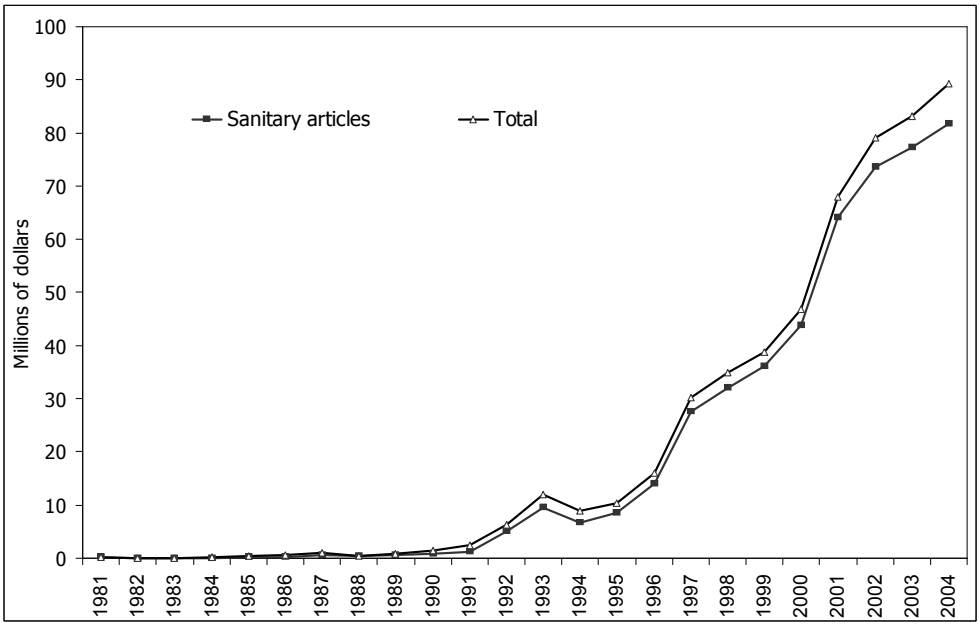
Figure 12: Share of Sanitary Article Exports in Paper Product Exports 1981-2004



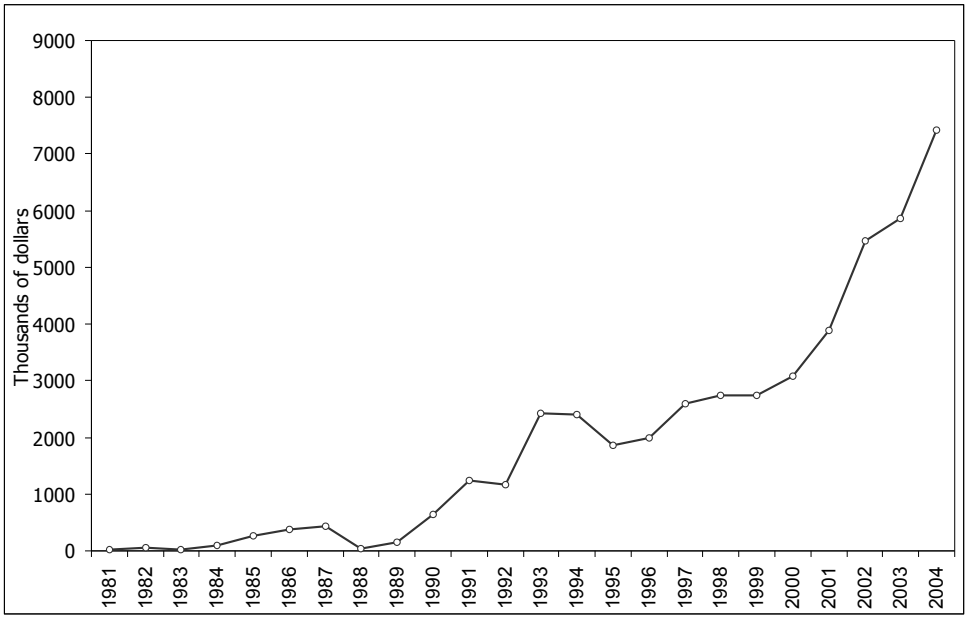
Source: UN COMTRADE and calculations from the authors.

Within the sub-sector's exports, sanitary articles (which include diapers, feminine protection pads, and tampons) have the greatest percentage share, although paper tissues, towels, and others reveal a similar increasing trend – both types of products are exported by the same firms (see Figure 13). Exports of diapers, sanitary towels, and tampons were US$81.8 million in 2004 - 83% of total branch exports - growing annually an average 38% since 1990, while paper tissues and related products exported US$7.4 million – 7.5% of the sub-sector's exports - growing on average 19%.

Figure 13: Sanitary Article Exports, 1981-2004



Paper Tissue, Towel, Bed Sheet Exports



Source: UN COMTRADE and calculations from the authors

The export dynamism that started during the first years of the nineties was driven by new investments and strategies adopted by the first movers in 1991 (Familia-Sancela and Colombiana-Kimberly-Colpapel). Since then, the activity of these companies, as well as the emergence of new firms, has led to a significant increase in exports. More recently, the export market of around 8 players has stabilized, and registers lower but sustained export growth rates (see Table 5).

Table 5: Growth Rate of Sanitary Article Exports

	1981-1990	1990-2000	2000-2004
Paper tissues, towels, bed sheets	60%	17%	25%
Sanitary towels and tampons; diapers	26%	48%	17%

Source: UN COMTRADE and calculations from the authors

Exports classified by market destination reveal great diversification (see Table 6). In 1991 Puerto Rico and Mexico were the countries with the largest share of Colombian exports of sanitary articles, participating with 83%. In 1992-1993 a new set of countries joined the group, Ecuador, Venezuela, and Bolivia, among others. Since then around 60% of exports have been imported by the Andean Countries. In 1995, Chile and the Central America became important in the sub-sector's exports. Since 2004 exports are less concentrated in the Andean Countries, while South American countries gained participation. In addition, Australia, South Africa, New Zeeland, Philippines, United States, Canada and European countries, are currently buyers of Colombian sanitary products.

The number of countries that receive Colombian exports has dramatically increased over time, from 11 in 1991 to 43 in 2004. In particular, have reached new markets in Europe, Asia and Africa.

Table 6: Exports of Sanitary Articles by Destination

	% of Total Exports				Number of Countries	
	1991	1995	2000	2004	1995	2004
Andean Countries	6,8	67,6	61,3	50,0	4	4
Caribbean	3,1	2,7	11,9	12,8	4	8
Mercosur	2,2	4,2	8,6	7,9	3	5
Central America	0,2	9,1	6,0	5,9	6	6
US & Canada & Puerto Rico	41,2	10,0	4,5	5,8	2	3
Mexico	42,6	6,4	5,7	2,3	1	1
Asia	4,0			0,4		6
Others			0,3	0,3		7
Europe			1,7	0,1		3
Zonas Francas				14,4		
Number of countries	11	20	30	43	20	43

Source: UN COMTRADE and calculations from the authors

In the case of the other sub-sector's line of products (Paper Tissue, Towel, Bed Sheet) exports have also diversified their markets over time, although they are more concentrated in the Andean Countries and the Caribbean (see Table 7).

Table 7: Exports of Paper Tissue, Towel, and Bed Sheet Articles by Destination

	% of Total Exports				Number of Countries	
	1991	1995	2000	2004	1995	2004
Andean Countries	14,5	71,0	89,9	66,0	4	4
Central America	0,2	0,0	3,5	10,5	1	6
US & Canada & Puerto Rico	68,7	22,9	0,8	5,6	2	2
Mexico		4,2	0,0	3,2	1	1
Mercosur			2,1	2,9		3
Caribbean	11,7	1,9	2,3	1,4	2	5
Europe	4,8	0,0	1,4	0,3		2
Zonas Francas				10,3		
Number of countries	16	10	15	24	10	23

Source: UN COMTRADE and calculations from the authors

- Industry structure

Based on DANE's Manufacturing Annual Survey, there have been only a few paper sanitary article and tissue producers: in 1997 there were only three active plants reported, and 5 plants in 2001. Information from Export Customs Registers from DIAN[68] confirms that the number of players is small, although it grew during the last few years in comparison with the end of the nineties[69]. Over the last 5 years the number of exporters has fluctuated from 6 to 9, and currently there are six active firms exporting paper sanitary articles.

[68] These sources are not perfectly comparable, since the first one is at a plant level and the second includes exporter firms.

[69] DANE reports a smaller number of plants in 2001 than the number of exporter firms registered by DIAN. This can be explained by the fact that some surveyed plants produce different goods at the same time (sanitary products and other paper products), and might report their activity in a classification different than sanitary products.

In spite of the entrance of new competitors, the export market is concentrated: in 2005 the two largest firms exported 81% of total exports, and 96% was exported by the three biggest firms. The leading exporters are Colombiana-Kimberly-Colpapel and Familia Sancela S.A, followed by Johnson & Johnson. Drypers Andina, Tecnosur and Produsa are the smallest companies participating in this industry.

5.3.3 The discovery process

The discovery process, which consisted in dynamically exporting sanitary articles and tissues, was a consequence of the paper sector's previous production and export performance. Indeed, in some cases, discovery took place within the same vertically integrated companies that produced paper and paper products.

According to interviews with the leading companies, the emergence of sanitary articles and tissues as "exportable" products was the result of a combination of different facts: i) inputs availability; ii) previous exporting experience and know-how; iii) previous production of high quality products for the domestic market; iv) high surpluses due to a widely installed production capacity; v) favorable opportunities to export; and vi) specific decisions and strategies adopted by companies to aggressively export a more sophisticated (differentiated) product of the paper chain, which could compensate for stagnating exports of other paper articles that had shown limited competitiveness since the end of the eighties. The latter was the case of Familia-Sancela, in which technical difficulties of exporting products such as soft paper, writing and printing paper, cardboard and boxes, as well as impediments to introducing to those products substantial changes in order to re-invigorate exports, triggered the decision to invest in more specialized and technologically-advanced products, already produced in the country but never exported in an active way.

I In its early stages in the 1930s, paper production consisted in importing processed raw material (i.e paper in rolls and sets of cardboard) to be cut, finished, and built into boxes as the final product to be sold in the domestic market. During the sixties paper production substantially changed, and companies started producing paper from scratch, using wood and sugar cane as raw materials. The paper industry started export activities as a response to local government export initiatives, such as Plan Vallejo[70]. During the nineties, the new commercial treaties in the Andean region motivated an export boom in the Colombian paper industry, and annual growth rates doubled between this decade and the last. Still, Colombian paper companies viewed international markets as an income-smoothing alternative, and industries within the sector aimed their paper and cardboard production at foreign markets only when internal demand weakened or when the macroeconomic environment was not favorable. However, the export dynamism registered during the 1970s and 1980s stopped at the beginning of the nineties.

[70] Cartones de Colombia was the first mover, exporting cardboard boxes in 1970, and Propal followed the same steps around the mid-seventies

The stagnation of paper and cardboard exports motivated companies inside the industry to develop new strategies, this time clearly oriented toward exports. Businessmen identified the facts that would enable them to be competitive in the international market of paper-related products, marking a breakpoint in 1991 in the sector's export history. They rapidly learned that product differentiation was a key issue for positioning their products in foreign markets, and the decision involved either enhancing the sophistication of their exports or making other products exportable. They recognized, for instance, that there was not much margin for generating added value to their export products, and this held companies back from differentiating their products in international markets. This was the case with soft papers and paper for printing or writing purposes, which were the same as the products available in competing countries. The nature of these products also restrained producers from innovating. On the other hand, sanitary products such as diapers and feminine protection pads provided great opportunities to improve, innovate, and add value.

Therefore, companies put into practice new strategies based on investing in leading-edge technology, developing business organization, and creating culture, with the objective of successfully taking sanitary articles to foreign markets. In addition, as part of their externalization strategy, major producers made strategic alliances with foreign companies.

Hence, since the beginning of the nineties, tissue and sanitary article producers had an explicit export target and profile, and the export plan was successful. There was a clear substitution of products. Today, this category leads total sector exports: in 1985 exports of sanitary articles represented an incipient 8%, while in 2003 they shared 63%. Sanitary towels, diapers, tampons, paper tissues, and paper towels are the core products of this category.

Colombiana-Kimberly-Colpapel (CKC) and Familia-Sancela S.A (FS) have been the leading companies, competing in a very intensive manner in this type of production. They were the pioneer exporters of sanitary products in Colombia, although their export processes and motivations were clearly different at the initial stages. CKC was the first mover insofar as it was the first producer and exporter, but early exports were mainly driven by production surpluses due to high production capacity and high quality. FS was also an export pioneer as it aggressively exported sanitary articles, thus contributing significantly to the sector's export activity, a process that was supported by a comprehensive business plan specifically designed to enter international markets.

The uncertainties faced by each company were quite different as well, as will be explained below. However, some common obstacles were related to transportation and poor infrastructure in Colombia, which hindered competitiveness.

5.3.3.1 Pioneers

5.3.3.1.1 Colombiana-Kimberly-Colpapel

In the mid 1960s, Kimberly Clark established its business in Colombia in order to produce soft papers and light paper for cigarettes. The company merged with a Colombian paper production enterprise, Colpapel, and created Colombiana Kimberly Colpapel (CKC). It also started producing sanitary products for the local market, such as feminine care protection pads, under the brand "Kotex". In the early eighties the company brought to Colombia a highly specialized machine that allowed it to produce diapers of excellent quality ("Huggies" and "Kimbies"), when compared to those produced by other companies such as Johnson & Johnson and Tecnoquímicas[71]. The higher quality and the wide production capacity positioned CKC as the first diaper producer, gaining 55% of the market in 1982-83, and displacing the other two companies. CKC´s portfolio also included adult diapers (incontinence pads), moisturized tissues, sanitary paper, and kitchen paper and napkins[72]. During the seventies and eighties, its production aim was satisfying domestic demand, and only small amounts of production surpluses - around US$100,000 - were exported, mainly to Latin-American markets.

- The exporting discovery process

The exports' breaking point, which occurred in 1991-1993, was driven by two facts.

First, diaper production capacity was large due to the new technology/machine imported from Switzerland (Suico) in 1989. Even though the machine was brought to Colombia to satisfy the local market and it was not aimed at producing for exporting, the high quality of diapers and the wide production capacity resulted in new foreign sales, in particular to Central America and Venezuela. Thus, in the first stages exports started increasing without the need for making new investments or introducing changes to products.

Second, in 1991 Kimberly-Clark put in place a new strategy for Latin America with which the real export discovery process started. At this time, Kimberly-Clark was only established in Colombia, Brazil and Central America, but Colombia was the biggest producer country. The company decided to make large investments in Colombia in order to attend to other markets of the region.

In order to assess foreign markets, the company carried out important changes. The exporting strategy involved two main issues: (1) The importation of new, costly leading-edge technology (specialized machines), which started operating in 1993, and (2) The complete reorganization of the production process, which consisted in concentrating the entire production in one big center (located in Tocancipá-Cundinamarca). Two specialized plants producing infant, feminine and family lines were created.

Therefore, the creation of the new production center, combined with large surpluses and the high quality of already-produced articles, imposed new export challenges for the

[71] Johnson & Johnson brought to Colombia the first diaper machine from Italy and Tecnoquímicas brought the second one.

[72] Disposable industrial and institutional products as well as thin papers for printing and writing and notebooks constitute other lines of CKC's production.

company. In addition, good opportunities were seen: Colombia had low labor costs, favorable geographical conditions, and specialized technologies already installed.

- Main uncertainties/difficulties

At the initial stages of the export activity, the company faced uncertainties of different kinds: (1) Payments from import countries were insecure and unstable, a risk that was particularly high with regards to the Dominican Republic, one of the main market targets; and (2) Transportation and infrastructure were deficient. CKC faced severe obstacles related to extremely high freights, inadequate ports, and limited means of transportation.

The company took direct action to resolve some of the problems, especially related to transportation, although the role of the government was also crucial. For instance, given the lack of transportation CKC resolved potential coordination problems by hiring a small boat for its own exports, departing from the port of Barranquilla. However, given that at the time exports were small, CKC associated with Familia-Sancela in order to completely fill the boat. Thus, at the very beginning of the export activity, the two largest companies managed to coordinate with each other to overcome transportation obstacles. Eventually, exports by each of them grew rapidly, and both companies adopted their own solutions.

Due to the difficulties faced in shipping ports – for instance shortage of personnel for loading and product damage -, the company decided to take the product containers to the production center in order to load merchandise directly in the plant, instead of loading at the ports. This process increased costs, since the plants were located far from the coast (Pereira), but it prevented high losses in the ports.

Finally, given that CKC was a multinational/Colombian company whose products and brands were already positioned and accepted around the world, the knowledge of foreign markets and demand was not perceived as a major uncertainty. This marks a difference with regard to Colombian companies (FS for instance) for which these issues were key challenges to starting the export activity.

- The role of the government

According to CKC, the government, through different institutions, helped the company to overcome several obstacles. The Ministry of Foreign Trade and Incomex facilitated exports, promoted payment agreements between exporters and the Central Bank, and efficiently supported exporters in solving legal and other kinds of problems in foreign markets. For instance, CKC was involved in a dumping case in Ecuador, and had several transportation problems due to non-compliance with the Andean Transportation Agreement. Proexpo was also active in developing instruments and finding ways to help exporters resolve transportation problems. One good example was the "Compensation Mechanism for Transportation". These elements are explained in more detail in section 5.3.5.

5.3.3.1.2 Familia Sancela S.A.

The export process of Familia is quite different since the discovery was the result of a concrete and comprehensive company strategy designed specifically to export sanitary products. As mentioned above, awareness of the difficulties in reinvigorating other paper product exports, FS decided to direct investments towards more valued-added products, which were already produced with high quality, and which had proved to be competitive in foreign markets through previous exports of production surpluses.

The history of Familia begins with URIGO - the company's first name -, founded in 1958 in Medellin (Antioquia)[73], which imported sanitary paper from the U.S. under the Waldorf brand produced by Scott Paper Co. Later, in 1965, the company incorporated important technological improvements and the first soft paper production plant (tissue and toilet paper) was built, initiating sanitary paper production in association with Scott Paper Co... From the seventies, URIGO started growing fast, and new products such as napkins, hand towels, and facial tissues were developed. In 1975, the company began producing feminine protection pads, under the "Nosotras" brand, and in 1978 kitchen towels and moisturized tissues were added. Feminine protection pad production was consolidated inside the company, and Familia decided to create an independent production line in association with the Swedish company Mölnlycke, and established Productos Sanitarios Sancela S.A. in 1985. In 1986 the creation of Productos Familia S.A took place – a 100% Colombian firm -, with the dissolution of the association with Scott Paper Co. The nineties was also a positive decade for Familia: in 1989 a new sanitary protection plant, Sancela, was opened, in 1992 the production of disposable baby diapers under the brand "Pequeñín" began, and in 1997 two new companies were created, aimed at increasing production capacity: Sancela del Cauca S.A. specialized in raw materials and Familia Sancela del Pacífico specialized in diaper production. The same year Productos Familia S.A. associated with SCA Hygiene Products, a Swedish multinational organization operating on five continents. Finally, the two companies founded in 1997 merged into one company, Familia Sancela del Pacífico S.A.

Today Familia Sancela has seven production plants, five of them located in Colombia and two in Ecuador and the Dominican Republic. It produces and exports baby diapers ("Pequeñín"), adult diapers ("Tena"), feminine protection pads ("Nosotras") and other soft papers such as toilet and kitchen papers ("Familia"). The company exports to 20 countries around the world, in Latin America, Europe, Australia, Asia and South Africa.

- The export discovery processes

Before the nineties, Familia exported few quantities of sanitary products, taking advantage of the production surpluses and looking for new experiences. Exports were of products that served as raw materials – with no specific brand -, and the company had neither responsibility for nor control over the finishing process or sale of the final products. This was the case with feminine protection pads exported to Chile in 1986.

[73] By John Gómez Restrepo and Mario Uribe.

Since these exports were fragile, volatile, and produced negative results, the company stopped exporting.

The export discovery process started in 1991 when the company's strategy changed radically, and it was decided that exports of sanitary products would become a permanent and consistent activity.

The decision was driven by different facts: i) the stagnation of other paper product exports and difficulties in reinvigorating them through product differentiation; ii) the awareness that the feminine protection line - with a high technological component - was strong in the domestic market, the production capacity was wide, and large volumes were produced which favored competitiveness; iii) the company's achievement of good acceptance of its products in previous exporting experiences; and iv) the perception of good opportunities in terms of open markets for Colombian exports and helpful government export support initiatives, although these elements were not considered crucial for putting the strategy in place.

The decision involved large investments, the adoption of new technologies, the opening of new specialized plants, and the production of diapers under the brand "Pequeñín".

The cornerstone of the export strategy was to replicate in foreign countries the model prevailing in the domestic market, which had shown itself to be successful. The strategy included two main aspects: i) exporting under their own brands – the same that were sold in the domestic market; and ii) having direct control of the whole chain – production, export, and distribution in foreign markets -, which meant not only selling the products but also becoming local players. This condition would allow the company to determine the amounts to be sold, as well as to apply their own commercial practices and marketing strategies for their brands.

To reach this objective, the company used different schemes: i) owning 100% of the enterprises in foreign countries, for instance, by creating plants managed by Colombian headquarters; ii) associating with local businesses (owning 50%) in foreign markets with commercial strengths, which allowed them to apply the same strategy as that in Colombia; and iii) selling to a third-party agent but controlling the commercial activity. As a result, in some cases exports are made under Familia's own brands and, in the case of associates, exports are sold locally under the foreign company's brands. In general, exports to Latin America and the Caribbean are sold under Familia's brands, and under different brands when exported to countries in Europe, Australia, and Asia.

Nowadays, the clients - meaning the companies with which Familia has strong commercial relationships for selling and commercializing its products - are[74] in México, Panamá, Suriname, Paraguay, Argentina, Spain, France, Israel, Slovakia, South Africa, and Australia. The subsidiaries - meaning companies that distribute Familia's products,

[74] Mexico (Saba, and Tena), Panama (soft papers, tissues), Suriname (Libresse), Paraguay (Nosotras), Argentina (Confess), Spain (Nosotras), France (Nana), Israel (Nosotras), Slovakia (Libresse), South Africa (Libresse), Australia (Tena).

with the headquarter being in Colombia -, are located in Venezuela[75], Ecuador, Peru, Chile, Puerto Rico, and the Dominican Republic.

Familia's strengths have been concentrated in design, innovation, and distribution of personal care products. The local model of operation and organization is replicated in international markets where brands are associated with confidence, quality, and consumer support. Logistics are directly related to the concept of "value added", and are therefore considered a strategic factor for the company's success. Due to the growing importance of logistics, the International Distribution Center was created with cutting-edge technology, allowing Familia to fulfill current expectations in an efficient manner. Human capital and skills are also considered crucial features, and Familia has a dedicated professional team, whose main goal is to improve the consumer's quality of life by fulfilling their constant needs and expectations.

- Uncertainties and the way to overcome them

The uncertainties faced by the company before adopting the export strategy were of different kinds:

1. Internal cultural barriers: The previous experience in which Familia did not participate in or control the whole export and distribution chain was a failure. This created a cultural barrier inside the company, through which exports were viewed with great skepticism. Managers had to create a new culture in the company in order for the strategy to be approved.

2. External cultural barriers: The acceptance of Colombian products in foreign markets and by foreign associate companies posed different problems, as the culture and habits of using personal care articles vary substantially among countries. For instance, some terms used domestically by Familia (e.g. "period") were not well accepted in other markets. Once managers realized that the same communication model for marketing their products in Colombia could not be exactly replicated outside, they developed new and more flexible communications tools which could be adapted to different cultural habits.

3. Inappropriate location of production plants: Plants were located in Medellin, far from the different ports, which meant high internal transportation costs. Some other competing producers in Latin America were located close to ports, such as those in Chile, Venezuela and Brazil. The company's strategy to overcome this problem rested on compensating for high transportation fees by reducing unitary transportation costs through the production of large volumes, as well as by cutting other costs through the adoption of advanced technologies.

4. Adaptation to external markets. Familia's first strategy lay in transferring to each destination market the model used in Colombia – business organization and product

[75] Venezuela (Familia, Nosotras Tena), Ecuador (Nosotras, Pequeñín, Tena and soft papers Familia), Peru (Nosotras, Tena) and Chile (Dona).

characteristics - without introducing major changes. Rapidly, the company recognized the need for adapting their model to different market trends (consumer preferences and habits) in terms of communication tools, products (appearance and quality) and packaging.

5. Knowledge of external markets and demand. From the beginning, Familia considered studies and research about other markets to be key elements in successfully becoming local players in foreign markets. Before entering a new market, the company commissioned marketing studies, either with companies that carried out studies in Colombia, or with foreign firms but under Familia's guidelines.

- The role of the government

According to the company, the Government has not played a key role in promoting exports. On the contrary, trade institutions were unable to provide valuable information about potential markets, exporting procedures were slow and inefficient, and Colombian authorities have not been helpful in solving problems faced by the company in other countries, especially those related to the copying and registration of brands.

However, some export promoting policies - such as Plan Vallejo and Ley Paez - were supportive, as were trade agreements. However, these facts were not considered fundamental to the company's exporting strategy.

5.3.4 The diffusion process

The diffusion process in the industry took place first in production, and, after some years, in exports. All the current-exporting firms produced first for the domestic market, and then started sending their products to international markets.

The history of the diffusion is illustrative. In the 1970s, Colombiana-Kimberly-Colpapel began producing feminine care protection pads (Kotex) in Colombia, which were sold basically in the domestic market, and small amounts of production surpluses were exported. In 1985, Familia started producing some articles with the "Nosotras" brand, and exported for the first time in 1986. Finally, Produsa started producing the same goods in 1990, and has exported small amounts since 1998.

Diaper production was also lead by CKC in the 1970s, followed by Tecnoquímicas in 1980. Until 1992 these were the only diaper producer companies, with CKC participating with 70% of total Colombian supply and Tecnoquímicas with 15%. This meant low penetration of the product due to high prices, which spurred the entry of new players into the industry. In 1992 Familia Sancela introduced "Pañales Pequeñín", and began exporting them in 1995. They were followed by Johnson & Johnson, Drypers Andina (a subsidiary of the Mexican enterprise Mabe) in 1996, and Tecnosur in 1998[76].

[76] Created from a joint venture between Tecnoquímicas and Kimberly.

Although Kimberly began exporting during the eighties – motivated by selling production surpluses - the entry of new firms (especially Familia-Sancela and Johnson & Johnson) made the market much more dynamic and led existing industries to become more competitive. The true export activity has taken place since the mid- nineties[77].

Some factors have facilitated the diffusion: i) the rapid success of leading exporting companies and their profitability; ii) the fact that, through offering products of high quality, the first movers ensured that Colombian sanitary articles were recognized and well-accepted in international markets; and iii) the existence of good exporting conditions in Colombia. Some companies have copied strategies of leading export firms, such as selling products abroad under Colombian brands, and some have copied and imitated products and strategies to get into markets – such as in the case of Produsa imitating Familia Sancela.

However, export diffusion has been limited, and nowadays the first movers still lead exports. Currently six active firms export paper sanitary articles; however, in 2005 Colombiana-Kimberly-Colpapel had 43% of total sector exports, Familia Sancela S.A. 40%, Johnson & Johnson 15%, and Drypers Andina, Tecnosur and Produsa, the smallest companies participating in this industry, shared 2% of the market.

Did diffusion hurt pioneers?

According to CKC during the first years of the export activity there was not a clear diffusion with followers. There were, rather, various companies (CKC, Familia-Sancela, Johnson & Johnson de Colombia, and Tecnoquímicas) producing sanitary products and trying to export at the same time. Exports took off when positive internal conditions arose, favoring all of them.

The entrance of Familia to the export activity didn't hurt CKC. On the contrary, on some occasions CKC gave Familia the chance to enter new markets. For instance, during the eighties CKC exported raw material for diapers (tissue) to Chile. It had to stop exporting when the strategy to satisfy the Latin American market with Colombian production was adopted. However, CKC gave the name of Familia to the Chilean importers, resulting in new business for Familia. With regard to feminine protection pads, when CKC had to cut exports to the Ecuadorian market, Familia rapidly cornered it. CKC didn't have the production capacity to contest.

Finally, competition from Johnson & Johnson and Tecnoquímicas didn't harm CKC either, given that the company's diaper quality was much higher.

[77] For instance, Tecnoquímicas developed a successful strategy for its brand "Winnies", based on the right combination of good prices, quality, and distribution. And leading companies CKC and FS - have been strengthening their efforts to conquer external markets through developing extremely specialized products in order to attend to all sorts of potential markets by responding to a variety of consumer preferences.

In the case of Familia, the diffusion process was not considered negative either, as the company led exports during the first years of the nineties. Colombiana Kimberly Colpapel, the other big company, was not seen as the competing company in external markets, since at this time the former was concentrated in the domestic market - Kimberly Clark was operating directly in other Latin American countries. Competition between both companies came some years later, especially in the Andean markets, when the strategy of Kimberly Latin America went into effect. However, Familia looked much more aggressively for markets outside the region, for instance in the Caribbean, South America, Europe and other countries in Asia and South Africa (see Table 8) .

Table 8: Export by Destination (Leading Firms)

	Familia		CKC		J&J		Produsa	
	2000	2005	2000	2005	2000	2005	2000	2005
Andean Countries	37,9	40,7	94,9	53,2	45,0	39,0	74,3	45,4
Caribbean	32,1	32,9	0,7	3,3	15,8	16,2	20,2	30,1
Central America and Mexico	8,6	1,6	0,6		19,9	11,5	5,5	21,8
Europe	0,9	9,6	3,3		0,3			
North America		0,2			13,0	26,8		2,7
Other		1,7			1,0	0,8		
South America	20,5	13,2	0,6	6,0	5,0	5,7		
Free Trade Zone				37,4				
Number of Countries	13	35	16	18	20	22	6	9

Source: UN COMTRADE and calculations from the authors

Today, competition between the biggest companies is intense, but it is the same as that faced in the domestic market: Familia´s brands compete with multinational brands, either locally or in foreign markets. Thus, diffusion has not been perceived as harmful, except in the case of a smaller company, such as Produsa.

Since the end of the nineties Familia has been facing harmful competition from Produsa, which has produced, since the eighties, feminine protection articles (under the brand "Ellas") and adult diapers. This company is perceived by Familia as an imitator of its products and export strategy, and competes in the same foreign markets, especially the Caribbean and Panama (see Table 8). Produsa is able to offer much lower prices since it is a much smaller firm, has a different cost structure, and uses different sale mechanisms – basically delivering to distributors without controlling the rest of the process.

5.3.5 Role of the government

As mentioned before, each company perceives the role played by the government in the early exporting stages in a very different way.

According to CKC, the government's support was crucial in many aspects:

1. Payments from importer countries.

Incomex was extremely helpful in moving the Central Bank to make payment and currency exchange agreements with exporters, aimed at guaranteeing that they would be

paid back in case of default by foreign buyer countries. Resolving this uncertainty was crucial for exporting to the Dominican Republic, one of CKC´s main market targets.

2. Transportation

The government played an important role in providing support in different ways. First, Proexpo established the "Transport Compensation Mechanism"[78], a program intended to support and promote exports to countries for which there are no direct, regular, and suitable transportation services. The government aid, still operating, consists of compensating 26% of the total freight paid by the exporter for the first three years, and 13% for the last two years. Given that between the Dominican Republic and Colombia there was no direct transportation line, CKC used the program several times, which facilitated first exports to that country. Second, Proexpo-Puerto Rico contacted and brought to Colombia a rich businessman, who rented a room in the Zona Franca of Cartagena. Through this mechanism exporters could avoid paying port fees, and CKC started using this system to export to Puerto Rico.

3. The government was efficient in solving legal and other kinds of problems with Andean Countries.

Interviewees mentioned two examples. First, at the beginning of the nineties CKC faced a dumping case in Ecuador. Incomex and the Ministry of Foreign Trade efficiently resolved the case by threatening the Ecuadorian government with retaliation by impeding the entry of some of their products into Colombia. Second, CKC experienced transportation problems in Ecuador. Under the Andean Transportation Regulation Agreement, exporter companies of the country members are allowed to transport their merchandise – on their own - throughout other member countries until reaching the final destination city, without making any merchandise transfer. However, when getting to Ecuador on some occasions CKC was forced to unload trucks in the frontier and hire a local company to transport products to Quito, incurring higher costs. Behind this situation was the Ecuadorian Transporters Association, which was strong in the country. The Colombian government was extremely helpful in making the government of Ecuador comply with the Andean Agreement.

4. The support provided by Incomex[79] was decisive, especially in speeding up procedures to facilitate exports, as was the support given by Proexpo in promoting exports.

5. Opening new markets was considered key for export success. The Andean Pact as well as a bilateral agreement with Chile were of great importance for first exports.

[78] Mecanismo de Compensación al Transporte

[79] Instituto Colombiano de Comercio Exterior

On the contrary, for Familia Sancela the Government's support for starting export activities was inefficient or even, in some cases, nonexistent. Some illustrative examples were mentioned by the interviewees: i) lack of good information about potential markets, which was needed for making investment decisions; ii) export procedures were slow and inefficient inside the country; and iv) Colombian authorities have not been helpful in solving problems faced by the company in other countries related to the copying and registration of brands. They argue that for several years they have faced legal problems that have not been resolved.

However, for both companies some issues regarding public policies are considered of great importance for the development of export activities, although each firm perceives the impact on investment decisions differently.

First, export promoting schemes such as Plan Vallejo and Ley Paez – the latter being important for Familia Sancela - contributed significantly. However, whereas Plan Vallejo was important for CKC's investment decisions, it was not perceived as decisive for carrying out export strategies for Familia Sancela.

Second, trade agreements, especially the Andean Pact, the Group of Three (among Colombia, México, and Venezuela), and a bilateral agreement with Chile were important. Opening new markets was considered key for export success, but again this criterion was not as fundamental for Familia's decision to export.

Finally, for both companies Colombian infrastructure (roads and ports) and transportation are major obstacles, hindering competitiveness.

5.3.6 Key factors behind the export success

The success of sanitary articles and tissues as a dynamic export activity relies on the following basic facts: i) technological competitiveness – in some cases due to associations with foreign firms - which allow companies to offer products of high quality and to produce large volumes; ii) an integrated but flexible business model that involves controlling all the steps from production to final sale – production, commercialization, marketing and distribution; iii) scale economies; iv) brand development; v) entrepreneurial culture and qualified human capital; and vi) research and development. Each one of these has contributed to the growth and development of exports of these articles; however the right combination of these has added to the positioning of the different products in each target market. The importance of this combination rests on the possibility of offering simultaneously low prices and excellent quality, resulting in a strategy of market competition through product differentiation. All firms playing in the industry share this competitive strategy.

The use of last generation technology – first brought by foreign companies and then adopted by local companies through a clear learning process - has helped in the development of extremely specialized products, designed to satisfy a changing and varying demand. This has in turn created significant competitiveness for Colombian

sanitary articles in international markets. Availability of this resource – i.e. technology - provided the possibility of innovation, product variety, and product functionality, and these elements have helped Colombian companies behave competitively in external markets. All Colombian firms competing for external demand of sanitary articles have had a specific moment of high investment in machinery and equipment, which allowed them to compete in foreign markets. Furthermore, a continuous expenditure on research and development is required in order to maintain the competitiveness achieved through initial investments. This task involves developing new materials, products, and equipment – i.e. employment of laboratories and machinery -, coupled with the improvement of processes and specialization of labor[80].

The presence of scale economies complements the existence of leading-edge technology by permitting low-cost production. The fact that these products involve high capital expenditures discourages the entry of new firms and impedes the success of small enterprises. Therefore, only competitive – and big - companies are able to incur large expenditures. On the other hand, economies of scale combined with high competition between firms results in low prices, which permits high product penetration.

Brand development supports export launching by positioning the product in the market. This backs up the creation of goodwill, which motivates future consumption of the product. In order to have good performance in this area an extensive and dedicated merchandising effort has to be developed. It has been of crucial importance for the industry to identify market needs in a precise manner, so as to develop products that effectively respond to consumer preferences. Once this issue is resolved, firms can proceed to design a commercial strategy focused on brand development that will have a positive impact on consumers (since the product addresses their needs).

Colombian industries producing sanitary products incurred substantial expenditures in technology and product development, aimed at creating particular products for specific consumer needs (protection pads with wings, different sizes, materials, thicknesses, colors, etc; diapers for each stage of baby's development, better absorption, training pants, disposable swim pants, etc). The budget assigned for merchandising and brand development and the whole package of related products that help create a relationship between the product and the consumer have also constituted an important product specialization task.

Finally, the adoption – and transfer - of the integrated business model applied in the domestic market - which for exporting purposes resulted in owning or associating with distribution companies in foreign markets - allowed Colombian exporters to successfully promote and market their brands, to learn consumers´ needs, preferences, and habits, and to control the entire distribution process up to the final sale.

[80] Produsa S.A., for instance, made important investments in order to gain standard quality grades, like the ISO 9001 granted by ICONTEC - Colombian Institute of Technical Norms -. This was crucial for the company since it gave the market a sign of reliability for Produsa's sanitary pads (under the brand "Ellas"). Today, Produsa seeks to gain the ISO 1400 grade, a certification of environmental care.

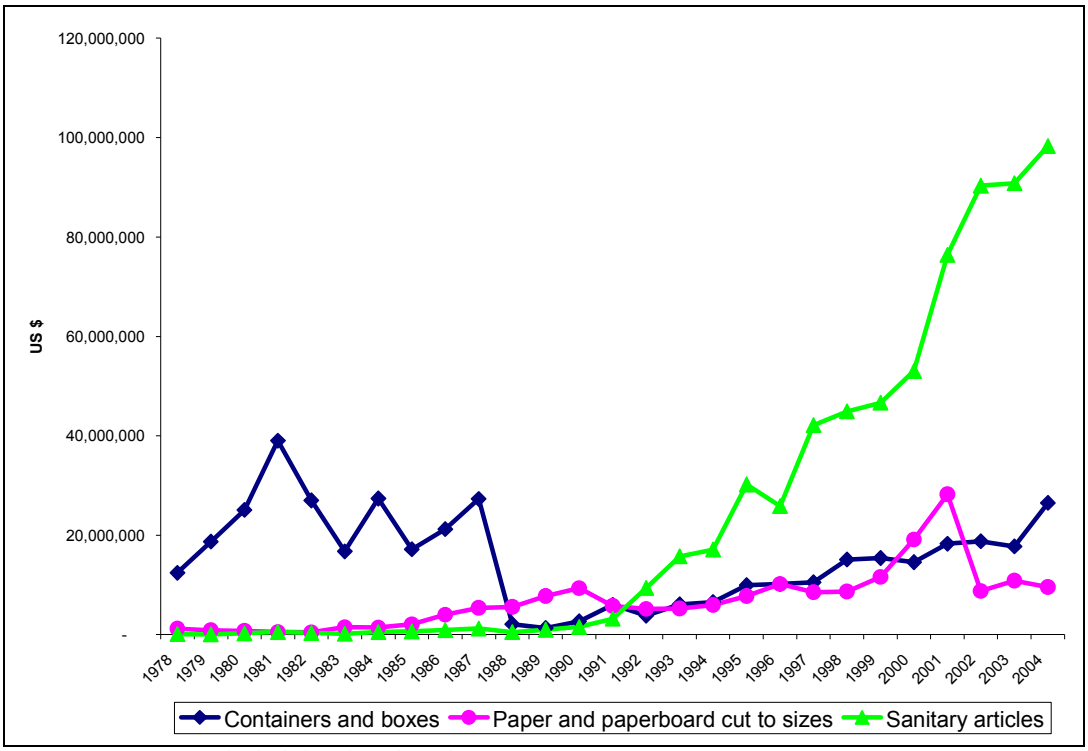
5.3.7 Counterfactual: Containers, boxes and paperboard

Two subsectors of the paper chain - cut paper and paperboard and containers and boxes made from paper - can be used as counterfactuals, as they use the same inputs and face similar conditions as sanitary products. In spite of these similarities, the export performances of these groups have been completely different.

Cut paper and paperboard, and containers and boxes made from paper, were the two categories that behaved most vigorously in the first stages of the industry's exports – the 70's until the mid-80's -, gaining an important position inside Latin American and U.S. markets, although there had not been a clear export orientation.

During the eighties, exports of container and boxes were dynamic, recording annual sales of around US$30 million. In 1988 exports almost stopped, and since then an extremely slow recovery trend has taken place. In spite of the upturn reported in 2004, exports are still half of the amounts reached in 1981. Cut paper and paperboard began exporting later, in the mid-eighties, selling on average US$5 million to foreign markets. From that year on a significant exporting boost was observed, growing at an annual average rate of 48% from 1999 until 2001, when exports reached their highest level - US$29 million. However, a strong fall was reported in 2002, and during the last few years, exports dropped to values close to US$15 million (see Figure 14: Paper Exports per Category of Product).

Figure 14: Paper Exports per Category of Product, 1978-2004



Source: UN COMTRADE and calculations from the authors

Sanitary articles show the opposite trend, since there were practically no exports during the eighties, and foreign sales grew dynamically from the nineties through the present. This situation was the result of the decision to promote sanitary product exports, while continuing to export production surpluses of other paper products. Thus, exports of cut paper and paperboard, and containers and boxes made from paper, have now been practically replaced by exports of sanitary articles. In 1985 exports of containers and boxes represented 84% of the paper products sector, while exports of sanitary articles represented an incipient 3.5%. In 1989, the share of containers and boxes fell to 11%, while cut paper and paperboard registered an upturn to 65% of sector exports, and sanitary articles increased their share to 8%. From that point on, sanitary articles started gaining in significance, while the other two categories began falling in participation. In 2003, sanitary articles constituted 63% of total paper products exports, while containers and boxes made from paper constituted 4% and cut paper and cardboard 8%.

The decision to concentrate production and investments on exporting new lines (principally sanitary articles) was driven by the fact that cut paper and containers had been losing competitiveness in international markets since the nineties, and there was no room to differentiate those products and add value. Companies considered that difficulties related to exporting paper products were not easily surmountable.

First, transportation costs and freight charges for cut paper cardboard and containers are extremely high, representing 25% of total product cost, a key factor that limits the products' competitiveness. Second, paper product exports – cut paper, containers, and boxes - require higher capital investments than other paper lines, since exports – demand - are not permanent, but seasonal. Thus, it is considered extremely costly to open a plant only for exporting, and foreign sales take place only when there is product availability.

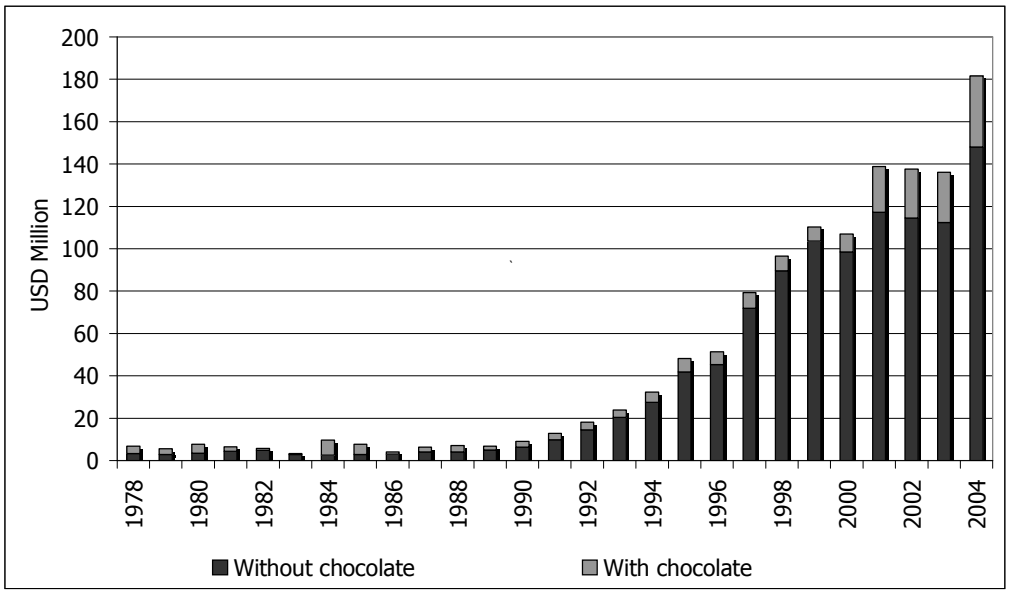
5.4 Case 4: Confectionery products

5.4.1 Introduction

- Exports

The Colombian Confectionery Products industry dates to the early 1900s. The first export experiences recorded took place only in the 1960s, however, when the industry was already well established in the local market, and were initially the result of sparse sales of output surpluses of three firms -Colombina, Compañía Nacional de Chocolates and Noel- in the international markets, but not until the 1970s the outcome of a distinct internationalization strategy of either of these firms. And even after there was, as we will see, a deliberate effort of Colombina to grow in the foreign markets, for many years nothing significant happened in terms of sector-wide export growth. As in the other cases examined it was during the years of the so-called market liberalization, in the 1990s, that confectionery exports really took off (see Figure 15).

Figure 15: Confectionery Exports, 1978- 2004



Source: UN COMTRADE (SITC Revision 2 classification) and calculations from the authors.

Also observable from Figure 15 is the fact that the confectionery with chocolate market segment took longer to find its way into the foreign markets. For many years the export records of chocolate confectionery correspond exclusively to the activity of one firm. This has changed in the more recent years and we see chocolate confectionery exports growing at a fast pace since 2001.

An hypothesis is that exports of confections with chocolate only take off once firms have established distribution channels for confectionary products without chocolate (i.e. perhaps there is an acquired comparative advantage that has to do with the fact that confections with chocolate share the distribution channels already in place for non-chocolate confectionery). Another possible explanation for the later take off of chocolate confectionery may be the fact that its consumption is more cyclical (more chocolate is consumed during the winter months than in the summer) so the existence of a stable demand for non-chocolate confectionery is useful to cover the fixed costs of production allowing firms to exploit economies of scope.

Table 9 shows that export growth has been accompanied by substantial geographic market diversification. While Venezuela and the U.S. stand out as the main destinations of Colombian Confectionery products, significant volumes are nowadays also sold in a large number of other countries in Latin America, Africa and Europe. Chocolate confectionery exports are more geographically concentrated than the other confectionery products, most of them going to Venezuela and Ecuador where possibly the free trade agreement under the Andean Community has facilitated the way (see Table 10). Note however the growing importance of the South African market in the recent years and the presence of U.S.A. as one of the main export destinations of Colombian Chocolate Confectionery.

Table 9: Confectionery Exports by Destination

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
United States	40.1	31.5	19.3	17.6	13.6	11.1	9.7	7.4	7.4	10.3	7.5	7.7	12.1	14.2
Puerto Rico	18.5	16.6	7.3	7.7	3.0	7.2	6.6	6.3	4.7	4.9	3.7	4.0	3.8	2.5
Peru	4.6	4.6	7.7	25.0	18.0	5.4	0.4	0.1	6.6	6.4	5.1	6.5	7.5	4.7
Dominican Republic	2.2	8.5	7.1	8.9	11.4	11.9	6.4	9.1	9.7	9.8	7.6	6.7	5.8	3.4
Venezuela	0.5	8.5	34.9	12.2	23.0	21.0	16.8	22.5	24.9	30.8	33.7	30.2	27.3	33.5
Ecuador	0.0	0.2	2.4	6.8	9.3	15.9	6.0	7.0	4.5	6.9	9.5	13.6	11.6	9.6
Other	34.0	30.1	21.4	21.7	21.7	27.4	54.2	47.6	42.3	30.9	32.9	31.3	31.9	32.0
No. of destinations	**35**	**35**	**31**	**46**	**42**	**48**	**47**	**54**	**59**	**63**	**69**	**76**	**81**	**94**
Total exports (million dollars)	**12.9**	**18.1**	**23.7**	**32.4**	**48.2**	**51.4**	**79.3**	**97.3**	**110.3**	**106.9**	**140.7**	**139.0**	**136.1**	**176.2**

Source: DANE-DIAN and calculations from the authors.

Table 10: Chocolate Confectionery Exports by Destination

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Japan	44.8	48.9	39.1	39.4	14.9	12.3	7.8	3.7	1.2	0.0	0.0	0.0	0.0	0.0
Panama	22.8	13.7	16.6	11.1	8.0	6.0	8.5	8.5	14.3	10.7	4.3	2.7	2.7	2.6
Venezuela	1.3	14.8	8.6	13.2	38.2	38.5	31.4	37.4	35.1	39.4	44.6	36.9	37.6	40.4
United States	11.5	10.4	18.8	12.9	13.6	6.4	12.2	8.7	15.2	9.1	6.6	7.4	7.6	6.3
Ecuador	0.0	0.1	2.1	7.9	6.1	16.7	22.2	20.1	13.2	17.3	20.0	24.8	25.6	21.3
South Africa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	12.4
Others	19.6	12.1	14.8	15.5	19.3	20.2	18.0	21.6	21.0	23.6	24.5	28.1	23.4	17.1
No. of destinations	**16**	**19**	**18**	**22**	**20**	**27**	**26**	**28**	**33**	**30**	**30**	**31**	**41**	**54**
Total exports (million dollars)	**3.0**	**3.6**	**3.5**	**4.8**	**6.3**	**6.0**	**7.2**	**6.9**	**6.6**	**8.5**	**22.2**	**23.2**	**23.7**	**33.0**

Source: DANE-DIAN and calculations from the authors.

5.4.2 The Confectionery products industry

- Industry structure

The Colombian Confectionery industry is composed of a relatively small number of players, with a few large national and multinational firms concentrating most of the activity in the market. Firms vertically integrated upwards into sugar production coexist with firms that get their main input through the market, just as well as firms vertically integrated downwards into distribution activities coexist with firms that sell their products through distribution networks not owned by them, so there is not a unique business organization model. While the smaller firms tend to specialize in the production of hard candy, soft candy or chocolate, the larger firms are increasingly active in all product market segments and compete among each other in all three markets, often under different leadership positions. Market segmentation to attend a wide array of consumers' preferences within those three markets, makes firm survival under increased competition possible.

These two elements of the sector's industrial organization -economies of scale and product differentiation- have been key for its access to the international markets and relevant in connection to its discovery and diffusion processes. On the one hand, size has determined the forms of distribution available to producers and only the larger firms able to establish their own distribution channels have been, as we will see, able to compete in the foreign markets. On the other, under product differentiation the entrance of new players does not completely dissipate the rents of the incumbents and that has made growth and diffusion possible simultaneously.

- International trade

The confectionery products international market can be divided into two large categories based on its use of chocolate. The market for confectionery products with chocolate is almost twice as big as that of confectionery products without chocolate, and together they represent 0.21% of total world exports. European countries are both the main exporters and importers along with the United States. There is a substantial amount of intra-industry trade.

The Colombian confectionery products industry has increased its export-orientation over time. Exports as a share of output were 40.4% in 2001, the last year for which output data are available, more than four times higher than in 1991 when the share of output exported was of 8.7%. Colombia is a larger exporter in the segment of candy without chocolate. It exports 2.7% of total world exports in that market segment, while in the segment of chocolate confectionery its share is of only 0.3%, and these exports represent 49% and 21% of production respectively.

Nowadays Colombia has comparative advantage in both market segments: Indices of Revealed Comparative Advantage for the period 2001-2004 are of 12.98 for confectionery with chocolate and 1.45 for confectionery without chocolate. For the previous period 1997-2000, however, while the former was of 10.45 the latter was below 1 (of 0.48). This is consistent with the idea that there may have been an acquired comparative advantage for chocolate confectionery from the previous organization of distribution channels for other confectionery products.

5.4.3 Pioneer

Colombina S.A was founded in 1928 in Cali, as a division of Riopaila, the largest sugar-cane producer of Colombia, with the purpose of taking advantage of the opportunities associated with vertical integration in the downstream market of value-added products. It started activity with imported equipment and a production capacity of 800 pounds of candy per day and four years later was incorporated as an independent company with the objective of "producing and commercializing all sorts of food products, canned foods, liqueurs and sugar products".

The national market for confectionery products was, however, not very large at the time and Colombina had to compete with the low-value products of other small and medium size candy producers. The company's target consumer-segment was that willing to pay a little more for higher quality products. It was soon evident that the company had to sell higher volumes in order to be sustainable. But this was not easily doable in the short run without turning to the international markets.

In the neighboring countries the confectionery industry was strongly protected. This was and continues to be true also in Europe, where the protection of the sugar beet business has resulted in high tariffs for all products with high sugar content. The only expansion

possibility appeared to be the U.S. market where tariffs for this type of products were at the time at a more "reasonable" level.

Colombina S.A. approached the U.S. market for the first time in 1965 with a shipment of 4 boxes of candy with appalling results. Some of the ingredients of the colors and flavors of the candy were rejected by the Food and Drug Administration, the product presentation did not respond to the consumers preferences and the competing products, both local and imported from Europe, were in every way superior. In 1980, fifteen years later, it was the second biggest candy exporter to that country after England. The years between these two dates were evidently the learning years for Colombina S.A., during which the discovery to which we next refer occurred.

After 1980 Colombina S.A. saw its markets expand both geographically and in terms of product range, becoming one of the largest candy producers and exporters in the region (in 2004 it exported more than 50% of its production). It nowadays exports to more than 40 countries including the United States, Central America and the Caribbean, Australia, Spain, Japan, England, South Africa, Denmark, Portugal, Israel, United Arab Emirates, Fiji Islands and China.

5.4.3.1 The discovery

The first unsuccessful export trial showed Colombina S.A. that to enter the new market it had to spend time learning about it:

1. It had to learn about the regulation affecting food imports.
2. It had to research the habits and tastes of the potential consumers with regards to flavors, sizes, presentation, packaging, ingredients, and unit prices.
3. It had to learn about the differences in tastes across consumers' ages and income groups.
4. It had to learn about the available distribution networks specialized in the distribution of "consumption-by-impulse" products, their geographical coverage and their direct customers.
5. It had to learn about the distribution margins of distribution networks, wholesale and retail sellers, self-service sale kiosks, etcetera, and the product sizes and packaging required by each distribution channel.

Colombina S.A. devoted a significant amount of time to develop the plan that succeeded in letting its confectionery products conquer the U.S. market. Research of the market included since the beginning Colombina S.A.'s presence in the local U.S. fairs and resulted in an ambitious investment plan for technological improvement and increased capacity, as well as in a well-conceived marketing plan, that were put in practice for the first time in 1970.

As a curious note, Colombina S.A.'s initial export success in the U.S. market was associated with the introduction of a coffee flavored candy. Coffee was at the time the

only Colombian product with an international standing and Colombina S.A. cleverly took advantage of that.

5.4.3.2 Uncertainties

Some of the uncertainties faced by Colombina (and later by other confectionery products companies intending to enter new export markets) were:

1. Assessing whether a confectionery product is or not successful in the new market.

Sales through intermediary distribution channels do not allow direct contact with consumers. An intermediary may place a large order this month and order nothing on the next, and the producer can't tell what is going on in the market. As a result, demand is impossible to forecast.

This uncertainty was overcome by the development of company owned distribution channels. It was direct contact with consumers, for instance, what allowed Colombina S.A. to learn that consumption of confectionery products with chocolate is lower during the summer.

2. Organizing transportation and logistics.

To date the obstacles related to the organization of transportation and logistics have not been fully overcome by the Colombian Confectionery products industry. They can be broadly separated in two categories: domestic transportation costs that affect firms differently according to their geographical location –interior or coastal– and are not specific to confectionery products, and distribution logistics at destination, in the foreign markets. Because the former are not directly in the hands of the industry to solve, it is the latter category that takes the shape of an uncertainty for which the Colombian firms have been able to devise alternative solution schemes.

For instance, the impossibility to enter into long-term relationships with intermediaries, resulting from the inability to forecast demand, was solved by the development of company-owned distribution systems that allow to improve logistics by planning orders, inputs' purchases, output and deliveries of final products in advance.

Also the definition of a strategic arena and the consolidation of a brand-name have resulted in a more permanent presence in the markets which, in turn, facilitates building permanent relationships with customers, input providers and transporters, and makes it easier to surpass obstacles in the business logistics.

3. Sanitary permits and labeling regulations.

Each country has its own requirements and typically the processes to fulfill them are bureaucratic, highly discretional and used as non-tariff trade barriers by the issuing countries. Colombina S.A. (and later other local exporters) has tried to circumvent this by

pushing for regulation homologation during trade agreement negotiations (adoption of the Food and Drug Administration or of the Norma Única Andina standards). The confectionery products chapter of the National Industries Association, ANDI for its acronym in Spanish, has played a key role in bringing the voice of these firms to the government on this and other issues of interest to the industry, and the government has been receptive. No homologation, however, has yet gone through.

Colombina S.A. (and later other large companies) have ended facing this uncertainty through the creation of a group of specialized attorneys within the firm, who visit the foreign regulatory agencies and study the requirements and the procedures to surpass the obstacles that may come about on entry. These are individual efforts with no apparent coordination among the attorneys of the different firms.

4. Exchange rate uncertainty.

The market for confectionery products is a market of "consumption by impulse", by definition extremely sensitive to price variations. Also, because there are large marketing expenses associated with positioning a product in the market, it is not possible to recurrently exit and enter. In this context, exchange rate appreciations represent large losses either due to exit or to price maintenance under cost increases.

This uncertainty has usually been faced by holding on to a long-term view according to which future depreciations compensate for the losses incurred during appreciation periods (i.e. market share is defended at the expense of short-term losses).

5. Commodity price uncertainty.

Commodity prices of sugar and cocoa (in the case of chocolate confectionery) are a central component of the price of the confectionery products. Since the agricultural inputs are protected, price movements faced by producers are not the same everywhere. Cocoa price is not a problem for confectionery producers because in Colombia cocoa is traded with reference to the international commodity market at a premium for flavor and aroma. However, due to protection, in Colombia the local price of sugar oscillates between 70% and 120% above the international price.

In this case the solution comes from the Government, through Plan Vallejo, which allows exporters to by-pass tariffs and pay the international prices for their inputs. Since there is a large local sugar supply, Plan Vallejo has resulted in an agreement whereby sugar used as an input for exports is sold in the local market at the international price plus a small premium. In the case of Colombina S.A. this arrangement was facilitated by the company's upward vertical integration with Riopaila, one of the larger sugar producers of Colombia. But for others, it emerged naturally as a market equilibrium outcome: Plan Vallejo gave local sugar producers a perfect scenario to benefit from price discrimination. The fact that this has been possible raises concerns about the rationale for tariff protection in the case of sugar in Colombia. But that is an issue for another study.

5.4.4 The diffusion process

Two other firms exported confectionery products between 1960 and 1990: Noel, founded in 1916, and Compañía Nacional de Chocolates, founded in 1920. Both of these firms belong to the food products consortium Grupo Nacional de Chocolates (GNC), and while until 2002 they operated as separate companies, their business strategies have followed a similar logic since the beginning.

Until 1990, their export market was an outlet for output surpluses of their products, mainly "Frunas" from Noel and "Chocolatinas Jet" from Compañía Nacional de Chocolates. The brand-name products were sold with no adjustment in the nearby markets, including Puerto Rico and the U.S. There was no strategy of market selection behind these sales, which were more the result of an empirical process of trial and error: sales were repeated where they had gone well. Exports were done through intermediaries in each country. A salesman traveled and made the initial contact and after that it was the foreign intermediary who would place orders when the exchange rate conditions were favorable. Sales materialized only when there were local surpluses. Both firms sold at FOB prices in Cartagena, and had no knowledge of the foreign markets or an internationalization strategy whatsoever.

It was the market liberalization of the early 1990s, by opening the possibility of an expanded demand and by increasing competition in the local market, what pressed these and other companies to follow Colombina S.A.'s path and develop a well-defined strategy to reach the foreign markets. Colombina S.A. experience showed that there was an international market for Colombian confectionery products and that it was possible to succeed in developing a permanent export market not restricted only to the sale of eventual output surpluses. This was the main lesson from Colombina S.A.'s to its followers.

Colombina S.A.'s spillovers range, however, from human capital development, to shared market information, distribution channels and costumers. Cooperation between producers has been central to the growth of the firms as exporters, has been facilitated by the confectionery products chapter of the National Industries Association (ANDI) that provides a space for firms to meet and exchange experiences, and has been possible thanks to product differentiation, a feature of the confectionery products market that prevents rent dissipation through increased competition.

It should be stated that the confectionery products chapter of the National Industries Association (ANDI) does not per se have the purpose of facilitating cooperation between producers. Its role is more connected, as has been said, to bringing the voice of producers to the government in contexts of trade agreements negotiations and eventually to facilitating agreements with other loops of the production chain –negotiations with cornstarch producers, for instance, were facilitated by ANDI. Cooperation among companies, however, has occurred more informally. The confectionery products chapter of ANDI does give executives of the member companies a space to meet with their competitors and eventually share useful information. But while in fact ANDI has played

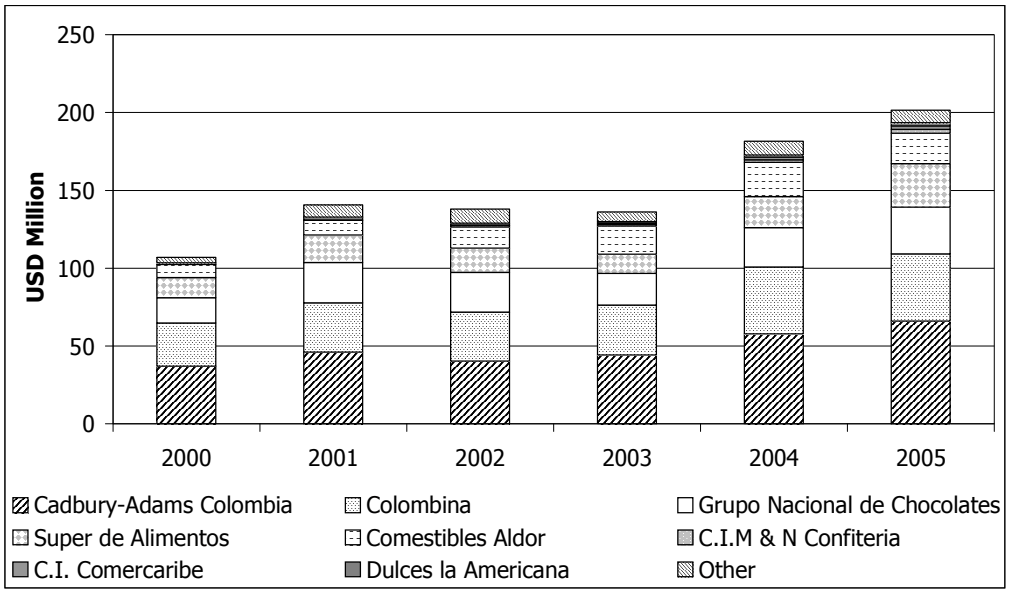
an important role for diffusion by providing such space, this is more a spillover of its activity than the outcome of a deliberate cooperation effort.

5.4.4.1 Followers

The information available from the Custom Registry for the more recent years allows us to provide some evidence about the way in which the confectionery exports industry is currently organized. The data tell of an exporting sector composed of 7 large firms, whose size in sales doubled between 2000 and 2005 (see Figure 16).

While there is no available record of the exports by firm before 2000, as would have been ideal to more properly reflect the diffusion process, we are able to say a few things about its ingredients using the information obtained through interviews.

Figure 16: Confectionery Exports by Firm. 2000-2004



Source: DIAN Customs Registry and calculations by the authors.

Cadbury Adams - Colombia, the largest exporter, is the only multinational player currently active in the Colombian confectionery products export market at a large scale. Chiclets Adams, a subsidiary of Cadbury Adams, established in Colombia 54 years ago and sold its production mainly in the local market until 1998, when headquarters decisions started shifting operations in America to the Colombian subsidiary. As a result of this decision process the company nowadays exports 85% of its production to 35 countries in the region and abroad. Cadbury Adams – Colombia exports' strategy, however, is ruled by headquarters' international supply optimization decisions so its export growth follows a logic different than that of other firms in the sector, and depends less on market growth or market share conquests and more on the distribution of the company's total output across its plants around the world (the company, for instance, closed plants in Ecuador and Venezuela in 2000 concentrating production in Colombia).

For this reason we will not consider its experience in describing the diffusion process of Colombina S.A.'s discovery.

- Grupo Nacional de Chocolates (GNC)

The story of Noel and Compañía Nacional de Chololates, henceforth Grupo Nacional de Chocolates (GNC), is worth looking into in some detail because, while followers to Colombina in terms of the timing under which they developed an export strategy and started growing as exporters, and in terms of benefiting from Colombina S.A.'s discovery that close detail knowledge of the objective markets would be central for that, the path followed by these firms diverges in some ways from that of the pioneer and has also had significant spillovers on the development of the Colombian confectionery sector as a whole.

GNC consolidated during the second half of the 1990s / early 2000s as the second Colombian confectionery exporter. Between 1991 and 1992 the consortium had entered alliances with foreign confectionery producers in Venezuela, Chile, Argentina and Mexico to distribute each other's products in the respective local markets. This distribution strategy required no presence of GNC personnel in the foreign markets, and in consequence during this exports phase no market knowledge was generated. It is later on, after 1995, when GNC explicitly defines its objective market to include markets other than Colombia and enters capital alliances with foreign firms (as opposed to the distribution alliances of the previous period), acquires foreign firms, and opens distribution companies of its own in several markets to sell its products building a brand-name. These features of GNC's internationalization strategy (larger direct investments in the foreign markets including the setup of production plants and the marketing of brand-name products) are what most distinguish GNC's experience from Colombina S.A.'s.

This internalization strategy was strengthened by the definition of a "strategic region" in 2000, by the creation of a research and development center in that same year, and by a thorough revision of the consortium's competitiveness by market in 2003. The more detailed understanding of the target markets combined with the research and development activities, allowed GNC to start developing products tailored to the tastes of the consumers in the different geographic markets, switching from follower to trend setter at a global level (i.e. Mars and Hersheys have allegedly copied some of GNC's products).

GNC's internationalization process provides evidence of (1) the importance of learning about the specific characteristics of the target markets for developing the adequate expansion strategy, and (2) the value of market segmentation through product differentiation in allowing firms to benefit from each other's experiences and grow simultaneously in the exports markets. Both points are obviously interconnected.

Moreover, market segmentation through product differentiation has been such that the exports portfolios of Colombina S.A. and GNC have very little in common. Colombina S.A. exports products that are more commodity types, while GNC does very little of that, and GNC has exited the lollypop market, where it tried to follow Colombina S.A. but

failed. As stated by both companies, "this is a market in which success is associated with leadership". To make justice to that statement what needs to be said is that when it comes to the confectionery business there are almost as many markets as products.

- Others

The smaller exporters in the Colombian confectionery products sector have developed under the signal sent out by Colombina S.A.'s expansion in the international markets. This company's exports success motivated others to look towards the foreign markets, and to model their strategies in a greater or lesser extent after that laid-out by Colombina S.A. This applies to the effort placed in gaining direct knowledge of the markets and participating directly in the distribution stages, but also in terms of product development to compete for leadership in specific product market segments.

A channel by which spillovers have materialized is product copy. With few exceptions, the smaller companies started out copying the products put in the market by the larger players, rather than developing their own new products. In a sense, this copying is a channel by which the knowledge of the markets gained by the leading firms reaches the rest of the market. It is also evidence that the segmented product markets are still wide enough to take on competition. Surely geographic market differentiation has contributed to making this possible.

Firms argue that among established exporters copy is common practice and does not go in only one direction. They also argue that with few exceptions, it is but one aspect of product development. Super de Alimentos, another of the large players in the export markets and the leader among Colombian firms in the caramel market segment, for instance, entered the international markets in 1990 selling a coconut caramel of its own and later copied Noel's caramel candies[81]. More recently Colombina has introduced a coconut caramel similar to that of Super de Alimentos. This serves well to illustrate the dynamics of product development through copy and of the competition for product market segments within the confectionery products industry.

Firms tell that most product copying results in fact from participation in international fairs in which they are exposed to other companies' globally successful products, and that this is true for Colombina S.A. as well as for the other market participants. Then they use this information to develop new products in their research departments in search for leadership in particular products market segments.

The experience of Aldor, a younger sugar confectionery products' company that started operations in 1991, oriented towards the international markets since the very beginning also fits well with this story. Aldor recognizes that Colombina S.A. was key for opening markets in the Caribbean for Colombian confectionery producers, and for showing others aspects of how to approach the business, but when it does not acknowledge a pioneering

[81] It now exports 66% of its production, and reaches 25 countries with brand-name products.

role of Colombina S.A. as product developer and rather points at the role played by international fairs when it comes to the product development-through-copy issue.

Currently Aldor has one of the most modern factories in America - after opening a new plant in 2004 - and exports 60% of its production to 46 countries in the five continents through a strategy "based on a low-cost structure, a flat organizational structure with management involved in all levels of operations, and *flexibility to adapt to the markets' needs*". Its larger markets are in South Africa, Irak, Taiwan and Korea, where the company has its distribution alliances with local partners, and in Venezuela and Ecuador, where it has direct presence through its own subsidiaries.

5.4.4.2 Barriers to entry

There are at least two entry barriers worth mentioning:

1. The exporters' experience shows that close knowledge of the markets is a must in order to develop the product supply adequate for the customer tastes and in order to push products into the foreign markets through targeted marketing. This, however, requires that producers willing to export are able to afford investments in research and distribution in the foreign markets and are able to produce the volumes to make that effort worth it. While this is a barrier that a company may eventually overcome through the introduction of a successful product, there is a circle that needs to be broken. The scale of operations acts as a natural entry barrier and, as a consequence successful players in this market are only large firms.

2. Sanitary licenses and regulations of the destination markets also constitute an entry barrier, and even more where they are used by the foreign countries as de facto non-tariff barriers. Under the description of the uncertainties that the newcomers must surpass to enter the foreign markets we explained some of the actions undertaken by the firms to deal with this sort of difficulties.

Another complementary route of action that should be mentioned, followed by all exporting firms active in the market today, is the attainment of internationally recognized quality standards certifications.

The activities required to surpass this entry barrier also restrict entry to the smaller firms.

5.4.5 Role of the government

While the government has not aimed exclusively at aiding the confectionery products sector to overcome the difficulties it faces to access the international markets, some of its export promoting policies have proved beneficial to this purpose.

By allowing exporters to by-pass the tariffs on inputs, Plan Vallejo has contributed to substantially lower export costs. On the one hand, it has resulted in a price agreement between exporters and local sugar producers by which locally produced sugar is sold at the international price plus a small premium to confectionery products exporters. On the

other, it has also been useful to reduce costs of packaging, colors, essences, and other imported inputs. As has been argued, while such program is unnecessary under an open market regime, it will remain useful as long as the local market continues to be protected.

Proexport's activity through its international offices is also mentioned as a channel through which the government has played a role as facilitator. Proexport has apparently been particularly active in the recent years in facilitating contacts with commercial chains and in helping firms learn and understand the law and regulations that prevail in the foreign markets, and has granted financial support for the development of market studies.

Firms complain, however, that there are cases in which the government is more an obstacle than an aid. They refer to instability in the rules of game, to the red tape in export procedures, and to high transport costs due to poor transport infrastructure as the main areas in which the government action is perceived as missing.

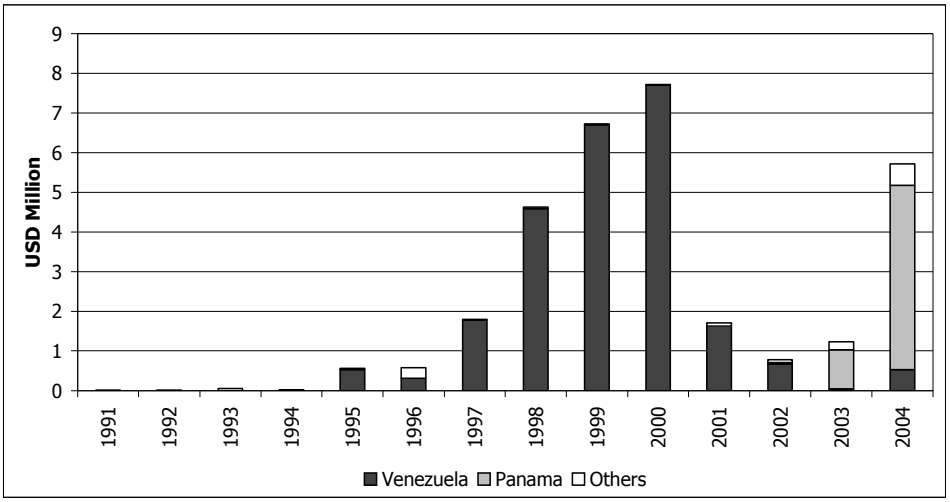
Finally, diffusion has been widely facilitated by firm interaction within the confectionery products chapter of the Colombian Industries Association (ANDI), known as the "Confectionery Committee" a private association of which all the larger firms are members.

5.4.6 Counterfactual: The potato chips industry

The potato chips industry is similar to that of confectionery products not only in that both belong to the broader category of the food industry, but also with respect to the fact that both are differentiated products industries in which there exist as many market niches as consumers tastes and in which both marketing and distribution logistics play a crucial role.

In contrast to the experience of the confectionery products industry, however, exports in the potato chips industry haven't taken off (see Figure 17). The export growth between 1995 and 2000 is associated with the entrance of the multinational Frito Lay to the Colombian market in 1995. From the export records by firm available from the Customs Registry for the recent years, we know that in 2000 this firm and its subsidiaries were responsible for all exports. But from 2001 on the picture is different: there are records of increasing export shares from two local firms, Internacional de Alimentos (CINAL) and Productos Yupi, and on 2004 this latter firm is responsible for most exports.

Figure 17: Potato Chips Exports, 1991-2004

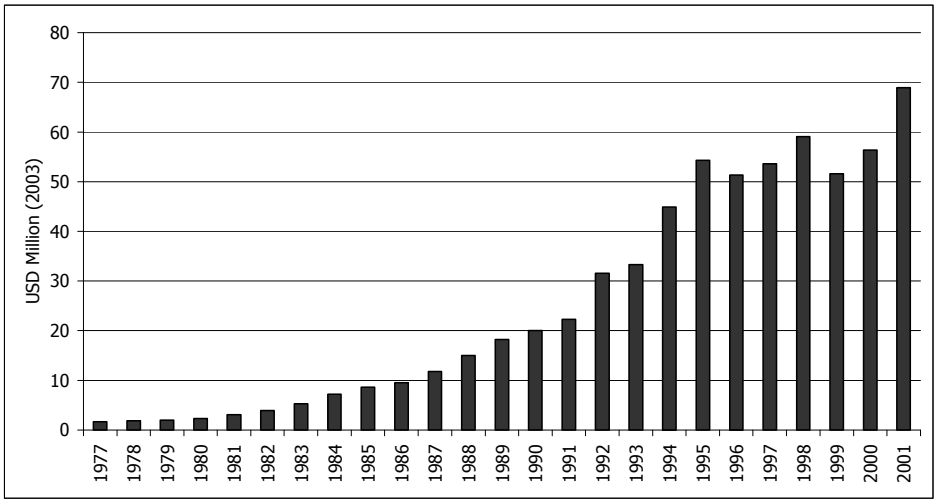


Source: DANE-DIAN and calculations by the authors.

The poor export performance of the potato chips industry contrasts with its growth in the local market that was very dynamic until 1995, and continued to show a positive tendency although at a slower rate in the more recent years (see Figure 18).

While there is a large number of micro-enterprises producing potato chips this is, as confectionery, a sector in which production volumes have been concentrated in a small number of large players. Until 1995 the industry was exclusively composed of local producers. The leading firm was Industrias y Pasabocas Margarita, and the other large players were Productos Yupi, Crunch, Ramo and Gran Colombia.

Figure 18: Potato Chips Output, 1977-2001



Source: Annual Manufacturing Survey, DANE and calculations by the authors.

The entrance of Frito Lay in 1995 brought about substantial reorganization to the industry. Soon after entering the market this firm acquired Crunch and Gran Colombia,

and later in 2000 it acquired the leading firm, Margarita, gaining, as a result of these acquisitions a share of 60% in the local market.

Apparently during the market liberalization of the 1990s this sectors' local firms were busier in defending their market shares in the local market than in looking outwards. Margarita was very competitive and its brand name was so strong that, against its best practice, Frito Lay held on to it after acquiring the company. During the 1990s, however, Margarita's owners faced serious personal safety concerns and their uncertainty about their permanence in the country prevented the development of a long-run expansion strategy for the firm and the associated investments such venture would have required.

The fact that the industry's leading firm did not expand internationally seems to have been a large deterrent for the smaller players to try their luck in the foreign markets. Margarita's focus in the local market may have signaled the industry that this was the most appropriate business strategy, and this is probably also why Frito Lay's exports after 1995 seem to have motivated others to look in that direction.

Another consideration that may be key with respect to the relative competitiveness of confectionery products and potato chips in the foreign markets has to do with the fact that while the primary input has been available from the local market at world competitive prices for the former that is not true for the latter. Because of their shapes and other characteristics, potatoes grown in Colombia apparently generate a high percentage of waste, which raises production costs and makes unviable some business projects. Also, potato crops are in the hands of a large number of small farmers and the potato chips industry represents only a small portion of their market, which makes hard to advance in cooperation or coordination schemes that could ensure quality and timeliness in deliveries (another source of over-costs faced by potato chips producers).

6 Lessons learned and policy recommendations

Shorten!!!

Three of the four activities studied belong to the manufacturing sector: sanitary products, underwear and swimwear, and confectionery. In all of them exports took off during the nineties, although the pioneers were companies that existed before, producing for the domestic market. The flower sector is a different case. Exports started at the end of the sixties and flowers were grown in an industrial and extensive manner exclusively for export.

6.1 The nature of the export discoveries

Based on the three manufacturing export cases studied, it can be argued that export discovery consisted in learning the costs of exporting dynamically, a product line that was produced in Colombia for the domestic market. The process involved introducing changes to products in order to make them "exportable" and competitive in international markets, as well as developing processes – production organization, distribution,

commercialization, and associated services - to successfully address the external demand. It also included innovating, training, and changing the work "culture". In some cases the discovery was accompanied by large investments and by the adoption of new technology, while in other cases investments and innovation were carried out before the export activity started.

In the flower sector the discovery took place when a group of businessmen (both Colombian and American) learned that Colombia had great natural, geographical, and economic advantages producing flowers at low cost, and that the costs were much lower than those in the U.S. This allowed Colombian flowers to be competitive in the U.S. market, in which there was a great demand. The discovery was in a product that had not been produced in an industrialized and extensive way before, and flower growing started with the unique objective of exportation.

In the case of sanitary products, pioneers discovered that their products, which were of good quality and were well-accepted in the domestic market, could be competitive in international markets. However, the two leading companies had different histories of discovery. Colombiana Kimberly Colpapel (CKC), half-multinational and half-Colombian, recognized that Colombia had good conditions (better than those in other countries' in which Kimberly Clark was established) for producing and for exporting to Latin America. As a consequence, the company made large investments to increase and improve the production in Colombia in order to export. At the same time, thanks to previous investments in technology to satisfy the domestic market, CKC had an excess of production capacity that also favored the export activity. The company did not introduce significant changes to their products given that their brands and products were already positioned and accepted in international markets.

On the other hand, Familia Sancela S.A. discovered the costs of producing and exporting good of their own brand, with high value added, and which could be differentiated (moved to a more sophisticated product line in the productive chain). The company discovered that this product could be competitive in international markets. In doing so, the company made large investments to put in place a comprehensive strategy based on developing new production technologies and controlling the marketing, distribution, and commercialization of their brands in foreign markets.

The export discovery in confectionery products consisted mainly in learning that Colombian producers were able to compete in international markets given their competitive costs, which resulted from of the existence of a large and well-developed sugar industry. But, Colombina, the pioneer, knew that in order to be competitive in international markets its products had to be adapted to local tastes and market characteristics.

Finally, in underwear and swimwear the export discovery consisted in understanding that world markets for these products were changing, and Colombia would soon be unable to compete in the low tiers of the market. The pioneer (Leonisa) discovered that it had the

capability to compete in the higher tiers with quality and design (greater added and perceived value), with competitive prices and with its own brand.

6.2 Discovery and pioneers: elements in common

1. Export discoveries and success took place in activities that had already existed in Colombia for more than a decade. In all of the manufacturing cases, the new exported products were produced in the country for the domestic market, where they had proved to be competitive. Moreover, first movers or pioneers were companies that already existed in Colombia and that were leaders in the product/line discovered. Pioneers were not new exporters, either. On the contrary, they had learned how to export from previous experiences exporting production surpluses, and they had proved the competitiveness and acceptance of their products in foreign markets.

In the case of sanitary products this was the case for both pioneers. Colombiana-Kimberly-Colpapel was established in Colombia in the mid-sixties. It started producing feminine care protection pads for the local market, and in the early eighties it began producing diapers. Familia Sancela (Urigo was the company's first name) was founded in 1958. In 1975, it began producing feminine protection pads, and in 1992, disposable baby diapers. Both companies exported production surpluses in the eighties, and their exporting discoveries started around 1991.

In the case of underwear, Leonisa was founded in 1956 for producing underwear. It began exporting in 1965, but the export discovery took place in 1989.

Finally, in the case of confectionery Colombina was founded 1928 and started exporting in 1965. The export discovery took place in 1980, but its true export dynamism was initiated in 1990.

The case of flowers is quite different. This was the only case in which new firms were created for exporting, and selling in international markets was the main target.

2. Companies had experience in producing goods at earlier stages of the production chain and they are vertically integrated. Familia-Sancela and CKC produce paper and raw materials for sanitary products. Leonisa produce its own textiles, and has direct distribution in many countries. Colombina was founded by the owners of Ingenio Riopaila (a cane sugar plantation and mill), and both companies were, until very recently, closely related.

3. All companies had strong entrepreneurial qualities and business vision, which allowed them to make aggressive decisions.

In the case of flowers, it was clear that flower exporters (first movers and pioneers) were businessmen more than agricultural experts or farmers.

In the other manufacturing companies discoveries involved making aggressive decisions and taking high risks. Some managers of Familia Sancela, for example, decided to completely change the exporting strategy of the company and replace some paper products with sanitary products. This involved not only making large investments and developing a comprehensive plan, but also persuading other people inside the company of the viability of the strategy.

In underwear and swimwear, Leonisa made significant investments and carried out an aggressive organizational restructuring in order to change its products to satisfy higher tiers of demand. It changed the focus of its competition from China to Europe and the United States. Its strategy was complex, multidimensional, and ambitious.

This is also true for Colombina in sugar confectionery: after an initial failure to export to the United States the company investigated for more than 6 months what was required to succeed in this market, and made all the required investments and changes - both to the products and to the organization - to make exports possible. This included contracting with consultants and researchers in the United States, and making significant investments without the certainty of success.

3. Pioneers were big companies with scale economies, and had innovated previous to the exporting discovery in order to be competitive in the domestic market. In most of the cases, strategic alliances and associations with foreign companies supported this innovation. Foreign investment was important in the early stages of production for the local market - rather than in the exporting period -, through the transfer of technology, knowledge, and even human capital. However, most of the alliances and associations with foreign companies made by Colombian firms remained for a limited period of time.

In sanitary products, for example, Colombian-Kimberly-Colpapel acquired a highly specialized machine in the early eighties, which allowed it to produce diapers of excellent quality. The multinational association with Kimberly-Clark drove the technological innovation. In 1965 Familia Sancela incorporated important technological improvements and began its sanitary paper production (tissues) in association with Scott Paper Co. In 1985 it strengthened its protection pad production (creating an independent production line with high technology) in association with the Swedish company Mölnlycke. However, all of these associations were temporary.

The case of sugar confectionery differs with respect to the others. Colombina made alliances with renowned international companies - Peter Paul, Meiji Seika, and General Foods - during the 80s, but these associations took place when the company was exporting significantly.

4. In the export discovery processes, with few exceptions, foreign investment did not play a direct role. However, the presence of multinationals in the Colombian market could trigger discoveries.

In most of the cases studied the leading discoverers were firms wholly owned by Colombians. There were, however, two exceptions: in sanitary products one of the pioneers was a multinational company associated with Colombian owners (Colombiana-Kimberly-Clark), and in the case of flowers one of the pioneers and leading companies (Floramérica) all of the ownership capital was foreign.

Nonetheless, it can be argued that the presence of multinational companies in the market was an important incentive for Colombian companies to become competitive, in this sense triggering some discoveries.

The presence of large international corporations makes leading global technologies more accessible to the local firms, as they facilitate their diffusion. It also causes these sectors to be more dynamic, as multinationals have almost unrestricted financial and marketing capacity, and have enormous resources for R&D. In addition, given that local firms must compete with multinationals in the domestic market, they have to make efforts to improve their competitiveness. Therefore competition with multinational corporations in the domestic market prepares local firms for entering international markets, where they have to face several times the competition of the same kind.

In most of the cases studied, at the time of the discoveries multinational or foreign companies were actively operating in the country: in the flower sector Floramérica, in sanitary products Kimberly Clark, and in confectionery Cadbury-Adams, Kraft, and Nestle.

5. The association with foreign companies for distribution and commercialization was crucial to the success of discoveries.

In the flower sector, the association of the first exporters with U.S. importers was crucial for developing adequate distribution and commercialization channels, as well as for acquiring knowledge about the foreign demand and consumers´ needs and preferences.

The success of the exporting strategy of Familia has also resided in its alliances and associations with local businesses in foreign markets, which have allowed the company to exercise control of the marketing and distribution of its products, and to apply abroad the strategies used in Colombia.

In sugar confectionery, Colombina has exclusive distributors in the United States, and Nacional de Chocolates started by associating with renowned producers in other countries to distribute each others' products in their respective countries.

In underwear and swimwear, Leonisa has its own distribution network in many countries. However, in Spain it sells though El Corte Ingles, and in other countries it uses retailers to reach costumers.

6. Pioneers learned to export to the closest markets (Andean Countries and others in Latin America), but the target from the beginning was to enter and compete in developed - and more distant - markets.

The exception is the case of flowers, in which, from the beginning, exports have been concentrated in the U.S. market.

In the case of sanitary products, since 1992 around 60% of total exports have been to Andean Countries, 6% to Mercosur, and 23% to Central America and the Caribbean. However, during recent years leading enterprises have exported to Europe, Australia, South Africa, and the Philippines. Leonisa also started exporting to Venezuela, and later to other Latin American countries, and currently it exports to more than 20 countries, including Spain.

Colombina is a different case. It started exporting to the United States because it was the only country at the time that had no barriers to sugar-made products. Currently, it exports to more than 40 countries all around the world.

7. Most pioneers´ strategies involved (1) exporting under their own brand, and (2) developing efficient ways for distributing and commercializing their products in foreign markets, for keeping control over the whole process up to the final sale, and for getting information about the foreign market and demand.

Companies export under their own brands in most of the markets. Familia exports baby diapers ("Pequeñín"), adult diapers ("Tena"), feminine protection pads ("Nosotras"), and other soft paper products ("Familia"). In some cases exports are made under Familia's own brands and, in the case of products distributed through associates, exports are sold locally under the foreign company's brand. In general, exports to Latin America and the Caribbean are sold under Familia's brands, and under different brands when exported to countries in Europe, Australia, and Asia. CKC exports under the brands "Kotex" for feminine protection pads, and "Huggies" and "Kimbies" for baby diapers, throughout the world. Finally, Leonisa exports underwear and swimwear only under its brand "Leonisa". The exception is Colombiana, whose exports are not made under the brands developed for the Colombian market.

Most of the pioneer firms have owned or associated with firms in external markets for commercializing and distributing their products in order to control the process from production to the final sale, as well as to be able to market their own brands. They have employed Colombian workers in foreign markets – which has helped in applying local models abroad - as well as foreign workers – which has helped in learning about external demand.

In the case of flowers, the creation of efficient distribution and commercialization channels was, from the beginning, a critical issue for success. In 1969 the first flower importing enterprise initiated operations in New York (it transferred to Miami in 1970 to avoid several obstacles and barriers that they had to face in New York.) Floramérica

found a solution through creating its own importer-distributor company in Miami (Sunbursts Farms), which allowed them to eliminate third-party brokerage houses, as well as to control the marketing of their product. Other exporters rapidly adopted this strategy and started establishing in the U.S. Colombian flower import companies, which were supported by associations with sellers in the United States.

Familia uses different schemes: i) owning 100% of the enterprises in foreign countries by, for instance, creating plants managed by Colombian headquarters; ii) associating with local businesses in foreign markets (owning 50%); and iii) selling to a third-party agent but controlling the commercial activity.

Leonisa has direct distribution in many countries (??) and also makes direct sales. It has shops in some markets in order to have close contact with consumers, and it controls 70% of all inventories in points of sale.

Colombina started by opening an office in Chicago and tried to establish its own distribution company, but eventually closed both and contracted with exclusive distributors who worked closely with company personnel.

In the case of multinationals (such as CKC), the international market distribution among different plants in different countries is almost always determined in the companies' headquarters, and, in almost all cases, the plant in Colombia is not concerned about the distribution and marketing of their products in other countries.

6.3 Events that triggered discovery

Some competitive advantages and low costs encouraged investments in new exportable products. However, in most of the cases, discovery was also driven by a specific decision to export certain products in a dynamic way, for which companies designed concrete and comprehensive strategies. In the case of multinational/Colombian companies, some strategies were developed directly by headquarters.

Some factors that triggered the discovery were:

1. Availability in Colombia of inputs and raw materials (some of which were exported).

This is the case with sugar and cacao for confectionery, textiles for underwear and swimwear, and paper and tissue for sanitary products.

2. Previous knowledge and production at earlier stages and interest in producing more sophisticated products (with more value added). This resulted in lower costs, fewer uncertainties, and higher propensity to innovate and discover, given that companies had accumulated some necessary capabilities. They knew better the possibilities of discovering and the way to produce goods with higher value added.

In three cases, companies produced (and still produce) goods at earlier stages of the production chain, some of them being inputs for the export product discovered. CKC and Familia were paper and tissue producers, Leonisa produced textiles, and Colombina, which did not produce sugar, had a close relationship with a sugar cane plantation that was owned by its founder, Ingenio Riopaila.

3. Products of high quality already produced for the domestic market.

Before the discovery, all companies were recognized in the domestic market for the quality of their products. Leonisa had won a quality award in 1986, chocolates of Colombina were highly appreciated, and CKC's diapers ("Huggies") and Familia's feminine protection pads "Nosotras" were of the highest quality in the domestic market.

4. Adequate and specialized technology due to previous innovation.

This was particularly the case with CKC, which imported a diaper machine in the 1980s that allowed the company to produce products of excellent quality, and even to displace Tecnoquímicas and Johnson & Johnson in the domestic market. Familia also made large investments in the eighties to consolidate its protection pad production, and it created an independent production line in association with the Swedish company Mölnlycke in 1985.

5. High production capacity.

In particular, CKC and Colombina had an excess of production capacity, which in both cases encouraged the export discovery.

6. In the case of the flower sector, pioneers were entrepreneurs rather than farmers, which enabled then to innovate and adapt technology.

7. Low labor and land costs, natural endowments, and favorable geographical location.

This element was particularly important in the flower export discovery, especially because of the great differences in these costs vis-à-vis the United States. In fact, flower export discovery in Colombia was driven by the search by American businessmen and flower growers for lower production costs. Colombia was endowed with favorable conditions: i) natural conditions such as fertile soil, flat topography, and adequate temperatures and luminosity during the whole year, existed in the regions surrounding Bogotá and Antioquia; ii) economic conditions related to land and labor abundance at relatively cheap costs, as well as low road transportation and warehousing costs due to proximity to the shipment ports (airports); and iii) convenient geographical location for reaching the U.S market.

8. Promotion policies.

In all of the cases, Plan Vallejo was considered an important support program at the initial stages of exporting, particularly because it partially compensated for the fact that the economy was tightly closed to imports. Therefore, Plan Vallejo became an important tool for companies with which to reach competitiveness. Other measures related to direct subsidies didn't have a major impact on discovering; some of them were even removed during the nineties.

9. Commercial policies.

The liberalization policy of the early nineties stimulated discovery processes. The openness to competition put pressure on local companies to find new destinations for their products, especially companies which had enough production and investment capacity (big and efficient companies, leaders in the domestic market).

In fact, except for the case of flowers, discovery processes and exports took off in the nineties. Familia and CKC adopted their export strategies in 1991, and Leonisa in 1989. Colombina started exporting earlier, but the export activity became significant in 1990.

Other relevant changes that took place in the nineties in Colombia were of great importance as well. Internationalization of the economy and reforms created a new entrepreneurial culture in the country.

Trade agreements were essential at the initial exporting stages. In fact, companies followed a learning process, exporting at first to markets with tariff preferences (Andean Countries). However, it is difficult to disentangle the impact of free entry and that of geographical proximity, since companies also began to export to other Latin American countries that gave no preferences to Colombian products. Moreover, exports rapidly reached markets on other continents. Both location advantage and a policy-based advantage were important, since success in getting to a market depends on the price at which companies can sell their product vis-a-vis the competitors.

10. Macroeconomic stability.

Finally, good macroeconomic conditions, especially economic stabilization, were important for the emergence of exporting discoveries. As a matter of fact, the flower sector arose as exporter from the end of 1960s until the mid-seventies, a period of macroeconomic stability. On the other hand, the three manufacturing export activities began in the nineties, when a package of reforms was implemented to stabilize and modernize the economy.

The exchange rate played a crucial role in the case of the flower sector. The establishment of a policy of mini-devaluations (*crawling peg*) in 1967 stabilized and devalued the currency. This helped first exports enormously, since it gave the necessary stability to an incipient industry. In the manufacturing cases, which started exporting later, the real exchange rate didn't have the same effect. Some relevant commercial

policies (Plan Vallejo, openness, trade agreements, and macroeconomic stabilization, for instance), combined with a new and more open business vision, predominated in encouraging discoveries in the cases studied

6.4 Major uncertainties and obstacles

Uncertainties vary among sectors and even among pioneers in the same sector (e.g. between multinational and Colombian companies). In some cases, especially in the flower sector, joint efforts among producers/exporters were important in overcoming uncertainties. Exporter associations played a crucial role as well, especially for those issues for which coordination problems prevailed.

In general, in the manufacturing sectors companies adopted their own strategies to overcome uncertainties and obstacles – those related to legal problems, transportation, information sharing, and knowledge of external demand, among others - and coordination with other participants took place only on a few specific occasions. The solutions adopted by individual companies prevailed over joint efforts in dealing with uncertainties and bottlenecks. The government was helpful in overcoming obstacles, but only in specific areas and on specific occasions, rather than in general.

1. Transportation and Infrastructure

One obstacle that was common to various activities was the lack of transportation means. This issue was especially critical in the flower sector, given that export activities emerged during a period in which air transportation in Colombia was not well-developed. But even in sectors in which exports took off later - at the end of the eighties and the beginning of the nineties - transportation presented problems for first exports.

When flower growers started exporting, Colombia didn't have direct flights to the U.S. and Europe. In addition, airplanes were not adequate for shipping flowers (due to the size of the cabin and the narrowness of the doors) and the schedule of flights was irregular. Coordination and joint efforts among exporters, Asocolflores, and the government was key to resolving transportation restrictions. In the early stages of export, growers had to make special arrangements with Colombian airlines to make flower transportation directly from Colombia to the U.S. possible However, as this scheme was extremely costly, insecure, and inefficient, exporters, with the support of Asocolflores, – later hired the services of foreign airlines, which allowed them to have access to the European markets.

Colombiana-Kimberly-Colpapel also faced severe obstacles related to limited means of transportation. The company took direct action to resolve some of the problems, although the support of the government was also crucial. At the very beginning of the export activity, the two largest paper products companies managed to coordinate with each other to overcome transportation obstacles, for instance by hiring a small boat for their own exports. Proexpo played an important role, through the program "Mecanismo de Compensación al Transporte".

Furthermore, all the sectors studied faced, and still face, extremely high transportation fees, which have had to be offset by cutting other costs. In addition, the deficient infrastructure - especially roads and ports - considered being a major obstacle.

2. Knowledge of external markets and demand, and acceptance of their products.

In most of the cases, the nature of external markets and demand – market size and consumers' habits, tastes, and needs –, as well as of competitors in foreign markets, were major uncertainties faced by companies when they were designing exporting strategies. In addition, whether their products and brands would be accepted was a critical issue.

The solutions were varied: (1) Proexport provided information about foreign markets, including their size and competitors; (2) companies engaged in their own research about foreign markets and consumer characteristics, and performed marketing studies for their products; and (3) companies used distribution companies located abroad – either their own companies or associated foreign companies - as sources of information and tools for the marketing of their products and brands.

In fact, in order to market their products and brands, to have direct contact with consumers, to track changes in, and the evolution of, demand, and to have control of final sales - all crucial elements l for modifying products and forecasting demand - companies at the outset developed efficient distribution channels as an essential part of their exporting strategy. Some of the companies are Colombian firms operating abroad (e.g. floriculturists, Colombina, Familia, and Leonisa), and some have made alliances with foreign importer-distributors that allow the Colombian companies to maintain some control over the sales and marketing of their products (e.g. the case of Familia).

3. Some specific uncertainties faced by different pioneers

Uncertainties faced in the flower sector: (1) there were no facilities at airports for receiving and storing flowers. Through Asocolflores (and with financing from Proexpo), Colombian flower exporters established a joint company in Miami (Transcold) that was in charge of unloading flowers and storing them in refrigerated storage rooms until inspection by customs; (2) the need to adapt foreign technology to Colombian conditions, a task that was facilitated by the establishment of the American company Floramérica; and (3) phytosanitary problems and plant diseases, which were first resolved by individual growers, and later managed through Asocolflores with the support of ICA.

Specific uncertainties faced by Leonisa in exporting underwear and swimwear: (1) the ability to offer products with the appropriate price-quality balance, in order to compete in the upper tier of international markets. The quality challenge was met by investing in technology and human capital, and the price challenge was met through low labor costs in Colombia and a deliberate effort to reduce inventory costs; (2) finding a way to fulfill large-scale orders on schedule and with standardized quality. Leonisa developed an industrial organization model in which multiple small players are coordinated and trained

by a large firm, and capacity is increased through outsourcing contracts; (3) the production of 8,500 products in response to demand preferences. Leonisa optimized the production process in such a way that the machinery is never idle, and started managing volume by computer; (4) exchange rate controls in export markets such as Venezuela. Leonisa continued selling under this restriction, but invested the income from these sales in local goods in order to bring the income back to Colombia.

Specific uncertainties faced by CKC and Familia in exporting sanitary products: CKC faced a particular uncertainty related to the fact that payments from import countries were insecure and unstable. The company signed payment and currency exchange agreements with the Central Bank aimed at guaranteeing that the company would be paid back in case of default by foreign buyers. Familia Sancela faced other kinds of uncertainties: (1) cultural barriers inside the company to putting in place the export strategy. Managers had to create a new culture in the company through education and informative activities; (2) external cultural barriers based in different cultures and habits related to the use of personal care articles. Familia developed new and more flexible communications tools which could be adapted to different cultural habits; (3) adaptation to external markets. Familia recognized the need for adapting their local model to different market trends (consumer preferences and habits) in terms of communication tools, products (appearance and quality), and packaging.

Specific uncertainties faced by Colombina S.A. in exporting confectionery products: (1) sanitary permits and labeling regulations which are used as non-tariff trade barriers by the issuing countries. The company (and later other local exporters), supported by the National Industries Association, ANDI, has pushed for homologation regulation during trade agreement negotiations. However, no homologation scheme has yet been adopted. Companies also created of a group of specialized attorneys within the firm, who visit foreign regulatory agencies and study the requirements and procedures needed to overcome these barriers; (2) exchange rate uncertainty. This uncertainty has usually been faced by adopting a long-term view according to which future depreciation gains compensate for the losses incurred during appreciation periods; (3) commodity price uncertainty (sugar and cocoa). The solution is provided by Plan Vallejo, which allows exporters to by-pass tariffs and pay international prices for their inputs, and which favors agreements under which sugar used as an input for exports is sold in the local market at the international price plus a small premium.

6.5 Diffusion

Diffusion took place in all the sectors/activities studied. There are several companies that are exporting products similar to those exported initially by the pioneers. However, diffusion of export discoveries was different among sectors in its depth and in the channels through which it occurred.

In the three manufacturing cases, pioneers were large firms with economies of scale, a factor that partially limited diffusion. Therefore, partial diffusion was not considered harmful for pioneers, as they could appropriate rents of investments. In addition, some

firms decided to differentiate products, which also restricted the impact that diffusion had on the pioneers. Partial diffusion can be evidenced in the fact that, in spite of the entry of new players, the four pioneers (CKC, Familia Sancela, Leonisa and Colombina) still have a leading position in the export market, as well as in the domestic market. In fact, in all the sub-sectors studied the market is still concentrated.

Furthermore, the emergence of new players created positive externalities such as country product recognition. In addition, in those activities for which the need for coordination prevailed in order to overcome obstacles that could not be tackled individually, the entry of new competitors was necessary and diffusion was desirable.

Partial diffusion occurred in the three manufacturing cases, suggesting that export discoveries occurred in those activities in which the potential diffusion was limited so that rents could be partially appropriated. However, due to its great differences, a complete diffusion occurred in the flower sector.

Specific cases of diffusion

Diffusion in flowers:

Occurrence: The diffusion was rapid, deep, and complete. Some factors were behind the entrance of a growing number of investors: it became common knowledge that Colombia was an excellent place in which to produce flowers and export them to the United States; the great size of the American market; the existence of many farmers who potentially could diversify their activities; the great profits reaped by the pioneers; and the ease of copying the production technology. The pioneer (Floramérica) diffused knowledge in different areas: in using production technology; in creating distribution channels; in changing and adapting products and packaging in order to satisfy the U.S. demand; and in training workers and changing work organization.

Channels for diffusion: Knowledge diffusion took place though different channels: (1) human capital transfer (technical advice given by Floramérica's ex-employees and the hiring by some firms of members of Floramérica´s staff); (2) input suppliers (pesticide sellers); and (4) imitation and copying.

Costs of diffusion: Diffusion was beneficial as the emergence of new participants helped exporters to overcome obstacles through coordination and cooperation. The main areas of coordination were: transportation; the establishment of adequate receipt and storage of flowers in Miami; distribution and commercialization channels; and positioning flowers in the U.S. market gaining recognition for Colombian flowers, with positive effects for the industry as a whole. Rent appropriabilility problems were highly offset by extremely large profitability. Therefore, the diffusion process was favorable during the seventies and the eighties, when the exporting process consolidated. However, the expansion continued and the non-existence of entry barriers encouraged new entrants – some of whom were farmers without knowledge about growing flowers or other perishable goods - until that diffusion became harmful for both pioneers - big companies – and the market as a whole.

Diffusion in underwear and swimwear:

Occurrence: In underwear and swimwear diffusion was incomplete. After Leonisa turned to the higher tiers of demand, the underwear and swimwear sector was energized and grew considerably. Other producers followed Leonisa by developing and strengthening their brands, and new companies developed by targeting the higher end of the market. Nevertheless, no company was able to produce for the international market high value added products in large volume under its own brand, mainly due to the complexity of the multidimensional strategy followed by Leonisa.

Channels for diffusion: Diffusion occurred through imitation, customer demand, direct training by the pioneer, and human capital flow between companies. Leonisa started using well-trained personnel, particularly for the design of its apparel. This created a pool of high quality designers that became available for the whole industry. Leonisa used microenterprises to outsource part of its production process, facilitating diffusion of some parts of its production technology to smaller firms. Leonisa's success prompted other companies to try to imitate Leonisa's products or the visible parts of its strategy, such as selling products under its own brand, targeting Latin-American women, or focusing on high value added products. Leonisa's growing exports brought recognition to the country as a place of design, and it may have caused customers of Leonisa to look for other producers, and to demand similar products as those made by Leonisa. This kind of diffusion is more difficult to register.

Costs of diffusion: Partial diffusion was not very costly for Leonisa. Leonisa is the largest player by far in the underwear sector, both for local production and for exporting. Although competition may reduce Leonisa's market share, clustering in apparel production benefits all players as it generates country recognition, attracting new customers and facilitating access to new markets. The benefits of developing a high quality, national apparel brand probably offsets the costs of competition.

Sanitary products:

Occurrence: The diffusion process took place first in production, and, after some years, in exports. All the current exporting firms produced initially for the domestic market, and then started sending their products to international markets. During the first years of the export activity there was not a clear diffusion with followers. There were, rather, various companies (CKC, Familia-Sancela, Johnson & Johnson de Colombia, and Tecnoquímicas) producing sanitary products and trying to export at the same time. Exports took off when positive internal conditions arose, favoring all of them. Some factors have facilitated the diffusion: i) the rapid success of leading exporting companies and their profitability; ii) the fact that, through offering products of high quality, the first movers ensured that Colombian sanitary articles were recognized and well-accepted in international markets; and iii) the existence of good exporting conditions in Colombia.

Channels for diffusion: Some companies have copied strategies of leading export firms, such as selling products abroad under Colombian brands, and some have copied and

imitated products and strategies to get into markets – such as in the case of Produsa imitating Familia Sancela.

Costs of diffusion: Diffusion, in general, has not been costly for the pioneers. Today, competition between the biggest companies is intense, but it is the same as that faced in the domestic market: Familia´s brands compete with multinational brands, both locally and in foreign markets. Thus, diffusion has not been perceived as harmful, except in the case of smaller companies. Produsa is perceived by Familia as an imitator of its products and exporting strategy, and competes in the same foreign markets offering much lower prices. Nonetheless, this company has only a 2% market share.

Confectionary products:

Occurrence: Diffusion in confectionary products occurred only during the 90s, many years after the pioneer started exporting. Market liberalization, which made possible an expanded demand and a competition in the local market, pressed other companies to follow Colombina S.A.'s path and develop a well-defined strategy to reach the foreign markets. At present there are 7 firms with large exports of confectionary products. Nevertheless, diffusion was not costless for the followers, and all firms had to make important investments in order to reach international markets, and had their own learning process and strategies.

Channels for diffusion: Diffusion in confectionary products has also come from imitation and from spillovers, although human capital flow between companies has also occurred, and informal information flow has benefited the companies. Product imitation is common in the industry, but most imitated products are those of foreign producers in international fairs. Commercialization strategies differ radically among companies, but international markets are similar and companies learn from each others' markets. Cooperation between producers has been facilitated by the confectionery products chapter of the National Industries Association (ANDI), which provides space for firms to meet and exchange experiences. Also, product differentiation vents rent dissipation through increased competition.

Costs of diffusion: Costs of diffusion are mild. Diffusion came years after the discovery had taken place, and product differentiation and/or geographical market differentiation has made rent appropriation possible both for the pioneers and for the incumbents. In confectionary products, export success normally comes from being a segment/sub-product leader, and there are almost as many markets as products; therefore, few firms compete for the same market segments or in the same sub-products.

6.6 The role of the government

The government played a critical role in the export discovery processes studied. The government supported exports in three different ways: first, in providing the appropriate environment that allowed or encouraged export discoveries; second, in adopting specific policy tools to promote exports; and third, in helping exporters to overcome coordination problems.

Before tackling each of these points, it its worth noting that the impact of the government was perceived differently in the different cases studied, even when considering the effect of specific policies on the discovery process.

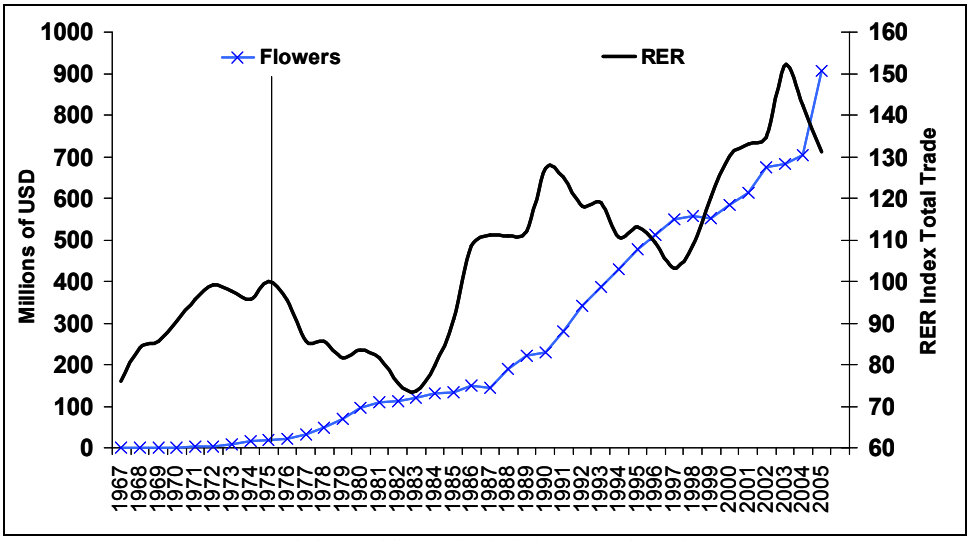
1. Favorable environment for exports and investments

As was mentioned in Chapter 1, the stabilization of macroeconomic conditions and the gradual removal of import restrictions between 1966 and the mid- seventies, were particularly important for the emergence and rapid success of flower exports.

In addition, the policy of mini-devaluations, (*crawling-peg*) put in place in 1967, by which the peso would devalue continuously against the dollar, was essential in the first stage of flower exports.

Similarly, the liberalization of the economy that was begun in 1989 and accelerated in 1990 was important for export discoveries in the manufacturing cases, since the program progressively removed quantitative restrictions on imports and reduced tariffs. This commercial policy lowered the costs of imported inputs, and generated further competition for the domestic market by putting pressure on local companies to find new destinations for their products (see Figure 19).

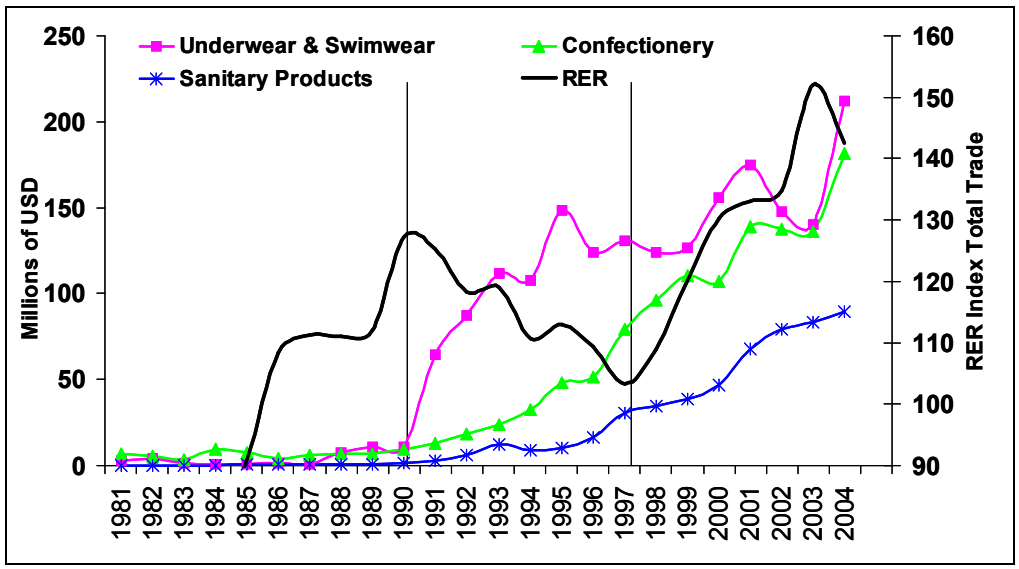
Figure 19: Flower Exports and Real Exchange Rate, 1967-2004



Source: UN COMTRADE, GRECO, Banco de la República, and calculations from the authors.

However, in the manufacturing cases the real exchange played in the opposite direction. The market liberalization, during which the discovery processes emerged, coincided with a revaluation of the currency. Therefore, successful exporters based their competitiveness on other variables (see Figure 20).

Figure 20: Exports and Real Exchange Rate, 1981-2004



Source: UN COMTRADE, GRECO, Banco de la República, and calculations from the authors.

2. Export promotion policies

The impact of export promotion policies was in some sense limited. Some programs were extremely useful, while others had practically no effect.

Plan Vallejo. As was mentioned above, Plan Vallejo went into effect in 1962 in order to allow local industry to have access to imported inputs at international prices. This was a mechanism for tariff exemption and the removal of other restrictions on the import of raw materials and capital goods to be used in the manufacture of products destined for export.

In all of the cases, Plan Vallejo was considered crucial in the initial stages of exporting, particularly because it partially compensated for the fact that the economy was tightly closed to imports. Therefore, Plan Vallejo became an important tool with which companies could reach competitiveness.

Evidently, as the economy liberalized in the nineties, its impact should have been reduced. However, given that some goods (especially agricultural goods) remained protected and the currency revalued, Plan Vallejo became fundamental for export promotion as it gave the local industry the possibility of lowering the costs of products destined for international markets.

In addition, for some companies the program was useful not only because it allowed exporters to buy inputs at international prices, but also because it became a powerful tool for negotiating prices in the domestic market to levels close to international levels. This was the case with confectionery companies, who could successfully negotiate the price of sugar with domestic producers (locally-produced sugar is sold at the international price plus a small premium for confectionery product exporters). The program has also been useful in reducing the costs of packaging, colors, essences, and other imported inputs.

CAT and CERT. In 1966 the government introduced direct subsidies for non-traditional exports through the creation of Export Tax Credits (CAT, "Certificado de Ahorro Tributario"), a bond that was given to the exporter, who could either use it to pay taxes or sell it in the financial market[82]. In 1984, this bond became the CERT, "Certificado de Reembolso Tributario". The impact of this subsidy instrument was extremely limited.

In the case of the flower sector, at the time of first exports the value of the CAT was established at 15% of the exported value, which helped very early exports. However, in 1974 the U.S. Treasury determined that, due to the subsidy, flowers from Colombia would be subject to an additional countervailing duty of 10.2%, which resulted in a much lower real CAT value From then until 1980, flower exports did not benefit from the CAT, and in 1981-1984 they started receiving CATs once again at the very low value of 4%. In 1984 Colombia renounced the issuance of CAT/CERT for exports made to the United States, under the Benefit Suspension Agreement signed by Colombia as a result of antidumping demands made by the United States.

In the case of the manufacturing sectors studied, direct subsidies didn't have major impact on the early exports and discoveries. In fact, some of the subsidies were removed during the nineties as a result of different trade agreements and the multilateral commitments that had to be made with the World Trade Organization.

Proexpo/Bancoldex. In 1967 the "Fondo de Promoción de Exportaciones" (PROEXPO), an export promotion fund which canalized subsidies through credits, was created. The fund was transformed in 1992 into the Banco de Comercio Exterior (BANCOLDEX), a re-discount bank through which the government assures credits at below-market rates, and Proexpo became Proexport.

Proexpo´s main objectives have been to provide (1) financing for the working capital needs of exporting companies and, to a lesser degree, investments in fixed capital; (2) external promotion through commercial offices around the world, which explore possibilities for Colombian products, give information to potential importers and Colombian exporters, and establish contacts between Colombian exporters and local buyers; and (3) help in the international promotion of exports, which includes technical assistance, participation in international fairs, information about foreign markets, and organization of commercial missions to different countries.

The impact of Proexpo/Bancoldex on first exports can be considered mixed. It was extremely useful in some cases and poor in others; its impact was greater in connection with some of its promotion functions than with others; and it was more helpful in certain periods than in others.

[82] Initially, the face value of these CATs was established at 15% of the exported value. Over the years, several classifications have been defined. In 1977 most agricultural products received 7% CATs, most manufacturing products received 5% CATs, and some other products not needing this support received 0.1% CATs. Cut Flowers were included in this category in 1974, after the U.S. Treasury determined that, due to the CATs, flowers from Colombia would be subject to an additional countervailing duty of 10.2%.

In the flower sector the role of Proexpo in the first years of exporting was important: credits grew at an average annual rate of 50% from 1973-1977, at interest rates below the market (13% versus 32%). For instance, it financed two important projects: a large refrigerated facility in Miami and the installation of refrigerated compartments in one of the planes of Avianca. However, in 1984 exporters renounced the use subsidized credits for exports made to the United States, under the Benefit Suspension Agreement signed by Colombia as a result of antidumping demands made by the United States. More recently, Proexport, in association with Asocolflores, has been very active in the international promotion of flowers.

For underwear producers, Proexport has played a proactive role as trade facilitator through its international offices. In particular, it has facilitated the interaction of potential buyers (department stores, specialty stores, and others) with potential sellers, often represented by the larger Colombian underwear firms.

For confectionary producers, Proexport's role has been similar. Proexport's activity through its international offices is mentioned as a channel through which the government has played a role as facilitator. Proexport has apparently been particularly active in recent years in facilitating contacts with commercial chains and in helping firms learn and understand the laws and regulations that prevail in foreign markets, and it has granted financial support for the development of market studies.

For CKC, Proexpo was extremely useful in helping exporters partially solve transportation obstacles. It established the "Mecanismo de Compensación al Transporte", a program intended to support and promote exports to countries for which there are no direct, regular, and suitable transportation services. CKC used the program several times, which facilitated first exports to the Dominican Republic. In addition, Proexpo-Puerto Rico contacted a rich businessman who rented a room in the Zona Franca of Cartagena. Through this mechanism exporters were able to avoid paying port fees, and CKC started using this system to export to Puerto Rico.

Trade Agreements. During the nineties, the regional economic integration was reactivated, various commercial agreements were signed or reinforced, and unilateral trade preferences were obtained.

The manufacturing sectors has been benefited by (1) the Andean Group's -Colombia, Ecuador, Venezuela, Bolivia and Peru - reorientation towards a more open-door integration model (1989-1993), which brought about the adoption of a common external tariff system by 1995; (2) the signing of the G3 trade agreement with Venezuela and Mexico (1994) to further the rapid insertion of the Colombian economy into international markets; and most importantly (3) the signing of ATPA (1991), and later of ATPDEA (2002), unilateral tariff preference agreements with the United States. In all of the cases, trade agreements were important, although some of them have been more important than others.

For the flower sector, for instance, trade preferences were not important at the beginning of the industry, since exports were directed at the United States. However, the ATPA, which went into effect in the nineties (later the ATPDEA), and which lowered to zero the tariff for Colombian flowers, became crucial. This agreement was also important for textiles and apparel. The Andean Group was also extremely important due to the geographical proximity of its members.

3. Helping exporters to overcome coordination problems

The government, through different institutions, also played an important role in helping exporters to overcome several obstacles.

One of these involved transportation. In the case of flowers, although coordination among exporters with the assistance of Asocolflores has generally been the means of overcoming bottlenecks, the government has been supportive in specific cases, as well. One interesting case is the "Transport Compensation Mechanism" established by Proexpo, a program intended to support and promote exports to countries for which there are no direct, regular, and suitable transportation services. The government aid, which is still being awarded, consists of compensating 26% of the total freight paid by the exporter for the first three years, and 13% for the following two years. This system was also particularly useful for exporters of sanitary products.

The Incomex also provided support to facilitate exports. An illustrative case involves the efforts of Incomex to convince the Central Bank to make payment and currency exchange agreements with exporters, aimed at guaranteeing that they would be paid back in case of default by foreign buyers. Resolving this uncertainty was important for CKC in sanitary products.

Another kind of assistance that can be provided by the government is the facilitation of the entry of Colombian products into foreign markets, for example by removing non-tariff barriers imposed by other countries. However, according to the cases studied, the effectiveness of the government in this area has been limited. Some examples illustrate this point. In the confectionery sector, the government has not been able to standardize sanitary regulations with other countries, a failure which l to this day constitutes a great impediment for exporters. In sanitary products, specifically the case of Familia, the government has been ineffective either in helping the company to register its brands in other markets, or in impeding the copying of its brands by foreign companies.

However, in other cases the government has been efficient and very helpful in solving legal and other kinds of problems. One example is when CKC, at the beginning of the nineties, faced a dumping case in Ecuador, which the Incomex and the Ministry of Foreign Trade efficiently resolved. In addition, when CKC faced problems in Ecuador regarding transportation of its goods inside the country, the government was extremely helpful in getting the government of Ecuador to comply with the Andean Agreement.

In general, however, even in the cases in which the government was helpful, government support was not considered fundamental, either for making initial decisions, or for the further development of exports. It is interesting to note that the multinational companies reviewed in this study seem to have a more positive opinion of the role of the government than do the Colombian companies studied. Two examples are Cradbury Adams and Colombiana-Kimberly-Colpapel (CKC).

Finally, the role of the associations has been particularly important in the case of the flower sector. This is mainly because Asocolflores has helped exporters to coordinate efforts to overcome obstacles, and it has represented them before foreign and local authorities.

In the manufacturing sectors, associations have played an important role in trade agreement negotiations, in developing beneficial relations with the government, in improving relationships within the production chain, and in getting information about competitors.

6.7 Policy recommendations

- The need for an industrial policy to promote self-discovery

In Colombia, as in other Latin American countries, the protection of the economy and the import substitution policies put in place in the sixties and seventies, and to a lesser degree in the eighties, created new industries that later became involved in export discovery processes.

The three manufacturing export discovery cases studied involved companies that had already been well-positioned in the country since the sixties and seventies, and this enabled them in the nineties to penetrate external markets with new export products for the country. This experience suggests that new export discoveries took place in already-established productive activities, rather than in the production of new goods for the country.

During the nineties, however, circumstances changed and protection policies have since been replaced with policies promoting the openness of the economy to foreign competition. In this new environment, the challenge for the Colombian Government has been to find effective ways to strengthen and diversify the productive sphere of the country in order to promote the emergence of new self-discovery and export discovery processes.

This suggests that Colombia should refocus its industrial policy by designing one that prioritizes diversification of the economy rather than strengthening specialization. This involves promoting the creation of activities that are new for the country, either for serving the domestic market (enhancing productivity) or for exporting, and the acquisition of knowledge of a broad range of activities. The core policy should be directed at developing new comparative advantages through discovery processes, instead

of concentrating support on already known and existing comparative advantages, or on the activities that the country currently does best.

In such a process of discovering an activity/export that does not yet exist in the country, the role of the government becomes crucial, given that profits and outcomes of new activities are almost completely uncertain. In order to give incentives for entrepreneurs to start new activities, the government must intervene to reduce uncertainties, which involves not only ensuring rents, but also providing support to overcome obstacles that emerge in the process of discovery in order to facilitate its success.

As noted by Rodrik (2004), an entrepreneur engaged in discovering a product that is already established in world markets and that can be produced at home at low cost faces two main externalities: information and coordination.

Information externalities entailed in discovering a new activity or export product are related to three facts: (1) if the new activity fails, the investor assumes the full cost; (2) if the activity is successful, social gains are produced but the profit of the discovery must be shared with the followers: and (3) first investments and the discovery (e.g. the adoption of foreign technology and the adaptation to local conditions) are not protected. Thus, ease of entry facilitates imitation, undercuts the rents to incumbents in self-discovery, and, therefore, reduces the level of discovery.

Furthermore, entrepreneurs engaged in discovery face several obstacles that can be overcome only with a coordinated effort. For instance, to become profitable, most of the activities require simultaneous large investments – such as adequate infrastructure and transportation services. Since at the early stages of a new activity the demand for these high cost services is low, the intervention of the government becomes crucial, either in making direct investments or in providing support for coordinating the investment decisions of different entrepreneurs.

- Lessons from the cases studied

The export discoveries studied in this project emerged from the private initiative of entrepreneurs who concluded that they could be competitive in exporting a product or a line of products that were new for the country. They bore all the costs and assumed all the risks of the investments. The information regarding the export products that could be produced in Colombia at low cost came from the private sector, and in none of the cases from public information or strategic alliances between the government and the entrepreneurs. Neither was there a deliberate policy to support the sectors or products where discoveries occurred.

Nevertheless, the role of the government was important in favoring discoveries in the sense that it provided favorable conditions for exporting, such as macroeconomic stability (including devaluation of the exchange rate in the case of flowers), the removal of import restrictions, and the creation of trade preferences, especially in the nineties. In addition, the discoveries were the result of protection and import substitution policies that had been

adopted in the past and that allowed the emergence and strengthening of big and efficient companies able to be competitive in international markets.

Discoveries also benefited from policies specifically designed to promote non-traditional exports. These policies included export subsidies (CAT/CERT), subsidized credit (Proexpo/ Proexport and Bancoldex), Plan Vallejo, and "Mecanismo de Compensación al Transporte". Although these programs encouraged initial investments and were useful in generating rents for entrepreneurs investing in new areas, the scope of their impact was limited. Plan Vallejo had the greatest effect since it compensated for the policy of import restrictions. In some cases credits from Proexport were useful, as were some other promotional measures, such as participation in international fairs, dissemination of information about foreign markets, and organization of commercial missions to different countries to bring sellers and buyers together ("macroruedas").

In addition, the support of the government in helping investors to solve coordination problems or to deal with market failures was neither well organized nor systematic. In accordance with the cases studied, the main obstacles faced by pioneers were related to transportation, infrastructure, export/import procedures (registration), phytosanitary issues (especially in the cases of flowers, mangos, and confectionery goods), and entry barriers or protectionist measures faced in foreign markets (e.g. dumping cases and phytosanitary barriers). Other common uncertainties were those related to the level of knowledge of foreign markets, the competitors, the size and characteristics of the demand, and consumers´ needs. The government was helpful only in specific cases, and only sporadically. In general terms, obstacles were solved through the coordination among pioneers (as in the case of flowers), or individually (as in the case of manufacturing export discoveries).

- Policy recommendations

1. Colombia should refocus its industrial policy by favoring diversification of the economy rather than specialization. Today, there is not such a clear distinction between these two aims, and the instruments of government, as well as its limited resources, are used to support both new activities and existing ones. In addition, the goal of the policy should be to give incentives to activities rather than sectors, favoring the production/export of more sophisticated and more value-added and differentiated products.

2. In order to promote new discoveries the Colombian government should adopt an active policy aimed at reducing uncertainties related to failures and rent appropriability. The policy response should be to provide direct support (e.g. subsidies or venture capital) to investors in new and non-traditional industries. However, the aid should be directed to first investors (not to copycats or followers), should be temporary to ensure that mistakes are not perpetuated, and should be subject to performance requirements (e.g. exports, productivity), which should be closely monitored. Since the outcome of new activities is uncertain by definition, the industrial policy must also be understood to be a discovery process

itself, in which firms and government learn together about new opportunities and the underlying costs.

3. The government should have a more active and systematic role in helping investors to solve coordination externalities and obstacles that arise during the process of discovery. Many failures in new activities occur because private investors are not able to overcome obstacles (a good example is the case of mangos in Colombia, in which investors were unable to solve transportation and phytosanitary problems). Moreover, the government can increase the probability of success and the social gains of its aid for discovering, if it simultaneously supports other activities related to the new enterprise. In sum, the government and the private sector should work together to discover where the most significant obstacles reside, and to find out the appropriate interventions to overcome them. The role of the government should be focused either on making direct investments or on coordinating the activities of different investors and producers. For example, the government can provide a stimulus for creating clusters, and for strengthening and integrating the productive chains, through reducing information externalities and asymmetries, rather than protecting intermediate stages. Besides, it can directly subsidize training and R&D in accordance with the specific needs.

Colombia has entities that can adequately carry out industrial policy, such as Bancoldex and Banco Agrario on the financing side, and Proexport on the promotion side. However, the government should redirect their objectives toward a policy that encourages the self-discovery process, bearing in mind the need for providing rents for new activities and methods for overcoming obstacles in order to reduce uncertainties. In the task of dealing with coordination externalities, other entities that play a key role such as the Instituto Colombiano Agropecuario, ICA, the Instituto Colombiano de Comercio Exterior, Incomex, Proexport, Colciencias -for R&D-, and Sena –for training-, should be aligned with this policy of promoting discovery.

4. Finally, providing an adequate and economic environment (macroeconomic stability) and improving institutional efficiency (e.g. favorable conditions for doing business) are necessary conditions for encouraging export discoveries.

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